

Herbicide Use & Safety in the Landscape (VEP 307)

A supplemental guide to accompany the VHS tape of the same title.

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VEP 307 – Herbicide Use and Safety in the Landscape: Overview of Video Training Program

Part 1 (25:30 minutes). **Part 2** (23 minutes)

Audience: Primarily beginning to intermediate level landscapers and right-of-way managers will benefit from this material.

Part 1 begins with a discussion of various weed control methods. Most of the remainder of the tape discusses classification of herbicides by selectivity, time of application, and mode of action. Part 1 closes with a brief discussion of herbicide labeling as it relates to product selection, storage, PPE, and formulations.

Part 2 begins with a review of the main points from Part 1 followed by a general discussion about equipment, calibration, and disposal. Considerable time is spent discussing the characteristics and uses of 11 brand name herbicides. This is followed by a discussion on how to select a herbicide based on several different application scenarios.

The training package includes a set of participant questions for each part of the tape. These can be completed during or after the showing of the video. Also provided is a small-group problem-solving exercise that allows participants to put the concepts presented in the program to use. The concluding crossword puzzle will reinforce many of the terms and concepts learned in this lesson.

Use of the entire training package (video tape and associated exercises) is necessary for audience members to obtain two hours of recertification credit in Ornamental and Turfgrass Pest Control, Right-of-Way Pest Control, Demonstration and Research, Dealer, and Private Applicator 'X' (specialty category) only.

Disclaimer: The use of brand and common names and any mention of commercial products or services in this manual does not imply endorsement by North Carolina State University nor discrimination against similar products or services not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Be sure to obtain current information about usage regulations and examine a current product label before applying any chemical. For assistance, contact your local Cooperative Extension Service agent.



Presenter's Guide: Herbicide Use and Safety in the Landscape (VEP 307)

1. Read "How to get the most out of a video-based presentation" (below) and make copies of each handout (pages 3, 4, 5, and page 6 or 7) for every participant.
2. Introduce the subject and pass out the participant question sheet (Handout # 1). Start the video and encourage the participants to listen for and record the answers to the questions 1 through 4. After showing Part 1, give the participants an opportunity to finish answering questions 1 through 4. Go over the answers and get participants involved in discussion.
3. Give a short break
4. Restart the tape and play Part 2. Encourage the participants to listen for and record the answers to questions 5 through 9 on Handout #1. Stop the tape at the 18:00 minute mark of Part 2. (This is just after the discussion on Roundup and Trimec). At this time go over the answers to questions 5 through 9. Encourage discussion. Remember: The more they talk, the more they will remember.
5. Pass out "Class Exercise" (Handout #2) and the "Herbicide Chart" (Handout # 3). Divide audience into small groups of 5 or 6 participants to discuss these scenarios and record their responses.
6. Play the remaining portion of Part 2 and have them compare their responses with those on the tape. Remember, there may be logical answers besides those on the tape, so encourage them to talk about the rationale for their answer.
7. A crossword puzzle (Handout #4) is included as an additional exercise to further emphasize some of the major points of the video if time permits. It can be used with the word list and some letters filled in if you feel your group has less experience with crossword puzzles (Handout 4B page 7) or without these aides (Handout 4A page 6).

How to get the most from a video-based presentation*

- Video is potentially the most complete medium available. Often, however, it is tempting to let the tape stand alone as an instructional event. This is not recommended. Videos require a proper introduction and follow-up. Tell participants what to look for so the follow-up activities will be more beneficial.
- As a general rule, don't let a video run more than 20 minutes without a "feedback session." One of the beauties of video training is that you may pause the video at any time you choose and discuss the topic further. Use this option to your advantage!
- **Stay in the room during the video!** If you leave, you are communicating disinterest to the class.
- Set up your TV monitor and VCR and test them before the presentation. The monitor should be slightly higher than the eye level of the audience.
- A general rule for calculating the optimum seating distance from a video presentation is to convert the diagonal size of the screen from inches to feet. If you have a 20-inch diagonal screen, place seating within 20 feet of the screen. The closest a viewer should sit is half the optimum distance (10 feet in this example). Be sure all the printed words on the screen are legible from the back row of seats.
- The optimum seating arrangement is a triangle of no more than 45-50 degrees in front of the monitor. Avoid creating a center aisle because the best viewing is in the middle. Sometimes placing the video monitor in the corner of a room, rather than the center of a wall, will increase the viewing area of the room.
- Check the volume level from at least two-thirds of the way back into the audience area. It is better to have an audio level that is too loud than too soft.

*Reference: **How to Show a Video**, Copyright 1991, California Polytechnic State University Foundation, Vocational Education Productions, Cal Poly, San Luis Obispo, CA 93407.

Handout #1. Herbicide Use and Safety in the Landscape (VEP 307)

The following questions can be answered as you view the video.

1. Besides using herbicides, what other techniques can be used to control weeds in the landscape or right-of-way? _____

2. Classification of herbicides
 - A. Selectivity
 - i. _____ herbicides affect only certain species.
 - ii. _____ herbicides kill all types of vegetation.

 - B. Application Timing
 - i. _____ herbicides are applied to the soil before a landscape is installed.
 - ii. _____ herbicides are applied around existing landscape plants to prevent germination of weed seeds.
 - iii. _____ herbicides are applied to existing weeds after they have emerged from the soil.

 - C. Postemergent modes of action
 - i. _____ herbicides affect only those leaves contacted by the spray. These are most often used on _____ weeds.
 - ii. _____ herbicides are sprayed onto the leaves and then move into other parts of the plant, affecting the growth and physiology of the plant from the inside. These are most often used on _____ weeds.

3. Chemical names on the label
 - A. (2-terf-butyl-4-(2,4-dichloro-5-isopropoxyphenyl)-2)1,3,4-oxadiazolin-5-one is the _____ name.
 - B. Oxadiazon is a _____ name.
 - C. Ronstar 50 WP is a _____ name.

4. According to the video, in addition to wearing long pants and a long sleeved shirt, three other pieces of safety gear should be worn or used when applying most herbicides. These are:
 - A. _____
 - B. _____
 - C. _____

5. Why should herbicide application equipment not be used for insecticides or fungicides?

6. What is the area of a lawn that measures 100 feet by 125 feet? _____

7. What are some negative consequences of using **more than** the labeled rate of herbicide?

8. What are some negative consequences of using **less than** the labeled rate of herbicide?

9. What is the recommended procedure for dealing with a gallon or less of leftover diluted liquid herbicide?

Handout #2. Herbicide Use and Safety in the Landscape (VEP 307) Part 2.

Class Exercise

In the six landscape and three right-of-way scenarios described below, use the information from the video and the chart provided on Handout # 3 to determine (A) what type of herbicide should be used, and (B) brand names of appropriate herbicides.

1. You are establishing a landscape that will contain tender bedding plants. Most of the weed control will be accomplished by hand weeding and mulching. (A) What type of herbicide, if any, would be helpful in this program? (B) What product from the herbicide chart would meet the requirements of the recommendation and why?

(A) _____ (B) _____

2. You have an extensive planting of established trees and shrubs and minimal use of mechanical weed control is desired. (A) What type of herbicide could be used to prevent weeds of all types and (B) what product would you choose from the chart and why?

(A) _____ (B) _____

3. Your goal is to keep broadleaf weeds out of the golf course fairways. (A) What type of herbicide and (B) which product would you use?

(A) _____ (B) _____

4. Keeping all vegetation from growing in a gravel drive is a challenge. (A) What type of herbicide and (B) what specific product would you use?

(A) _____ (B) _____

5. You have a perennial bed with a variety of broadleaf plants. You want to control the grassy weeds in this bed.

(A) What type of herbicide and (B) which product would you use?

(A) _____ (B) _____

6. You have been contracted to replace a neglected landscape with an entirely new one. (A) What type of herbicide and (B) which product would you use to clear up the existing landscape?

(A) _____ (B) _____

7. Your goal is to clear all of the vegetation from a roadside right-of-way. Trees grow close to some of the area.

(A) What type of herbicide and (B) which product would you use?

(A) _____ (B) _____

8. Your goal is to clear all of the vegetation from a roadside right-of-way. There are no trees around the area to be treated. (A) What type of herbicide and (B) which product would you use?

(A) _____ (B) _____

9. Your challenge is to kill annual grasses along a right-of-way. There are desirable broadleaf plants present.

(A) What type of herbicide and (B) which product would you use?

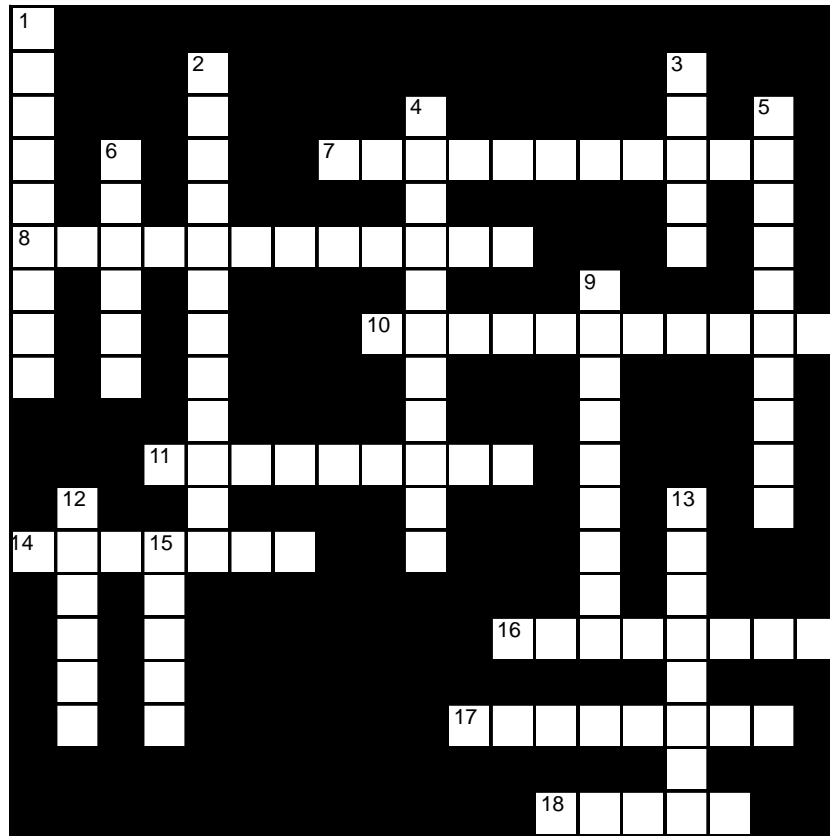
(A) _____ (B) _____

Handout # 3. Herbicide Use and Safety —Characteristics of Selected Materials.*

Herbicide	Formulation	Pre-plant	Pre-emergent	Post-emergent	Right-of-way Use	Selective	Non-selective	Use
Ronstar 2G	Granule	yes	yes				yes	
Rout	Granule		yes					Landscape, container production of ornamentals.
Ronstar 50 WP	Wettable Powder		yes					Around existing landscape plants to prevent weed seed development.
Casoron 50 WP	Wettable Powder		yes					Around established trees and shrubs to prevent germination of weed seeds. NOTE: Do not use around tender or newly installed plants.
Spike 80 DF	Dry Flowable		yes		yes		yes	Where no growth at all is wanted AND where tree roots do not extend. May prevent growth of vegetation for some years after application.
Surflan	Aqueous Solution		yes					Around landscape plants to inhibit weed seed development.
Turflon	Emulsion			yes translocated		yes		Control broadleaf weeds in turf. Can be used to control some woody brush plants.
Fusilade 4E	Emulsion			yes translocated	yes	yes		Control grass weeds around broadleaf plants.
Sharp Shooter				yes translocated			yes	Kill individual weeds in relatively small areas.
Roundup	Solution			yes translocated	yes		yes	Clears an area of all vegetation.
Trimec				yes translocated		yes		Controls broadleaf weeds in turf.

* Other products are also available. Those mentioned here are for example only.

Handout 4A. Herbicide Use and Safety in the Landscape (VEP 307)



Down

1. A weed that lives many years.
2. Herbicide applied to existing weeds after they emerge from the soil.
3. Product name given by the manufacturer is the _____ name.
4. Measuring and adjusting the output of application equipment.
5. Pulling a weed by hand is an example of _____ weed control.
6. A weed that completes its life cycle in one year.
9. Herbicides that affect only certain species.

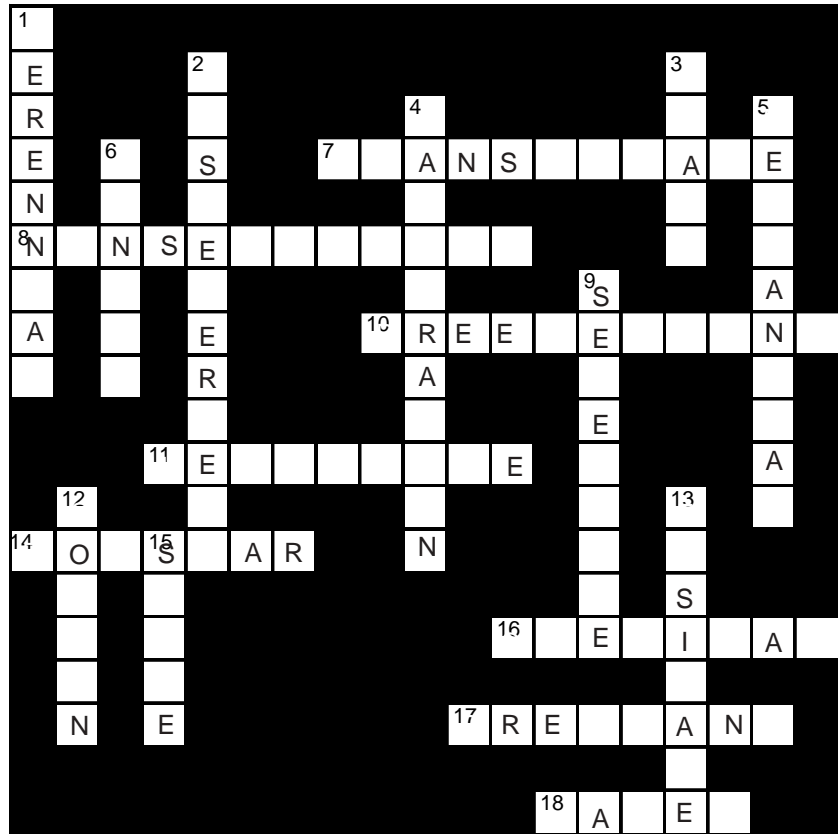
12. The name for the active ingredient on the label that is not expressed in "chemical" terms is the _____ name.
13. A postemergent for grass weeds (Trade name).
15. A strong, nonselective preemergent (Trade name).

Across

7. Movement of herbicide from leaves to other parts of the plant.
8. Herbicides that kill all types of vegetation.
10. Herbicide applied around existing landscape plants to prevent germination of weed seeds.
11. A pesticide to kill weeds.
14. A nonselective, preplant granule (Trade name)
16. The name of the active ingredient on the label that very few can read and pronounce is the _____ name.
17. Herbicide that is applied to the soil before plants are installed.
18. This must be read, understood and followed when applying a pesticide.

Handout 4B. Herbicide Use and Safety in the Landscape (VEP 307)

Words to use:
 annual
 brand (or trade)
 calibration
 chemical
 common
 fusilade
 herbicide
 label
 mechanical
 nonselective
 perennial
 preemergent
 postemergent
 preplant
 ronstar
 selective
 spike
 translocation



Down

1. A weed that lives many years.
2. Herbicide applied to existing weeds after they emerge from the soil.
3. Product name given by the manufacturer is the _____ name.
4. Measuring and adjusting the output of application equipment.
5. Pulling a weed by hand is an example of _____ weed control.
6. A weed that completes its life cycle in one year.
9. Herbicides that affect only certain species.

12. The name for the active ingredient on the label that is not expressed in "chemical" terms is the _____ name.
13. A postemergent for grass weeds (Trade name).
15. A strong, nonselective preemergent (Trade name).

Across

7. Movement of herbicide from leaves to other parts of the plant.
8. Herbicides that kill all types of vegetation.
10. Herbicide applied around existing landscape plants to prevent germination of weed seeds.
11. A pesticide to kill weeds.
14. A nonselective, preplant granule (Trade name)
16. The name of the active ingredient on the label that very few can read and pronounce is the _____ name.
17. Herbicide that is applied to the soil before plants are installed.
18. This must be read, understood and followed when applying a pesticide.

Handout #1 Answers. **Herbicide Use and Safety in the Landscape (VEP 307)**

The following questions can be answered as you view the video.

1. Besides using herbicides, what other techniques can be used to control weeds in the landscapes?
Mechanical removal, mulching or a combination
2. Classification of herbicides
 - A. Selectivity
 - i. **Selective** herbicides affect only certain species.
 - ii. **Non-selective** herbicides kill all types of vegetation.
 - B. Application Timing
 - i. **Preplant** herbicides are applied to the soil before a landscape is installed.
 - ii. **Preemergent** herbicides are applied around existing landscape plants to prevent germination of weed seeds .
 - iii. **Postemergent** herbicides are applied to existing weeds after they have emerged from the soil .
 - C. Postemergent modes of action
 - i. **Foliar contact** herbicides affect only those leaves contacted by the spray. These are most often used on **annual** weeds.
 - ii. **Translocated** herbicides are sprayed onto the leaves and then move into other parts of the plant, affecting the growth and physiology of the plant from the inside. These are most often used on **perennial** weeds.
3. Chemical names on the label
 - A. (2-terf-butyl-4-(2,4-dichloro-5-isopropoxyphenyl)-”2)1,3,4-oxadiazolin-5-one is the **chemical** name.
 - B. Oxadiazon is the **common** name.
 - C. Ronstar 50 WP is the **trade** name.
4. According to the video, in addition to wearing long pants and a long sleeved shirt, three other pieces of safety gear should be worn or used when applying most herbicides. These are:
 - A. **rubber gloves**
 - B. **rubber boots**
 - C. **eye protection**
5. Why should herbicide application equipment not be used for insecticides or fungicides?
To avoid injury to desirable plants
6. What is the area of a lawn that measures 100 feet by 125 feet? **12,500 square feet.**
7. What are some negative consequences of using **more than** the labeled rate of herbicide?
May damage desirable plants; have a higher probability of damaging the environment; waste money on herbicide; may face regulatory action for violating the label.
8. What are some negative consequences of using **less than** the labeled rate of herbicide?
May not kill the weeds so that customer is dissatisfied; waste time; waste money retreating.
9. What is the recommended procedure for dealing with a gallon or less of leftover diluted liquid herbicide?
Dilute the leftover herbicide with three times its volume and spray onto areas allowed by the label. After this, triple rinse the sprayer to wash out any remaining chemical.

Handout #2 Answers. **Herbicide Use and Safety in the Landscape (VEP 307)**

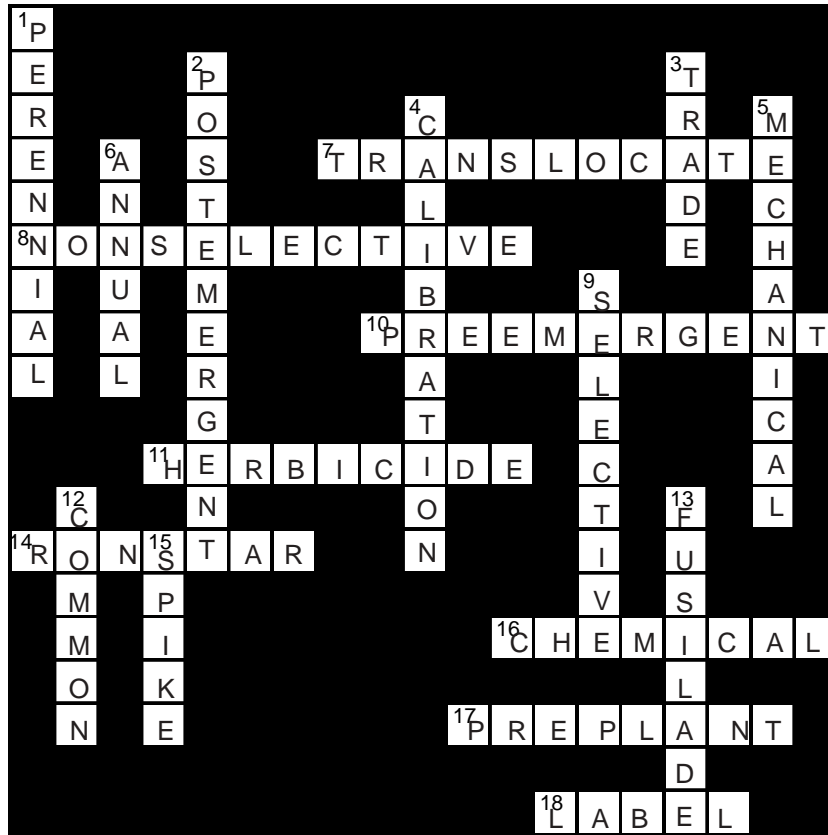
Class Exercise

Continue the Part 2 tape and it will explain the answers for questions 1-6. Note to the instructor: You may wish to stop the tape after each scenario is explained and compare the answers of the class to that on the tape. Discuss any differences. Encourage participants to discuss the thought process they went through in choosing their answers.

In the scenarios described below, use the information from the video and the chart provided on Handout # 3 to determine (A) what type of herbicide should be used and (B) sample brand name(s) of the herbicide(s).

1. You are establishing a landscape that will contain tender bedding plants. Most of the weed control will be accomplished by hand weeding and mulching. (A) What type of herbicide, if any, would be helpful in this program? (B) What product from the herbicide chart would meet the requirements of the recommendation and why?
(A) Apply a preplant herbicide before the beds are installed. (B) Ronstar 2G is the only preplant on the chart. You would want to avoid applying any herbicide around such tender growth after the plants are there for fear of injuring them.
2. You have an extensive planting of established trees and shrubs and minimal use of mechanical weed control is desired. (A) What type of herbicide could be used to prevent weeds of all types and (B) what product would you choose from the chart and why?
(A) Non-selective, preemergent herbicide. (B) You could use Ronstar 2G. The only other non-selective, preemergent on the chart is Spike, but this scenario has too many tree roots present to use it.
3. Your goal is to keep broadleaf weeds out of the golf course fairways. (A) What type of herbicide and (B) which product would you use?
(A) Postemergent, selective herbicide. (B) You could use Turflon or Trimec are both selective for broadleaf weeds
4. Keeping all vegetation from growing in a gravel drive is a challenge. (A) What type of herbicide and (B) what specific product would you use?
(A) Strong, non-selective, preemergent herbicide. (B) You could use Spike — if you are certain that no tree roots come in contact with it.
5. You have a perennial bed with a variety of broadleaf plants. You want to control the grassy weeds in this bed. (A) What type of herbicide and (B) which product would you use?
(A) A postemergent, translocated, selective(for grasses) herbicide. (B) You could use Fusilade.
6. You have been contracted to replace a neglected landscape with an entirely new one. (A) What type of herbicide and which product would you use to clear up the existing landscape?
(A) Non-selective, postemergent herbicide. (B) You could use Roundup.
7. Your goal is to clear all of the vegetation from a roadside right-of-way. Trees grow close to some of the area. (A) What type of herbicide and (B) which product would you use?
(A) Non-selective, post-emergent herbicide. (B) Roundup is the only non-selective product labeled for right-of-way that could be used around trees. Spike 80DF cannot be used where tree roots might extend.
8. Your goal is to clear all of the vegetation from a roadside right-of-way. There are no trees around the area to be treated. (A) What type of herbicide and (B) which product would you use?
(A) Non-selective, post-emergent herbicide. (B) Roundup or Spike 80DF could be used.
9. **Your challenge is to kill annual grasses along a right-of-way. There are desirable broadleaf plants present** (A) What type of herbicide and (B) which product would you use?
(A) Selective. (B) Fusilade 4E is the only product on the chart labeled for right-of-way that is selective to grasses.

Handout 4. Answers. Herbicide Use and Safety in the Landscape (VEP 307)



Down

1. A weed that lives many years.
2. Herbicide applied to existing weeds after they emerge from the soil.
3. Product name given by the manufacturer is the _____ name (or brand name).
4. Measuring and adjusting the output of application equipment.
5. Pulling a weed by hand is an example of _____ weed control.
6. A weed that completes its life cycle in one year.
9. Herbicides that affect only certain species.

12. The name for the active ingredient on the label that is not expressed in “chemical” terms is the _____ name.
13. A postemergent for grass weeds (Trade name).
15. A strong, nonselective preemergent (Trade name).

Across

7. Movement of herbicide from leaves to other parts of the plant.
8. Herbicides that kill all types of vegetation.

10. Herbicide applied around existing landscape plants to prevent germination of weed seeds.
11. A pesticide to kill weeds.
14. A nonselective, preplant granule (Trade name)
16. The name of the active ingredient on the label that very few can read and pronounce is the _____ name.
17. Herbicide that is applied to the soil before plants are installed.
18. This must be read, understood and followed when applying a pesticide.