

Frequently Asked Questions about Herbicides

Athea Laboratories offers introductory answers to frequently asked questions our herbicide products. Links throughout the answers will guide you to further information on our website. Should you have any further questions, please consult our [Contact Us](#) page.

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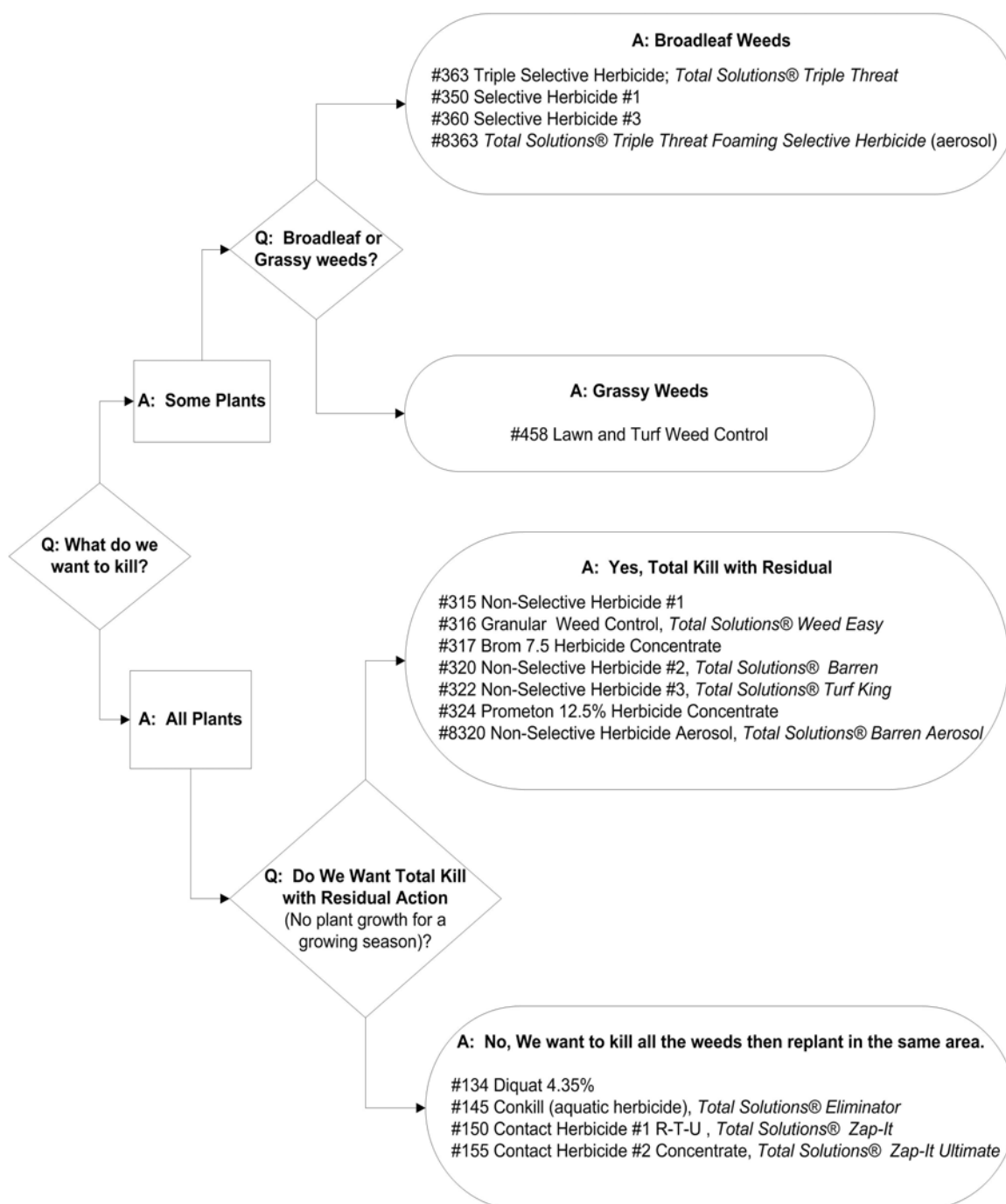
Selecting An Herbicide?

Sometimes it may be desirable to kill ALL of the vegetation growing in that particular area, whether that vegetation is weeds or grass. This could be along fence lines, in parking lots and driveways, around electrical equipment, storage yards, next to buildings, etc. Here, we want to kill everything, and we make no distinction between desirable plants and undesirable plants. We want a NON-SELECTIVE herbicide that will kill everything.

In other cases, we may want to kill only those plants that we call weeds and leave the desirable plants that we call grass growing undisturbed. In other words, we want to be selective about the plants we kill. In this case, we must use a SELECTIVE herbicide to do the job. A selective herbicide is a chemical that will kill some types of plants without harming other types.

We have now made an important distinction between SELECTIVE weed control and NON-SELECTIVE weed control. Now we can go on to the next question that will help to define our objectives in more detail and eventually lead us to pick the correct product for the job.

Herbicide Product Selection Flowchart



Procedure For Supplemental Registration Of E.P.A. Registered Products

Federal law requires that your company must be supplementally registered for each disinfectant, herbicide, insecticide, or other registered pesticide product that you desire to sell. The registration process is quick and free of charge. One simple form must be completed for each separate product you wish to distribute. Our office will fill out the form and mail it to you. You are allowed to use a product trade name that is different from the Athea name. If you choose to do so, let us at Athea know. If you do not choose a different trade name, the product will be given the standard Athea trade name. The trade name that is assigned to this product on the form will be used on the product label.

Sign and date the form, and mail it back to Athea as soon as possible. By law, our order for this product may be released for shipment only after the form has been received back at our office. We will complete the registration process and send you a copy of the completed, signed forms for your records.

If you will have your own custom label printed, we suggest that proofs be submitted for approval in advance. EPA registered product labels must conform to specific requirements, and prior approval will prevent delays in the shipment of your order. We will be glad to assist you in any way necessary.

Note that individual states have regulations governing the sale, distribution and use of pesticide products, fertilizers and soil conditioners. It is the responsibility of the distributor to obtain the necessary registrations and permits required by each state. Athea Laboratories, Inc. assumes no responsibility for the registration of these products with the various states, and may require proof of state registration as a condition of sale. Our office will provide you with the address of the appropriate registering agency in each state, and other assistance that you might require.

If you do not have a company number, you must write to the EPA to request that a number be assigned to your firm. This company number is a permanent identifying number, and will be used on all of your registered products, whether from Athea or another supplier. This number must be printed on the product label, so shipments of product cannot be made until this number is obtained. Please note that the Firm Name and Address will be used on all of your EPA product labels. Your request must be typed on your letterhead (Xerox copies are NOT acceptable), and signed by an officer of your firm. Use the following form as an example:

YOUR LETTERHEAD

DATE

Document Processing Desk (NEWCO)

Office of Pesticide Programs (7504C)

U.S. Environmental Protection Agency

Ariel Rios Building

1200 Pennsylvania Avenue, N.W.

Washington, D.C. 20460

To Whom it May Concern,

Please assign a company number to our firm so that we may sub-register products for sale under our own private label.

Firm Name

Company Address

Contact Person

Phone #

YOUR SIGNATURE

YOUR TITLE

Selective Herbicides

Selective herbicides are used to selectively kill broadleaf weeds like dandelions, thistle, and clover in a lawn or within turf grass.

Even if we don't know the exact name of the weeds, we can easily identify the broadleaf weeds just by looking at the leaves. We can determine that a SELECTIVE herbicide that is designed to eliminate broadleaf weeds without harming the grass plants.

Selective Herbicide Chemicals and their Functions

These chemicals are broadleaf killers; they selectively kill only those plants that meet the definition of broadleaf. They will not kill grasses. Also, all of the above chemicals are systemic herbicides. They are absorbed into the plants and kill them by disrupting important chemical processes within the plant to grow much faster than it normally should, and strains the life support system so much that death results.

2,4-D: Herbicides containing this chemical are very effective in killing many species of broadleaf weeds. However, you will need a strong solution to control some of the tough weeds like chickweed, knotweed, clover, ground ivy, and woody plants like sumac.

MCP: A mild but very effective product. More effective than 2,4-D on the tough clovers, plantains, and ivy. It will generally control about 23 species of weeds.

2,4-DP: Closely related to 2,4-D, but more effective on tough perennial weeds and woody brush.

Athea Selective Herbicide Products

#363 Triple Selective Herbicide (Total Solutions Triple Threat) and **#8363 Total Solutions Triple Threat Foaming Selective Herbicide** are products that combine 2,4-D, 2,4-DP, and MCP. This mixture provides the best control of the widest variety of broadleaf weeds, and is highly recommended for most turf areas. **#8363 Triple Threat Foaming Selective Herbicide** is an aerosol that can be used to spray the weeds from a standing position, and the foam marks the plants that have already been sprayed.

#350 Selective Herbicide #1 is straight concentrated 2,4-D (25% 2,4-D) and is available for turf and pasture uses.

#360 Selective Herbicide #3 also contains non-volatile 2,4-D salts (31.37% 2,4-D), and is labeled for use as a broadleaf killer, a woody brush killer, and may even be used as a stump killer.

While not really an herbicide, adding a surfactant to your herbicides help them penetrate the foliage and increase the efficacy of any water-based herbicide. **#395 Non-Ionic Turf Conditioner** can be mixed with any of these herbicides speeding their penetration into the soil and to the root systems of the plants.

For Best results:

- The herbicide is used on weeds that are young and in a rapid growth condition.
- Apply during when temperatures are cool, in the spring or fall, or early in the morning.
- Wet foliage thoroughly with spray solution.
- If desirable lawn grass begins to yellow, water thoroughly and fertilize.
- NEWLY SEEDED LAWNS may be treated after they have been mowed at least 3 times.

Application

- Applications of lower rates to susceptible annual weeds will be satisfactory, but for perennial weeds and other conditions where weed kill is difficult, use higher rates. Some woody plants and weeds are hard to kill and repeat applications may be necessary.
- To kill undesirable plants such as poison ivy or poison oak, drench plants when they are in full leaf. Repeat in 4 weeks if necessary.
- After applying product, many broadleaf weeds will begin to show visible signs of leaf curl within a few days. Some hard to control broadleaf weeds may require an additional treatment in 3-4 weeks.
- Certain hard-to-kill weeds such as poison ivy, poison oak and English daisy may require a fall application.

- To control Oxalis, repeated treatments maybe necessary.
- For best control of wild onions, treat while young and before bulbils are formed – usually in late fall or early spring.
- For woody plants such as poison oak, brambles, poison ivy, Sumac, honeysuckle Product #360 Selective Herbicide #3 may be used:
- To kill tree and shrub stumps use Product #360 Selective Herbicide #3.
- Spray entire lawn, wetting weeds and lawn grasses, do not overspray.
- Spray when air is calm to avoid spray drift that might injure desirable ornamental plants.

Precautions

- **IMPORTANT:** Do not use this product for controlling weeds in flower or vegetable beds, or around shrubs or ornamental plantings.
- Do not apply to recently seeded areas until grass is well established.
- Most legumes are usually injured or killed at the rates recommended.
- Temporary burning or yellowing may occur to Bent and Fescue grasses.
- Do not use on clover, Dichondra or Lippia lawns.
- Do not apply through any type of irrigation system.
- Do not reseed for 3 to 4 weeks after use. If lawn needs watering, water thoroughly before application.
- Do not water for 48 hours after application.
- Do not apply when temperatures are expected to exceed 85°F. within 24 hours of application.
- Do not use old product, make a new dilution for each use.

Pasture usages (For product #350 and #360 only)

- Do not graze dairy animals on treated areas within **seven days** after treatment.
- Do not graze meat animals on treated areas within **3 days before** slaughter.
- Do not harvest treated grass for hay within **30 days** after treatment.

Selective Weed Control For Grassy Weeds

If we want to selectively kill grassy weeds like crabgrass and Johnson grass in a typical turf grass, we need a different type of *selective herbicide*. These grassy weeds are plant forms just like our desirable turf grass. Since selective herbicides like 2,4-D will not normally kill them, we must find a different type of selective herbicide that WILL kill these grassy weeds – without harming the desirable turf grass.

MSMA: Is a non-residual herbicide for use in non-crop areas to control weeds including Johnson grass, nutgrass, crabgrass, dallisgrass, foxtails pigweeds and cockleburrs. This product is a rapid burn down herbicide and works best under hot conditions. MSMA is quickly inactivated on contact with soil.

#458 Lawn and Turf Weed Control, will SELECTIVELY kill certain grassy weeds without harming desirable plants like blue grass. The product label clearly states which types of grassy weeds it will kill, and that it will not harm our desirable turf.

For Best results:

Apply product to young actively growing weeds at air temperatures about 70°F.

Mow lawns 1 to 1- 1/2 inches high before treatment, (about 3 mowings).

Apply with a suitable surfactant at the manufacturer's recommended rate.

Good grasses may be temporarily discolored. Zoysia, bluegrass and Bermuda are quite tolerant.

Spray unwanted vegetation thoroughly to just short of runoff.

If regrowth occurs, reapply as required.

Use only as a spot treatment in Florida.

Application

Spray thoroughly to wet all undesirable plants.

Two or more repeat applications at 14-day intervals may be necessary.

Do not make more than three (3) applications per year.

Precautions

Do not contaminate water used for domestic consumption, or by animals, wildlife or aquatic life, or for irrigation purposes.

DO NOT make more than five (5) applications per year.

DO NOT apply more than 4 quarts (2 lbs. MSMA) of this product per acre per application

DO NOT apply more than 4 fluid ounces (0.0625 lbs. MSMA) of this product per 1,000 square feet per application.

Do not apply with hose end applicators.

Do not apply this product through any type of irrigation system.

DO NOT apply to St. Augustine grass, Carpet grass, Centipede grass, or to Dichondra lawns.

DO NOT reseed until 2 weeks after last application.

Non-Selective Weed Control – Contact Herbicides - No Residual Action

If we decide that we want to kill all of the plants, down to bare ground, we will want to use a non-selective herbicide that kills everything. We do not need to determine what kinds of plants we want to kill – because we want to kill everything non-selectively. Now we need to determine whether we want any residual action. For instance, we may want to kill all vegetation in an overgrown flowerbed, and then plant or seed new flowers the next week. Otherwise, we may want to kill weeds underneath a canopy of decorative shrubs. In these areas, we do not want to harm the soil or do damage to future plantings or to existing plants immediately next to the area being treated. We must use an herbicide that kills the weeds and then disappears without affecting the soil. By choosing the right product, we can kill off weeds without any harmful effects on existing or future desirable plants. We want a contact herbicide to do this job.

Non-Selective Herbicide Chemicals and their Functions

Diquat is absorbed into the plant, it disrupts the photosynthesis process to kill the plant. This herbicide is the answer to many gardeners' prayers: it eliminates the time consuming, backbreaking task of weeding ornamental beds. It does not kill the roots of the plant, and kill only what they are sprayed on. Even if some is accidentally sprayed on a shrub, this herbicide only kills the leaves, not the roots. Most woody plants can recover from some damage due to contact herbicides. If it is sprayed onto the ground, diquat is absorbed by the soil and deactivated. It has no residual activity, and does not affect the soil in any way. New planting or seeding can be made in the treated areas within days after application of contact herbicide. It can also be carefully sprayed or brushed on to kill weeds underneath shrubs or trees, as long as the herbicide is not sprayed onto the shrubs themselves.

Glyphosate, which is active against a substance found only in plants. It enters the plant through the foliage and is translocated throughout the plant, killing both roots and top growth. Applications to plant foliage are rainfast in approximately two hours and afterward will not be affected by rainfall or irrigation. This product is not active in the soil and cannot move through the soil to damage desirable plants. Sprays not absorbed by the plants are broken down into natural materials. Use these herbicides as a spot treatment inside gardens, around trees and shrubs and in landscaped area. They can also be used for eliminating undesirable weeds and grasses on large areas. The areas can later be replanted with desirable sod, shrubs or trees.

Athea Non-Selective Herbicide Products and Usages

#145 Contact Herbicide #1 (Total Solutions Eliminator) contains 1.85% active ingredient, Diquat

#134 Diquat 4.35% is a super concentrate containing 4.35% Diquat. They both behave similarly when used as directed.

#150 Contact Herbicide #1 RTU (Total Solutions Zap-It) is a ready to use product and

#155 Contact Herbicide #2 Concentrate (Total Solutions Zap-It Ultimate) is a concentrate. Both are glyphosate based products.

For Best Results

- Apply when weather is warm (above 60°C^aF) and sunny to stimulate systemic movement from foliage to roots.

- To avoid spray drift to desirable vegetation, adjust spray nozzle to produce large droplets and spray when wind is calm.
- Spray foliage until thoroughly wet, but not past the point of runoff.
- Apply when weeds are small and actively growing, before seeds develop.

Application

- Adjust the spray nozzle to produce large droplets. Small droplets or mists are more likely to drift and cause damage to desirable plants.
- Spray the weeds until the leaves are thoroughly wet, but not past the point of runoff.
- Weeds may begin to wilt within a few hours, but complete kill may require 1 to 2 weeks.
- Small, rapidly growing weeds may be killed with a single application while older, mature weeds may require re-application. If reapplication is necessary, wait until new growth appears.
- If a desirable plant is nearby, a piece of cardboard or plastic should be used to shield the plant from the spray. If a desirable plant is sprayed by mistake, immediately rinse the plant with water.
- Before sprays have dried, avoid inadvertent transfer of the spray solution from treated plants to desirable plants or tracking spray from treated areas onto lawns or other desirable vegetation.

Precautions

- Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.
- Do not allow people or pets to touch treated plants until the sprays have dried.
- Do not allow entry of maintenance personnel into treated areas, or allow contact with treated vegetation wet with spray, dew or rain, without appropriate protective clothing until spray has dried.
- Do not spray during windy conditions or allow the spray to contact desirable plants such as flowers, ground covers or lawn areas, as they will be severely damaged or killed. In situations where weeds and desirable plants are in close proximity, use a piece of cardboard or plastic to shield desirable plants from the spray.

Aquatic Herbicide

Many turf managers must keep ponds or small lakes looking good as well. This may require that steps be taken to control growth of algae or waterweeds. Of course, we want to eradicate these pests without harming people, fish, or other wildlife.

#145 Conkill (Total Solutions Eliminator) will kill almost all aquatic weeds and algae without any harmful side effects. Like the contact herbicides, it becomes de-activated upon contact with the soil on the bottom. Results will be visible within a few days after application.

How To Apply

There are certain precautions that should be taken when using this aquatic herbicide. Although this product is non-toxic to fish, certain steps should be taken to ensure that the fish population is not harmed by the treatment. While the chemical itself is not harmful to the fish, the decomposing dead vegetation can use up all the dissolved oxygen in the water. This lack of dissolved oxygen may cause the fish to suffocate. To prevent any possibility of fish kill, treat no more than 1/3 of the pond at a time.

Precautions

Aquatic use directions are not allowed in the states of Michigan, New Hampshire and New York. For these states please order product **#146 Contact Herbicide #1 (Total Solutions Eliminator NW)**, which has terrestrial uses only (this is the same formula as the #145).

Non-Selective Weed Control – Soil Sterilants

If we want to kill ALL the vegetation and leave bare ground for an extended period of time, with no re-growth of any vegetation for a long time. For example, a parking lot area should remain free of all plant growth for as long as possible. Here we want a RESIDUAL herbicide that provides long lasting action to prevent the re-growth of any plants. We want to kill everything and sterilize the soil, so that nothing else will grow for a long time. Today, there are many safe and effective products that will give long lasting residual control of all vegetation.

Non-Selective Herbicide Chemicals And Their Functions

Bromacil are widely used, because they provide excellent control and resist movement through the soil (leaching). Bromacil is a photosynthetic inhibitor. Electron flow is interrupted during the conversion of light energy to high energy chemical compounds. This causes formation of free radicals causing protein and lipid damage, leading to cell membrane damage and desiccation.

Prometon moves upwards in the plant after being absorbed by the roots. Downward movement after foliar absorption is limited. Since much of its activity is through the roots, adequate rainfall is required to move the chemical into the root zone. Prometon is more readily adsorbed on muck or clay soils than on soils of low clay or organic matter content.

Prometon is a photosynthetic inhibitor. Electron flow is interrupted during the conversion of light energy to high energy chemical compounds. This causes formation of free radicals causing protein and lipid damage, leading to cell membrane damage and desiccation.

Bromacil Products:

- When product is applied according to label directions, it usually results in a nonproductive condition for a period of a year or more. The degrees of control and duration of effect will vary with the amount of product applied, soil type, rainfall and other conditions. Where limited rainfall (usually less than 4 inches) occurs during the active growth period, such as some areas of the west, this product will not provide satisfactory control of hard-to-kill, deep rooted perennial weeds such as Johnson grass. Effects are slow to appear and may not become apparent until the chemical has been carried into the root zone by moisture.

#315 Non-Selective Herbicide #1,

#320 Non-Selective Herbicide #2 (Total Solutions Barren) and

#8320 Non-Selective Herbicide Aerosol (Total Solutions Barren Aerosol) are ready-to-use herbicides that contain Bromacil. These products also contain 2,4-D for rapid knockdown of weeds, and are mixed in low-volatile oil base carriers for the maximum residual activity and resistance to leaching.

#317 Brom 7.5 Herbicide Concentrate, a water-dilutable, very economical concentrate for killing ALL vegetation.

#316 Granular Weed Control (Total Solutions Weed Easy) contains 4.0% Bromacil for long lasting vegetation control in convenient granules.

For Best Results using the Bromacil products.

- Apply to the ground where it will be absorbed by the roots.
- Applications early in the season have been found to give results superior to applications made later in the season.
- Superior results are obtained when this product is applied just before or during the period of active growth of plants to be controlled and when rainfall can be expected for soil activation. This product may, however, be applied at any time of the year.
- Because it works through the soil, results will be improved by removing dense vegetation growth before treatment.

Precautions when using Bromacil products

- Before spraying, calibrate equipment to uniformly apply the herbicide.
- After mixing, agitation of the spray solution is not required.
- Repeat spot treatment may be required when deep rooted perennial weeds are present. To obtain best results, Users should consult State Agricultural Experimental Stations or Extension Service Weed specialists for recommendations as to use of this product in their particular area.
- **IMPORTANT:** Do not apply on or near valuable woody or herbaceous plants or in areas where their roots may extend, because of possible injury to such plants. Thoroughly clean spreading

equipment with a suitable chemical cleaner before using for other purposes (or do not use same spreading equipment for other purposes).

- Do not apply this product in such a way that it will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.
- Do not enter or allow others to enter the treated area until sprays have dried.
- Not to be used in any recreational areas or in or around homes.
- Do not use aluminum spray nozzles.
- Do not apply when the ground is frozen.
- Do not apply, drain or flush equipment on or near valuable trees or other desirable plants or on areas where their roots may extend, or where the chemical may be washed or moved into contact with their roots.
- Do not use on lawns, walks, driveways, tennis courts or similar areas.
- Prevent spray drift to desirable plants.
- NOTE: For effective brush control and to prevent damage to desirable vegetation: do not apply to brush in standing water; do not use on rights-of-way or other sites where desirable trees or shrubs are immediately adjacent to the treated areas.

Prometon Products:

This herbicide is designed for non-selective weed control in non-cropland areas such as parking lots, fence rows, railroad sidings, drainage ditch banks, storage yards, around buildings or industrial sites. Although this product has considerable activity through foliar contact, much of its activity is through the roots and, therefore, adequate rainfall is necessary to move the herbicide into the root zone. When applied to the soil, this product usually inhibits plant growth for a year or more.

#322 Non-Selective Herbicide #3 (Total Solutions Turf King) is an emulsified concentrate (designed to be diluted with water) that contains 3.73% of this active ingredient.

#324 Prometon 12.5% Herbicide Concentrate is a highly concentrated version for economical application over very large areas. Adding #395 Non-Ionic Soil Conditioner increases the effectiveness of both of these products. Dilutable concentrates such as these provide the user with options and alternatives to the ready-to-use products.

For Best Results using the Prometon products.

For best results, apply prior to weed emergence or when weeds are young and actively growing. For faster top kill of existing vegetation, apply product diluted with diesel oil, fuel oil or weed oil.

Application

- Thoroughly wet all foliage to insure contact action.
- Under conditions where the rainfall is high and the growing season long, a second application may be necessary to maintain a weed-free soil surface.
- Although it has considerable activity through foliar contact, much of its activity is through the roots; therefore, its effectiveness is dependent on rainfall to move it into the root zone.
- Very dry soil conditions and lack of sufficient rainfall may result in poor weed control.
- This product is generally non-corrosive to application equipment, but may cause swelling or more rapid deterioration of hoses and fittings containing natural rubber.

When Not To Use the Prometon Products

- Care must be taken to keep this herbicide away from desirable flower beds, lawns and shrubs. Do not apply over roots of valuable trees, shrubs or woody ornamental plants. Only apply this herbicide outside the drip line of trees. Avoid spray drift to desirable plants.
- Do not use for weed control in greenhouses.