



U.S. ENVIRONMENTAL PROTECTION AGENCY
 Office of Pesticide Programs
 Registration Division (7505P)
 1200 Pennsylvania Ave., N.W.
 Washington, D.C. 20460

EPA Reg. Number:

62719-726

Date of Issuance:

1/25/18

NOTICE OF PESTICIDE:

Registration
 Reregistration
 (under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Challenger

Name and Address of Registrant (include ZIP Code):

Dow AgroScience LLC
 9330 Zionsville Road
 Indianapolis, IN 46268

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.
2. The data requirements for storage stability and corrosion characteristics (Guidelines 830.6317 and 830.6320) are not satisfied. A one year study is required to satisfy these data requirements. You have 18 months from the date of registration to provide these data.

Signature of Approving Official:

Reuben Baris, Acting Product Manager 23
 Herbicide Branch, Registration Division (7505P)

Date:

1/25/18

3. Submit one copy of the revised final printed label for the record before you release the product for shipment.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 7/26/2017

If you have any questions, please contact Emily Schmid at 703-347-0189 or by email at schmid.emily@epa.gov.

Enclosure

(Base label):

Challenger™

HERBICIDE

COLEX-D® Technology

[Alternate Brand Names: Embed™ Extra; Freelexx™ II]

2,4-D CHOLINE SALT	Group	4	HERBICIDE
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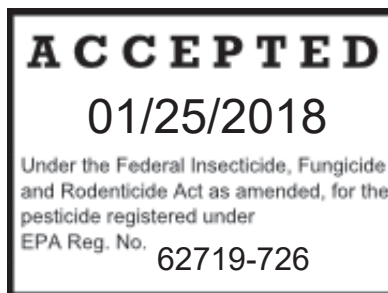
For selective control of many broadleaf weeds in crops specified in this label, orchard floors, fallow cropland, forestry, grass pastures, rangeland, Conservation Reserve Program acres, ornamental turfgrass (including turfgrass grown for sod or seed), non-cropland and aquatic areas as listed.

Do not allow contact of herbicide with foliage of desirable plants and trees because severe injury or destruction may result.

Active Ingredient(s):

2,4-Dichlorophenoxyacetic acid, choline salt	55.7%
Other Ingredients	44.3%
Total	100.0%

2,4-dichlorophenoxyacetic acid equivalent – 38% - 3.8 lb/gal

**Keep Out of Reach of Children****WARNING AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements**Hazards to Humans and Domestic Animals**

May be fatal if swallowed. Causes substantial but temporary eye injury. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Do not get in eyes or on clothing. Avoid contact with skin.

Personal Protective Equipment (PPE)**All mixers, loaders, applicators, flaggers, and handlers must wear:**

- Long-sleeved shirt and long pants
- Shoes and socks, plus
- Waterproof gloves
- Protective eyewear (goggles, face shield, or safety glasses).
- Chemical-resistant apron when mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.

See engineering controls for additional requirements.

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.

Engineering Controls

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-5)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protections Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)].

User Safety Recommendations

Users should:

- Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

First Aid

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994, for emergency medical treatment information.

Environmental Hazards

This product is toxic to fish and aquatic invertebrates. For terrestrial uses: Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift or runoff may adversely affect aquatic invertebrates and non-target plants. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Aquatic Weed Control: Fish breathe dissolved oxygen in the water and decaying weeds also use oxygen. When treating continuous, dense weed masses, it may be appropriate to treat only part of the infestation at a time. For example, apply the product in lanes separated by untreated strips that can be treated after vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Waters having limited and less dense weed infestations may not require partial treatments.

Physical and Chemical Hazards

Spray solutions of this product must be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic lined containers.

Do not mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel containers or spray tanks.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

(Storage and Disposal for rigid containers 5 gallons or less)

Storage and Disposal

Do not contaminate water, food, feed or seed by storage or disposal.

Pesticide Storage: Store in a cool, dry place. Store in original container. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

(Storage and Disposal for refillable rigid containers larger than 5 gal)

Storage and Disposal

Do not contaminate water, food, feed or seed by storage or disposal.

Pesticide Storage: Store in a cool, dry place. Store in original container. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose.

Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

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Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refer to label booklet for Directions for Use.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-721

EPA Est. _____

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

**Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268**

NET CONTENTS _____

(cover, shipping container):

Challenger™

HERBICIDE

COLEX-D® Technology

[Alternate Brand Names: Embed™ Extra; Freelexx™ II

2,4-D CHOLINE SALT	Group	4	HERBICIDE
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Personal Protective Equipment (PPE)

All mixers, loaders, applicators, flaggers, and handlers must wear:

- Long-sleeved shirt and long pants
- Shoes and socks, plus
- Waterproof gloves
- Protective eyewear (goggles, face shield, or safety glasses).
- Chemical-resistant apron when mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.

See engineering controls for additional requirements

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.

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Users should:

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This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Aquatic Weed Control: Fish breathe dissolved oxygen in the water and decaying weeds also use oxygen. When treating continuous, dense weed masses, it may be appropriate to treat only part of the infestation at a time. For example, apply the product in lanes separated by untreated strips that can be treated after vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Waters having limited and less dense weed infestations may not require partial treatments.

Physical and Chemical Hazards

Spray solutions of this product must be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic lined containers.

Do not mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel containers or spray tanks.

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 or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Protective eyewear (goggles, face shield, or safety glasses)

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Entry Restrictions for Non-WPS Uses: Do not enter or allow people (or pets) to enter the treated area until sprays have dried.

Storage and Disposal

Do not contaminate water, food, feed or seed by storage or disposal.

Pesticide Storage: Store in a cool, dry place. Store in original container. In case of leak or spill, contain material and dispose as waste.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refillable containers larger than 5 gallons:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose.

Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container $\frac{1}{4}$ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Product Information

Challenger™ herbicide is intended for selective control of many broadleaf weeds in asparagus; blueberries, high bush; cereal grains; corn (field, sweet and popcorn); cranberries; grain and forage sorghum; soybeans; sugarcane; orchard floors (pome fruit, including apples and pears, stone fruit, and nut orchards), fallowland and crop stubble; filberts; forestry; established grass pastures; rangeland; perennial grasslands (Conservation Reserve Program acres); ornamental turfgrass (including turfgrass grown for sod or seed); hops; non-cropland; red potatoes; strawberries (established planting only); rice; and aquatic areas as listed. Also for control of trees by injection.

Apply Challenger as a water or oil-water spray during warm weather when target weeds or woody plants are actively growing. Application under drought conditions will often give poor results. Use low spray pressure to minimize drift. Generally, the lower dosages specified on this label will be satisfactory for young, succulent growth of susceptible weed species. For less susceptible species and under conditions where control is more difficult, use higher specified rates. Deep-rooted perennial weeds such as Canada thistle and field bindweed and many woody plants usually require repeated applications for satisfactory control. Consult your State Agricultural Experiment stations or Extension Service Weed Specialists for recommendations from this label that best fit local conditions.

When this product is applied as directed and under the circumstances described, it controls annual and perennial broadleaf weeds listed in this label.

Time to Symptoms on Susceptible Plants: Initial symptoms include drooping leaves and epinasty, which typically occurs within 24 hours of foliar treatment. This is followed by chlorosis, necrosis, further leaf/stem malformation and, growth inhibition. Complete death and desiccation of susceptible plants occurs within 3-5 weeks.

Stage of Broadleaf Weeds: Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when treatment is made at late growth stages approaching maturity. Refer to the annual and perennial rate tables for specific weeds. When treating weeds with disease or insect damage, weeds heavily covered with dust, or weeds under poor growing conditions, reduced weed control may result.

Rainfastness: Heavy rainfall soon after application may wash off this product from the foliage.

Spray Coverage: For best results, spray coverage should be uniform and complete. Do not spray weed foliage to the point of runoff.

Mode of Action: 2,4-D, the active ingredient in this product, mimics the naturally occurring plant auxins and overloads the plant's auxin balance affecting vital processes, such as cell division and elongation, resulting in abnormal growth and plant death.

Limited Soil Activity: Though some suppression of annual weeds emerging soon after application may occur when this product is applied at higher rates within the rate range, optimum control is achieved when the majority of weeds are emerged at the time of application. Unemerged plants arising from unattached underground rhizomes or rootstocks of perennials will not be affected by the herbicide and will continue to grow.

Biological Degradation: Degradation of this product is primarily a biological process carried out by soil microbes.

Herbicide Resistance Management

2,4-D, the active ingredient in this product, is a Group 4 herbicide (synthetic auxin). Weed populations may develop biotypes that are resistant to different herbicides with the same mode of action. If herbicides with the same mode of action are used repeatedly in the same field, resistant biotypes may eventually develop, produce viable seed, dominate the weed population and may not be controlled by this product.

Other resistance mechanisms, such as biotypes with enhanced herbicide metabolism, may also develop, exist in a field and may cause reduced weed control. Some naturally occurring weed biotypes that are tolerant (resistant) to 2,4-D may exist due to genetic variability in a weed population. Where resistant biotypes exist, the repeated use of herbicides with the same mode of action can lead to the selection for resistant weeds. Certain agronomic practices reduce the likelihood that resistant weed populations will develop and can be utilized to manage weed resistance once it occurs.

Suspected herbicide-resistant weeds may be identified by these indicators:

- Failure to control a weeds species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
- A spreading patch of non-controlled plants of a particular weed species; and
- Surviving plants mixed with controlled individuals of the same species.

This product should be used as part of an Integrated Pest Management (IPM) program that may include biological, cultural, and chemical practices aimed at preventing economic pest damage. Application of this product should be based on appropriate IPM and resistance management strategies and practices that delay or reduce the development of herbicide-resistant weed biotypes. Such practices include, but are not limited to, field scouting, use of weed free crop seed, cultural practices including burndown herbicides, crop rotation and cultivation, proper water management, correct weed pest identification, following rotational practices outlined on pesticide labels, and treating with the correct product rates when target weed populations are at the correct stage and economic thresholds for control.

To aid in the prevention of developing 2,4-D resistant weeds, Dow AgroSciences recommends the following practices:

Herbicide Selection:

- Rotate the use of 2,4-D with non-auxin (non-Group 4) herbicides.
- Utilize a broad spectrum soil-applied herbicide as a foundation treatment.
- Utilize tank mixes or sequential applications of herbicides with alternative modes of action.
- Avoid using more than two applications of a Group 4 herbicide, such as 2,4-D, within a single growing season unless mixed with another mode of action herbicide with overlapping spectrum.
- Apply full rates of 2,4-D at the specified time (correct weed size) to minimize escapes of tolerant weeds.
- Fields should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective.

Crop Selection and Cultural Practices:

- Incorporate additional weed control practices whenever possible, such as mechanical cultivation, delayed planting, crop rotation, and weed-free crop seeds, as part of an integrated weed control program.
- Do not allow weed escapes to produce seeds, roots or tubers.
- Thoroughly clean plant residues from equipment before leaving fields suspected to contain resistant weeds.
- Scout fields after application to detect weed escapes or shifts in weed species.
- If resistance is suspected, treat weed escapes with an alternate mode of action or cultivation.
- Report any incidence of repeated non-performance of this product against a particular weed species to the local retailer, county extension agent, or Dow AgroSciences representative.

Because the presence of herbicide resistance in weed populations is difficult to detect prior to use to the extent consistent with applicable law, Dow AgroSciences accepts no liability for any losses that may result from the failure of this product to control weeds resistant to this mode of action. Report incidents of non-performance to the local retailer, county extension agent, or Dow AgroSciences representative.

Spray Drift Management

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, and relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Droplet Size

When applying sprays that contain 2,4-D as the sole active ingredient, or when applying sprays that contain 2,4-D mixed with other active ingredients that require a coarse or coarser spray, apply only as a coarse or coarser spray (ASABE S-572 standard) or a volume mean diameter of 385 microns or greater for spinning atomizer nozzles.

When applying sprays that contain 2,4-D mixed with other active ingredients that require a medium or finer spray, apply only as a medium or coarser spray (ASABE Standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

Wind Speed

Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition and there are not sensitive areas (including residential areas, bodies of water, known habitat for non-target species, non-target crops) within 250 feet downwind. If applying a medium droplet spray, leave one swath unsprayed at the downwind edge of the treated field.

Temperature Inversions

Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

State and Local Requirements

Applicators must follow all state and local pesticide drift requirements regarding application of 2,4-D herbicides. Where states have more stringent regulations, they must be observed.

Susceptible Plants

Do not apply under circumstances where spray drift may occur to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption. Do not allow contact of herbicide with foliage of desirable plants; including cotton and trees, because severe injury or destruction may result. Small amounts of spray drift that may not be visible may injure susceptible broadleaf plants.

Before making an application, please refer to your state's sensitive crop registry (if available) to identify any commercial specialty or certified organic crops that may be located nearby.

At the time of application, the wind cannot be blowing toward adjacent commercially grown tomatoes and other fruiting vegetables (EPA crop group 8), cucurbits (EPA crop group 9), grapes and cotton.

Application Equipment and Application Methods

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

Apply Challenger with the following application equipment: Apply spray solutions in properly maintained and calibrated equipment capable of delivering desired volumes.

Ground Broadcast Spray

Boom, pull-type sprayer, floaters, pick-up sprayers, spray coupes and other ground broadcast equipment. Use the minimum boom height based upon the nozzle manufacturer's specifications. Spray drift potential is increased as boom height increases. Spray drift can be minimized if nozzle height is not greater than maximum height recommended by nozzle manufacturer for the nozzle selected.

Use the specified rates of this product as a broadcast spray unless otherwise specified. As the density of weeds increases, increase spray volume within the specified range to ensure complete coverage. Check for even distribution of spray droplets.

Aerial Application

The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.

Release spray at the lowest height consistent with efficacy and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety. This requirement does not apply to forestry or rights-of-way applications.

When applications are made with a crosswind, the swath will be displaced downwind. The applicator must compensate for this by adjusting the path of the aircraft upwind.

Mixing Directions

Challenger – Alone

Mix Challenger only with water unless otherwise directed on this label. Add about half of the water to the mixing tank, then add Challenger with agitation, and finally the rest of the water with continuing agitation. **Note:** Adding oil, wetting agent, or other surfactant to the spray mixture may increase effectiveness on weeds, but also may reduce selectivity to crops resulting in crop damage.

Challenger - Tank Mix

When tank mixing, read and follow the label of each tank mix product used for precautionary statements, directions for use, weeds controlled, and geographic and other restrictions. Use in accordance with the most restrictive of label limitations and precautions. Do not exceed any active ingredient's maximum use rates when tank mixing. Do not tank mix this product with any product containing a label prohibition against tank mixing with 2,4-D. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Tank Mix Compatibility Testing: A jar test is recommended prior to tank mixing to ensure compatibility of this product and other pesticides. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately ½ hour. If the mixture balls-up, forms flakes, sludges, gels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

Mixing with Liquid Nitrogen Fertilizer: This product may be combined with liquid nitrogen fertilizer suitable for foliar application to accomplish broadleaf weed control and fertilization of corn, small grains or pastures in a single operation. Use Challenger in accordance with directions for these crops provided in this label. Use liquid fertilizer at rates specified by the supplier or Extension Service Specialist. Test for mixing compatibility as described above before mixing in a spray tank. A compatibility aid such as Unite or Complex may be needed in some situations. Compatibility is best with liquid fertilizer solutions containing only nitrogen. Mixing with N-P-K solutions may not be satisfactory, even with the addition of a compatibility aid. Pre-mixing 1 part Challenger with up to 4 parts water may help in situations when mixing difficulty occurs.

Fill the tank about half full with the liquid fertilizer, then add the required amount of Challenger with agitation. Maintain agitation and complete filling the tank with liquid fertilizer. Apply immediately and continue agitation in spray tank during application. **Do not store the spray mixture.** Application during very cold weather (near freezing) is not advisable.

Sprayer Clean-Out

To avoid injury to desirable plants, thoroughly clean equipment used to apply this product before re-use or using it to apply other chemicals.

1. Completely drain the spray system, including pump, lines and spray boom, for at least 5 minutes.
2. Fill the spray tank with clean water to at least 10% of the total tank volume and circulate the solution through the entire system so that all internal surfaces are contacted for at least 15 minutes to complete the first rinse of the application equipment. Spray the solution out of the spray tank through the boom.
3. Completely drain the spray system, including lines and spray boom, for at least 5 minutes; remove and clean filters and strainers.
4. During the second rinse, fill the container with clean water to at least 10% of the total tank volume. The addition of tank cleaning agents may be used at the manufacturer's specified rates. Circulate the solution through the entire system for at least 15 to 20 minutes. Let the solution stand for several hours, preferably overnight. Spray the solution out of the spray tank through the boom.
5. Completely drain the spray system, including lines and spray boom, for at least 5 minutes.
6. Fill the container with clean water to at least 10% of the total tank volume and circulate the solution through the entire system so that all internal surfaces are contacted for at least 15 minutes to complete the third rinse of the application equipment. Spray the solution out of the spray tank through the boom.
7. Completely drain the spray system, remove nozzle tips and strainers and clean them separately.

Application Directions

Apply with calibrated air or ground equipment using sufficient spray volume to provide adequate coverage of target weeds or as otherwise directed in Use Directions. For broadcast application, use a spray volume of 3 gallons or more per acre by air and 10 gallons or more per acre for ground equipment. Where states have regulations which specify minimum spray volumes, they must be observed. In general, increase spray volume as crop canopy, height and weed density increase in order to obtain adequate spray coverage. **Do not apply less than 3 gallons total spray volume per acre.**

Application Rate

The lower dosages given will be satisfactory for young, succulent growth of sensitive weed species. For less sensitive species and under conditions where control is more difficult, the higher dosages will be needed.

Application Timing

Apply Challenger during warm weather when weeds are young and actively growing.

Spot Treatments

To prevent misapplication, apply spot treatments with a calibrated boom or with hand sprayers using a fixed spray volume per 1000 sq ft as indicated below.

Hand-Held Sprayers: Hand-held sprayers may be used for spot applications of Challenger. Take care to apply the spray uniformly and at a rate equivalent to a broadcast application. Application rates in the table are based upon the application rate for an area of 1000 sq ft. Mix the amount of Challenger (fl oz or mL) corresponding to the desired broadcast rate in 1 to 3 gallons of spray. To calculate the amount of Challenger required for larger areas, multiply the table value (fl oz or mL) by the thousands of sq ft to be treated. An area of 1000 sq ft is approximately 10.5 X 10.5 yards (strides) in size.

Rate Conversion Table for Spot Treatment:

Label Broadcast Rate (pint/acre)							
1/2	2/3	3/4	1	2	3	4	8
Equivalent Amount of Challenger per 1000 sq ft							
1/5 fl oz (5.5 mL)	1/4 fl oz (7.3 mL)	1/3 fl oz (8.3 mL)	3/8 fl oz (11 mL)	3/4 fl oz (22 mL)	1 fl oz (33 mL)	1 1/2 fl oz (44 mL)	3 fl oz (88 mL)

Band Application

Challenger may be applied as a band treatment. Use the formulas below to determine the appropriate rate and volume per treated acre.

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Band rate per treated acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Band volume per treated acre}$$

Weeds Controlled

Hard to control weeds, such as Palmer amaranth, may require a total program approach including soil applied residual herbicide(s) followed by a single or sequential post herbicide application.

Perennial weeds may require higher rates for best control. Below-ground portions of perennial weeds may not be completely controlled with single applications and follow-up applications may be required if regrowth occurs.

Annual or Biennial Weeds

beggarticks ¹	mousetail
bittercress, smallflowered	mustards (except blue mustard)
bitterweed	parsnip, wild
broomweed, common ¹	pennycress, field
burdock, common	pepperweed ¹
buttercup, smallflowered ¹	pigweeds (<i>Amaranthus</i> spp.) ¹
carpetweed	poorjoe
cinquefoil, common	primrose, common
cinquefoil, rough	purslane, common
cocklebur, common	pusley, Florida
coffeeweed	radish, wild
copperleaf, Virginia	ragweed, common
croton, Texas	ragweed, giant
croton, woolly	rape, wild
flixweed	rocket, yellow
galinsoga	salsify, common ¹
geranium, Carolina	salsify, western ¹
hemp, wild	shepherdspurse
horseweed (marestail)	sicklepod
jewelweed	smartweed (annual species) ¹
jimsonweed	sneezeweed, bitter
knotweed ¹	sowthistle, annual
kochia	sowthistle, spiny
lambsquarters, common	spanishneedles
lettuce, prickly ¹	sunflower
lettuce, wild	sweetclover
lupines	tansymustard
mallow, little ¹	thistle, bull
mallow, Venice ¹	thistle, musk ¹
marshelder	thistle, Russian (tumbleweed) ¹
morningglory, annual	velvetleaf
morningglory, ivy	vetches
morningglory, woolly	

Perennial Weeds

alfalfa ¹	eveningprimrose, cutleaf
artichoke, Jerusalem ¹	garlic, wild ¹
aster, many-flower ¹	goldenrod
Austrian fieldcress ¹	hawkweed, orange ¹
bindweed (hedge, field and European) ¹	healal
blue lettuce	ironweed, western
blueweed, Texas	ivy, ground ¹
broomweed	Jerusalem artichoke
bullnettle ¹	loco, bigbend
carrot, wild ¹	nettles (including stinging) ¹
catnip	onion, wild ¹
chicory	pennywort
clover, red ¹	plantains
coffeeweed	ragwort, tansy ¹
cress, hoary ¹	sowthistle, perennial
dandelion ¹	thistle, Canada ¹
docks ¹	vervains ¹
dogbanes ¹	waterplantain
	wormwood

¹May require application to small weeds, repeat applications, and/or use of higher specified rates of this product. Control at rates of 1 pint or less per acre may only be partial.

Use Directions

Unless otherwise specified, applications may be made to control any weeds listed in the annual and perennial tables.

Agricultural Use Requirements for Crops: For the following crop uses, follow PPE and re-entry instructions in the Agricultural Use Requirements section of this label.

Apples, Pears, Stone Fruit and Nut Orchards (Except Filberts) (Orchard Floor)

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence		
Annual and biennial broadleaf weeds	1 to 2 pints	For application to orchard floors, use coarse, low-pressure sprays and sufficient water for thorough coverage of weeds. Apply to annual weeds when small and actively growing. Apply to perennial weeds from bud to bloom stage. Newly established trees or young orchards are more susceptible to 2,4-D injury. Apply only to orchards that have been established for at least one year and are in vigorous growth condition
Perennial broadleaf weeds	Up to 4 pints	

Restrictions for Use in Pome Fruits

- Preharvest Intervals (PHI):
 - Apples and Pear: Do not harvest fruit within 14 days of application.
 - Stone Fruit: Do not harvest within 40 days of application
 - Nut Orchard and Pistachio: Do not harvest within 60 days of application.
- Do not apply to bare ground as injury may result.
- Do not apply immediately before irrigation. Withhold irrigation for two days before and three days after application.
- Do not allow spray drift to contact foliage, fruit, stems, trunks or trees or exposed roots.
- Do not apply to newly established or young orchards. Trees must be at least 1 year old and in vigorous condition.
- Do not apply when orchards are blooming.
- Do not cut orchard floor forage for hay within 7 days of application.

- Allow at least 75 days between applications.
- Do not make more than 2 applications per year.
- Max annual rate: 4.0 lbs ae per acre per year.
- Do not graze or feed cover crops from treated orchards.

Asparagus

CROP / APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual, biennial and perennial broadleaf weeds	3 to 4 pints	<p>Apply on actively growing weeds.</p> <p>Ground Application: Apply in 50 to 60 gallons of water per acre.</p> <p>Aerial Application: Apply in 12 gallons of water per acre.</p> <p>Post-harvest spraying should be only by ground application using drop nozzles to avoid spraying the fern.</p> <p>If asparagus spears are present, treat immediately after cutting. Spears contacted by the spray may be malformed and off-flavored. If spears are malformed by spray, cut immediately and discard.</p>

Restrictions for Use in Asparagus

- Limited to two applications per crop cycle.
- Maximum of 4 pints (2.0 lb ae) per acre per application.
- Minimum of 30 days between applications.
- Preharvest Interval (PHI): Do not harvest within 3 days of application.

Blueberries, High Bush

CROP STAGE	MAXIMUM APPLICATION RATE / ACRE	DIRECTIONS / TIMING
Postemergence	3.0 pints	Make directed or shielded application in the spring.
Postharvest	3.0 pints	Make directed application to row middles in summer or fall after harvest.

Restrictions for Use in Blueberries

- Preharvest Interval (PHI): Do not harvest within 30 days of application.
- Max annual rate: 6.0 pints (2.8 lbs ae) per acre per year.
- Limited to one application per year for each of the crop stages.
- Do not allow herbicide contact with blueberry plant foliage.

Cereal Grains

(Wheat, Barley, Millet, Oats, Rye, Triticale and Teff)

CROP / APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Barley, Rye, Triticale, Wheat, Millet and Teff Not underseeded with legumes Postemergence Annual and biennial broadleaf weeds Perennial broadleaf weeds	½ to 2 pints* 1 to 2 pints*	<p>Apply after crop is fully tillered (usually 4 to 8 inches high) but not forming joints in the stem.</p> <p>Do not apply before tillering or from early boot through the milk stage of growth.</p>

CROP / APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Oats Not underseeded with legumes Postemergence Spring Seeded Fall Seeded Southern	½ pint ¾ to 1½ pints*	Apply after crop is fully tillered (usually 4 to 8 inches high) but not forming joints in the stem. Do not apply before tillering or from early boot through the milk stage of growth. Do not apply during or immediately following cold weather.
Oats Underseeded with legumes	¼ to ½ pint*	Apply after grain is 8 inches tall. Do not apply before tillering or from early boot through the milk stage of growth. Do not spray alfalfa or sweet clover unless the infestation is severe and injury to these legumes can be tolerated.
Emergency weed control in Triticale, Wheat Perennial broadleaf weeds	2.6 pints	Apply when weeds are approaching bud stage, after the grain dough stage. Do not apply before tillering or from early boot through the milk stage of growth The 2.6 pints per acre application can produce injury to wheat. Balance the severity of your weed problem against the possibility of crop damage. Where perennial weeds are scattered, spot treatment is suggested to minimize the extent of crop injury.
Preharvest application	1 pint	Apply using air or ground equipment to control weeds that could interfere with harvest, or to suppress perennial weeds. Apply when grain is in dough stage. Do not apply from early boot through the milk stage of growth.

*Apply when weeds are small and actively growing. Use a lower rate in the rate range for small rapidly growing annual or biennial weeds. Use the higher rate for perennial weeds or annual or biennial weeds are present which are in the hard-to-kill categories as determined by local experience.

Precautions:

- Up to 2½ pints per acre may be applied postemergence to barley, millet, rye and wheat. However, there is greater risk of crop injury at rates greater than 1½ pints per acre. Use such rates only when the need for weed control justifies additional risk to the crop.
- For ground application, a minimum of 10 to 15 gallons per acre of water is required.

Restrictions for Use on Cereal Grains

- Limited to one application for each of the crop stages.
- Do not apply more than a total of 3.6 pints of Challenger (1.75 lb ae) per acre per use season.
- Maximum single postemergence application rate is 2.6 pints of Challenger (1.25 lb ae) per acre.
- Preharvest Interval (PHI): Do not apply within 14 days of grain harvest.
- Do not feed treated straw to livestock if an emergency treatment as described above is applied.
- Do not apply Challenger at the crop seedling stage of growth prior to tillering or from early boot (forming joints in the stem) through milk stage of grain development. Consult state agricultural experiment station or extension service weed specialists for recommendations or suggestions to fit local conditions.
- Do not use on Teff in California.

Corn (Field, Sweet and Popcorn)

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Corn Preplant (Burndown)	1 to 2 pints	To control emerged broadleaf weed seedlings or existing cover crops prior to planting corn, apply 7 to 14 days before planting. Do not use on light, sandy soil, or where soil moisture is inadequate for normal weed growth. Use high rate for less susceptible weeds or cover crops such as alfalfa.
Preemergence	2 pints	Apply 3 to 5 days after planting but before corn emerges. Do not use on light, sandy soils or where soil moisture is low.
Postemergence Annual broadleaf weeds Perennial broadleaf weeds	$\frac{1}{2}$ to 1 pint 1 pint	Apply when weeds are small and corn is less than 8 inches tall (to top of canopy). When corn is over 8 inches tall, use drop nozzles and keep spray off foliage. Treat perennial weeds when they are in the bud to bloom stage. Do not spray corn in the tassel to dough stage. Corn treated with 2,4-D may become temporarily brittle. Winds or cultivation may cause stalk breakage during the period of time when the corn is brittle.
Preharvest (Field Corn and Popcorn Only)	Up to 3 pints	Apply after corn is in hard dough (or denting) stage.

Precautions:

- Preplant or preemergence applications to light sandy soils is not recommended.
- Corn hybrids vary in tolerance to 2,4-D. Some are easily injured. Apply only to varieties known to be tolerant to 2,4-D. Consult the seed company or your Agricultural Experiment Station or Extension Service Weed Specialist for this information.
- Note: Corn treated with 2,4-D may exhibit stem brittleness for 8 to 10 days following application. During this period, the crop is more susceptible to stem breakage from cultivation or wind.
- For ground application, a minimum of 10 to 15 gallons per acre of water is required.

Restrictions for Use on Field Corn and Popcorn

- Preharvest Interval (PHI): Do not apply within 7 days of grain or fodder harvest.
- Do not make more than one preplant or preemergence application, one postemergence application, and one preharvest application per use season.
- Do not apply more than a total of 6.32 pints of Challenger (3 lb ae) per acre per use season.
- Max annual rate: Apply no more than 6.3 pints (3 lbs ae) per acre per year.
- Maximum single preplant or preemergence application rate is 2.1 pints of Challenger (1 lb ae) per acre.
- Maximum single postemergence application rate is 1.1 pints of Challenger (0.5 lb ae) per acre.
- Maximum single preharvest application rate is 3.2 pints of Challenger (1.5 lb ae) per acre.

Restrictions for Use on Sweet Corn

- Preharvest Interval (PHI): Do not apply within 45 days of ear harvest.
- Do not use treated crop as fodder for 7 days following application.
- Do not make a postemergence application within 21 days after a previous application.
- Do not apply more than a total of 3.2 pints of Challenger (1.5 lb ae) per acre per use season.
- Do not make more than one preplant or preemergence application and one postemergence application per use season.
- Maximum single preplant or preemergence application rate is 2.1 pints of Challenger (1 lb ae) per acre.
- Maximum single postemergence application rate is 1.1 pints of Challenger (0.5 lb ae) per acre.

Cranberries

CROP STAGE	MAXIMUM APPLICATION RATE / ACRE	DIRECTIONS / TIMING
Postemergence	2.5 pints	Make directed wipe or spot applications when weed tops are above crop.

Restrictions for Use in Cranberries

- Preharvest Interval (PHI): Do not harvest within 30 days of application.
- Postemergence: Do not exceed two postemergence applications per year.
- Do not exceed 2.5 pints (1.2 lb ae) per acre per application.
- Max annual rate: 5 pints (2.4 lbs ae) per acre per year in the growing season.

Fallowland and Crop Stubble

(Fallow land is idle land, postharvest to crops, or between crops)

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	1 to 2 pints	Use a lower rate in the rate range when weeds are small (2 to 3 inches tall) and actively growing. Use a higher in the rate range when weeds are larger and under less favorable growth conditions
Biennial broadleaf weeds	2 to 4 pints	Apply when musk thistles or other biennial species are in the seedling to rosette stage and before development of flower stalks The lower rate in the rate range can be used in the spring during the rosette stage. Use the highest rate in the rate range in the fall or after flower stalks have developed.
Perennial broadleaf weeds	2 to 4 pints	Apply when perennial weeds are in bud to early bloom stage or while in good vegetative growth.
Wild garlic and onion in crop stubble	4 pints	Apply to new regrowth of wild garlic or onion that occurs in the fall after harvest of small grains, corn or grain sorghum.

Precaution:

- For best weed control results, do not cultivate for at least two weeks after application or until top growth is dead.

Restrictions for Use in Fallowland and Crop Stubble

- PHI: Do not cut forage for hay within 7 days of application.
- Maximum single application rate is 4.0 pints of Challenger (2 lb ae) per acre.
- Do not apply more than two times per year.
- Maximum of 8 pints of Challenger (4 lbs ae) per acre per year.
- Do not apply within 30 days of previous application.
- Plant only labeled crops within 29 days following application.

Planting in Treated Areas

Labeled Crops: Within 29 days following an application of this product, plant only those crops named as use sites on this or other registered 2,4-D labels. Follow more specific limitations, if any, provided in the directions for individual crops. Labeled crops may be at risk for crop injury or loss when planted soon after application, especially in the first 14 days. Degradation factors described below should be considered in weighing this risk.

Other Crops: All other crops may be planted 30 or more days following an application without concern for illegal residues in the planted crop. However, under certain conditions, there may be a risk of injury to susceptible crops. Degradation factors described below should be considered in weighing this risk. Under normal conditions, any crop may be planted without risk of injury if at least 90 days of soil temperatures above freezing have elapsed since application.

Degradation Factors: When planting into treated areas, the risk of crop injury is less if lower rates of product were applied and conditions following application have included warm, moist soil conditions that favor rapid degradation of 2,4-D. Risk is greater if higher rates of product were applied and soil temperatures have been cold and/or soils have been excessively wet or dry in the days following application.

Filberts (Orchard Floor)

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence Annual and biennial broadleaf weeds	2.1 pints	Apply a maximum of 2.1 pints (1.0 lb ae) in 100 gallons of spray solution per acre for spot treatments only. For control of suckers, spray to wet leaves and stems of suckers that are 6 to 8 inches in height during April through August.

Restrictions for Use in Filberts

- Preharvest Interval (PHI): Do not harvest nuts within 45 days of application.
- Allow at least 30 days between applications.
- Ground spot treatment only.
- Do not make more than 4 applications per year.
- Do not apply to bare ground as injury may result.
- Do not use on light sandy soil.
- Do not apply immediately before irrigation and withhold irrigation for 2 days before and for 3 days after treatment.
- Do not allow spray to drift onto or contact foliage, fruit, stems, trunks of trees or exposed roots as injury may result.
- Do not apply to newly established or young orchards. Trees must be at least 1 year old and in vigorous condition.
- Do not apply during bloom.
- Do not graze or feed cover crops from treated orchards.
- Do not cut orchard floor forage for hay within 7 days of application.

Grain or Forage Sorghum

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Grain Sorghum (Milo) and Forage Sorghum Postemergence Crop 6-8 inches tall	½ to 1½ pints	Apply when sorghum is 6 to 15 inches tall. If sorghum is more than 8 inches tall (to top of crop canopy), use drop nozzles and apply as a directed spray to keep spray off of foliage.
Crop 9-15 inches tall (Direct Spray Only)	¾ to 1½ pint	

Precautions:

- Sorghum hybrids vary in tolerance to 2,4-D. Some are easily injured. Apply only to varieties known to be tolerant to 2,4-D. Consult the seed company or your agricultural experiment station or extension service weed specialist for this information.
- Temporary crop injury can be expected under conditions of high soil moisture and high air temperatures. If it is necessary to apply Challenger under these conditions, use no more than ⅔ pint per acre.

Restrictions for Use on Sorghum

- Preharvest Interval (PHI): Do not apply within 30 days of grain harvest.

- Do not permit meat or dairy animals to consume treated crop as fodder or forage within 30 days after application.
- Do not apply more than a total of 2.1 pints of Challenger (1 lb ae) per acre per use season.
- Do not apply more than one postemergence application per use season.
- Do not apply during boot, or later stages of growth.
- Do not use with oil or other adjuvants.

Forestry

Forest Site Preparation, Forest Roadsides, Brush Control, Established Conifer Release (Including Christmas trees and reforestation areas)

Agricultural Use Requirements for Forest Use (Except Tree Injection Use): For use in forests, follow PPE and re-entry instructions in the Agricultural Use Requirements section under the Directions for Use heading of this label.

Agricultural Use Requirements for Rangeland, Pasture, Forest (Tree Injection Only) and Non-Cropland Areas: When this product is applied to rangeland and established grass pastures not harvested for hay or seed; non-cropland areas, and when applied by tree injection in forest sites, follow re-entry requirements given in the Non-Agricultural Use Requirements section under the Directions for Use heading of this label.

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	2 to 4 pints	Apply when weeds are small and growing actively before the bud stage. Apply when biennial and perennial species are in the seedling to rosette stage and before flower stalks appear. For difficult to control perennial broadleaf weeds and woody species, use up to 8 pints of Challenger and 1 to 4 quarts of Garlon® 3A herbicide per acre. For conifer release, make application in early spring before budbreak of conifers when weeds are small and actively growing.
Biennial and perennial broadleaf weeds and susceptible woody plants	4 to 8 pints	
Spot Treatment to control broadleaf weeds	See Instructions for Spot Treatments	Note: to control broadleaf weeds in small areas with a hand sprayer, use an application rate equivalent to the broadcast rate specified for this treatment site and spray to thoroughly wet all foliage. See rate conversion table and instructions for Spot Treatment and use of hand-held sprayers.
Conifer Release: Species including white pine, ponderosa pine, jack pine, red pine, black spruce, white spruce, red spruce, and balsam fir	3 to 8 pints	To control competing hardwood species such as alder, aspen, birch, hazel, and willow, apply from mid to late summer when growth of conifer trees has hardened off and woody plants are still actively growing. Apply with ground or air equipment, using sufficient spray volume to ensure complete coverage. Because this treatment may cause occasional conifer injury, do not apply if such injury cannot be tolerated.
Directed Spray: Conifer plantations including pine	8 pints / 100 gallons of spray	Apply when brush or weeds are actively growing by directing the spray so as to avoid contact with conifer foliage and injurious amounts of spray. Apply in oil, oil water, or water carrier in a spray volume of 10 to 100 gallons per acre.
Basal Spray (May also be used in rangeland, pastures, and noncropland)	17 pints/ 100 gallons of spray or	Thoroughly wet the base and root collar of all stems until the spray begins to accumulate around the root collar at the ground line. Wetting stems with the mixture may also aid in control. Apply as soon as possible after cutting trees. Thoroughly soak the entire stump with the 2,4-D mixture including cut surface, bark, and exposed roots.
Surface of Cut Stumps (May also be used in rangeland, pastures, and noncropland)	2.6 fl oz/ 1 gallon of spray	

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Frill and Girdle (May also be used in rangeland, pastures, and noncropland)	1 to 2 ml per injection site	Cut frills (overlapping V-shaped notches cut downward through the bark in a continuous ring around the base of the tree) using an axe or other suitable tool. Treat freshly cut frills with as much of the 2,4-D mixture as they will hold.
Tree Injection Application (May also be used in rangeland, pastures, and noncropland.)		To control unwanted hardwood trees such as elm, hickory, oak, and sweetgum in forests and other non-crop areas, apply by injecting at a rate of 1 mL of undiluted Challenger per inch of trunk diameter at breast height (DBH) as measured approximately 4½ ft above the ground. For resistant species such as hickory, injections should overlap. For hard to control species such as ash, alder, aspen, birch, blackgum, cherry, tulip poplar, maple, and dogwood use 2 ml of undiluted Challenger per injection site or double the number of 1 ml injections. Applications may be made throughout the year; but for best results, apply between May 15 and October 15. Maples should not be treated during the spring sap flow. Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is directly injected into agricultural plants.

Restrictions for Use in Forestry

- Do not allow sprays to contact conifer shoot growth (current year's new growth) or injury may occur.
- Do not apply to nursery seed beds.
- For conifer release, do not use on plantations where pine or larch are among the desired species.
- For broadcast applications, do not apply more than a total of 8.0 pints of Challenger (4 lb ae) per acre per 12-month period.
- Limited to one broadcast application per year
- Limited to one basal spray or cut surface application per year.
- Limited to one injection application per year.
- For basal spray, cut surface stumps, and frill applications, do not apply more than 17 pints of Challenger (8 lb ae) per 100 gallons of spray solution.
- Maximum single application is 2 mL of Challenger per injection site.

Established Grass Pastures, Rangeland, and Perennial Grasslands Not in Agricultural Production (Conservation Reserve Program)

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	2 pints	For best results, apply before the bud stage when weeds are small and growing actively.
Biennial and perennial	2 to 4 pints	Apply before flower stalks appear, when musk thistles or other biennial species are in the seedling to rosette stage. Refer to the Weeds Controlled section for a listing of susceptible weed species and weeds that may be only partially controlled and require repeat applications and/or use of higher specified rates, even under ideal conditions of application.
Spot treatment to control broadleaf weeds	1.28 fl oz/gal of spray solution (see instructions for Spot Treatment)	To control broadleaf weeds in small areas with a hand sprayer, use an application rate equivalent to the broadcast rate specified for this treatment site and spray to thoroughly wet all foliage. Addition of a nonionic surfactant is recommended to improve coverage. See rate conversion table and instructions for Spot Treatment and use of handheld sprayers under Application Directions.
Tree injection application		See instructions for tree injection application in Forestry section.

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Wild garlic and wild onion	4 pints	Make three applications (fall-spring-fall or spring-fall-spring) starting in late fall or early spring.
Broadleaf weed control in newly sprigged coastal bermudagrass	2 to 4 pints	Apply either preemergence or postemergence. Follow use directions for annual, biennial and perennial broadleaf weed control above
Sand shinnery oak / Sand sagebrush	2 pints	Sand shinnery oak: Apply by aircraft between May 15 and June 15. Sand sagebrush: Apply by ground or aircraft when foliage is fully expanded and plants are actively growing. Use a 1:4 oil-water emulsion as carrier and a spray volume of 3 to 5 gallons per acre.
Big sagebrush / Rabbitbrush	4 pints	Apply by ground or aircraft when foliage is fully expanded and plants are actively growing. Use a 1:4 oil-water emulsion as carrier and a spray volume of 3 to 5 gallons per acre. Re-treatment may be needed.
Buckbrush, chamise, chaparral species, coastal sage, coyote brush, manzanita	4 pints	Apply by ground or aircraft when foliage is fully expanded and plants are actively growing. Use water or 1:4 oil-water emulsion as carrier and a spray volume of 5 to 10 gallons per acre. Retreatment may be needed.
Southern wild rose: Broadcast application Spot treatment	up to 4 pints 8 pints / 100 gal of spray solution	Broadcast: Apply in a spray volume of 5 gallons or more per acre by aircraft or 10 gallons or more per acre by ground equipment. Spot treatment: Apply when foliage is well developed. Thorough coverage is required. Addition of a nonionic surfactant is recommended to improve coverage. Two or more treatments may be required for control. Do not exceed 4 pints per acre per application.

Restrictions for Use in Pastures, Rangeland, and Perennial Grasslands Not in Agricultural Production

- PHI: Do not cut forage for hay within 7 days of application.
- PHI: For program lands, including CRP, consult program rules to determine whether grass or hay may be used. The more restrictive requirements of the program rules or this label must be followed.
- Max annual rate: Apply no more than 4.0 lbs ae per acre per year.
- Use 2 or more gallons of spray solution per acre.
- Maximum 2 applications per year
- Do not apply within 30 days of previous application.
- Use at least 2 gallons of water per acre by air and 5 gallons of water per acre by ground.
- Do not apply to grasses in the boot to dough stage if grass seed production is desired.
- Do not cut forage for hay within 7 days of application.
- **Postemergence:**
 - For susceptible annual and biennial broadleaf weeds, do not exceed 2 pints (1.0 lb ae) per acre per application.
 - For moderately susceptible biennial and perennial broadleaf weeds and for difficult to control weeds and woody plants, do not exceed 4 pints (2.0 lbs ae) per acre
 - Per application.
 - Spot treatments do not exceed 4 pints (2.0 lbs ae) per acre.
- When tank mixing with products that contain 2,4-D, do not exceed a combined total of 4.0 pounds of ae per acre per year.
- For program lands, including Conservation Reserve Program, consult program rules to determine whether grass or hay may be used. The more restrictive requirements of the program rules or this label must be followed.

- If grass is to be cut for hay, Agricultural Use Requirements for the Worker Protection Standard are applicable.

Grasses (Turf) for Seed or Sod

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Grasses Grown for Seed Postemergence use <ul style="list-style-type: none"> • Seedling grass (five-leaf stage or later) • Well established 	¾ to 1 pint 1 to 4 pints	<ul style="list-style-type: none"> • Apply when weeds are small and actively growing. For best results, apply when soil moisture is adequate for active weed growth. • Do not apply to newly seeded grasses until well established (five-leaf stage or later) and then use a maximum of 1 pint per acre. Cool season turfgrass is tolerant of higher rates. • Do not apply to turfgrass in the early boot through milk stage if seed production is desired. • When turfgrass is well established, higher rates of up to 4 pints per acre may be applied for control of hard to kill annual or perennial weeds.
Sod Farms Postemergence use	½ to 4 pints	

Restrictions for Use in Grass Grown for Seed and Sod

- Do not apply more than 2 broadcast applications per year per treatment site.
- Do not make a postemergence application within 21 days after a previous application.
- Maximum of 4 pints of Challenger (2 lbs ae) per acre per application.
- Maximum of 8 pints of Challenger (4.0 lbs ae) per acre per year.
- Minimum of 21 days between applications.
- Do not cut forage for hay within 7 days of application.
- Do not use on newly seeded area of grass.
- Do not use on creeping grasses except as a spot treatment.
- Do not use on susceptible southern grasses such as St. Augustine.
- Reseeding: Delay reseeding at least 30 days following application. Preferably, with spring application, reseed in the fall and, with fall application, reseed in the spring
- Do not use on dichondra or other herbaceous groundcovers. Legumes may be damaged or killed.

Hops

CROP / APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence	1 pint	Make directed applications to the row middles. Make up to 3 applications at 30-day intervals with the last application before harvest. Hop foliage, especially new growth, is susceptible to this product. Take care to avoid spray or drift outside target area. The use of shielded or hooded sprayers, coarse sprays and low pressure (30 psi or less) will minimize contact with foliage and plant injury.

Restrictions for Use in Hops

- Preharvest Interval (PHI): Do not harvest within 28 days of application.
- Limited to 3 applications per year.
- Maximum of 1 pint (0.5 lb ae) per acre per application.
- Maximum of 3 pints (1.5 lb ae) per acre per crop cycle.
- Minimum of 30 days of between applications.

Ornamental Turf (excluding grass grown for seed or sod farms)

Golf courses, Cemeteries, Parks, Turfgrass, Airfields, Roadsides, Vacant Lots and Other Grass Areas.

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	2 to 3 pints	For best results, when weeds are small and actively growing. Perennial weeds should be near the bud stage, but not flowering at application. Do not use on susceptible southern greases such as St. Augustine. Do not apply to newly seeded area until grass is well established. Bentgrass, clover, legumes and dichondra may be injured by this treatment.
Biennial and perennial broadleaf weeds	3 pints	

Restrictions for Use in Turf

- Do not apply more than 2 broadcast applications per year per treatment site.
- Do not make a postemergence application within 21 days after a previous application.
- Maximum of 3 pints of Challenger (1.5 lbs ae) per acre per application.
- Maximum of 6 pints of Challenger (3.0 lbs ae) per acre per year.
- Turf Reentry:
 - For liquid formulations: Do not allow people or pets to enter the treated area until sprays have dried.
 - For dry formulations: Do not allow people or pets to enter the treated areas until dust has settled.
- Reseeding: Delay reseeding at least 30 days following application. Preferably, with spring application, reseed in the fall and, with fall application, reseed in the spring.
- Do not use on newly seeded area of grass.
- Do not use on creeping grasses except as a spot treatment.
- Do not use on susceptible southern grasses such as St. Augustine.
- Do not use on dichondra or other herbaceous groundcovers. Legumes may be damaged or killed.

Non-Cropland

Including fencerows, hedgerows, roadsides, ditches, rights-of-way, utility power lines, railroads, airports, industrial sites, and other non-crop areas

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	2 to 4 pints	Treat when weeds are young and actively growing. Perennial weeds should be near the bud stage, but not flowering at application. Do not use on susceptible southern grasses such as St. Augustine. Do not apply to newly seeded areas until grass is well established. Bentgrass, clover, legumes and dichondra may be injured by this treatment.
Biennial and perennial broadleaf weeds	4 to 8 pints	
Spot Treatment to control broadleaf weeds	See Use Directions in Spot Treatment Section	Note: To control broadleaf weeds in small areas with a hand sprayer, use an application rate equivalent to the broadcast rate specified for this treatment site and spray to thoroughly wet all foliage. See rate conversion table and instructions for "Spot Treatment" and "Hand-Held Sprayers" for use of hand-held sprayers.
Tree Injection		See instructions for tree injection application in "Forestry Uses" section.
Southern wild rose: Broadcast application	up to 4 pints	Broadcast: Apply in a spray volume of 5 gallons or more per acre by aircraft or 10 gallons or more per acre by ground equipment.
Spot treatment	8 pints / 100 gal of spray solution	Spot treatment: Apply when foliage is well developed. Thorough coverage is required. Addition of a nonionic surfactant is recommended to improve coverage. Two or more treatment may be required.

Precautions:

- Bentgrass, St. Augustine, clover, legumes and dichondra may be severely injured or killed by this treatment.

Restrictions for Use in Non-Cropland

- Do not apply to newly seeded areas until grass is well established.
- Do not consider commercial timber or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes as non-cropland areas.
- Annual, biennial and perennial weeds:
 - Do not apply more than 4.0 pints of Challenger (2 lb ae) per acre per application.
 - Do not make more than two applications per season.
 - Minimum Treatment Interval: Do not reapply to a treated area within 30 days of a previous application.
- Woody plants:
 - Do not apply more than 8.0 pints of Challenger (4 lb ae) per acre per use season.
 - Do not make more than one application per season.
 - Max annual rate: Apply no more than 4.0 lbs ae per acre per year.

Red Potatoes**(Only for Use on Red Potatoes Intended for Fresh Market)**

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence	2.35 fl oz	Make first application when potatoes are in the pre-bud stage (about 7 to 10 inches high) and make a second application about 10 to 14 days later. Red Potatoes: Properly timed applications of this product generally enhance red color, aid in storage retention of red color, improve skin appearance, increase tuber set, and improve tuber size uniformity (fewer jumbos). Crop response may vary depending on variety, stress factors, and local conditions. Varieties with naturally dark red color generally benefit less from treatment.

Precautions for Use on Red Potatoes

- Apply 2.35 fluid ounces of this product per acre in 5 to 25 gallons of water using ground or aerial equipment. The specific spray volume selected should be sufficient for good coverage of plants.
- Consult with Agricultural Extension Service and other qualified crop advisors for local recommendations.

Restrictions for Use in Potatoes

- Preharvest Interval (PHI): Do not harvest within 45 days of application.
- Minimum 10 days between applications.
- Limited to two postemergence application per crop cycle
- Maximum of 2.35 fluid ounces (0.07 lb 2,4-D ae) per acre per application.

Soybean (Preplant Only)**Do Not Use in California**

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence	$\frac{3}{4}$ to 1 pint	Apply not less than 15 days prior to planting soybeans, when weeds are small and actively growing. Use the higher rate on larger weeds and when perennials are present.
	>1 to 2 pints	Apply not less than 30 days prior to planting soybeans, when weeds are actively growing. Use the higher rate on larger weeds and when perennials are present.

Precautions

- Apply no more than 2.0 pints of this product in one season prior to planting soybeans.
- After applying, plant soybean seed as deep as practical or at least 1½ to 2 inches deep. Adjust the planter press wheel, if necessary, to ensure that planted seed is completely covered.
- If desired, this product may be applied pre-plant to soybeans in tank mixtures with other herbicides that are registered for pre-plant soybean use.

Restrictions for Use in Soybeans (Preplant)

- Do not disturb treated soil through tillage between application and planting of soybeans.
- Do not make more than one application per season regardless of the application rate used.
- Do not apply Challenger as a preplant application in soybeans unless the results of soybean injury are acceptable, including possible stand loss and/or yield reduction.
- During the growing season following application, do not replant treated fields with crops other than those labeled for use with Challenger.
- Do not apply more than a total of 2.0 pints of Challenger (1 lb ae) per acre per use season.
- Do not replant fields treated with this product in the same growing season with crops other than those labeled for 2,4-D pre-plant use.
- Grazing and Preharvest Interval (PHI): Do not allow livestock grazing or harvest hay, forage, or fodder from treated fields. Restrict livestock from feeding/grazing of treated cover crops.
- Do not use on sandy soils with less than 1% organic matter.

Strawberries (Established Planting Only)**DO NOT USE IN CALIFORNIA OR FLORIDA**

CROP / APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Postemergence	2 - 3 pints	Apply to established plantings when strawberries have gone into dormancy or soon after the last picking. Apply in 25 – 50 gallons of water per acre

RESTRICTIONS FOR USE in STRAWBERRIES

- Apply only in established strawberry plantings.
- Apply in early spring when strawberries are dormant or immediately after the last picking.
- Limited to one application per year.
- Maximum use rate of 3 pints (1.5 lb ae) per acre per application.

Sugarcane

Do Not Use in California

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Preemergence	4 pints	Apply before canes appear for control of emerged broadleaf weeds.
Postemergence	1½ to 4 pints	Apply after cane emerges and through lay-by.

Restrictions for Use in Sugarcane

- Max annual rate: Apply no more than 8.0 pints (4.0 lbs ae) per acre per year.
- Do not harvest cane prior to crop maturity.
- Limited to one application per year for each of the crop stages.

Rice

Do Not Use In California

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Preemergence	1 to 2 pints	Apply before canes appear for control of emerged broadleaf weeds.
Postemergence	1 to 2½ pints	Apply when rice is in the late tillering stage of development at the time of first joint development. Do not apply after panicle initiation, after rice internodes exceed one-half inch, at early seedling, early panicle, boot or heading stages. Consult local university or Agricultural Extension Service specialists for more specific information on rates and timing of application. Application rates of 2½ pints per acre may be applied to handle difficult weed control problems. However, do not use the 2½ pints per acre rate unless possible crop injury is acceptable.

Precautions

- Some rice varieties under certain conditions or stages of growth may be injured by 2,4-D. Before applying, consult local university or agricultural extension service specialists regarding for local treatment recommendations for various rice varieties.

Restrictions for Use on Rice

- Preharvest Interval (PHI): Do not harvest within 60 days of application.
- Max annual rate: Apply no more than 2½ pints (1.2 lbs ae) per acre per year.
- Limited to one application per year for each of the crop stages.
- Do not use on rice in California.

Aquatic Uses

Use Requirements for Aquatic Areas: When this product is applied to aquatic areas, follow PPE and reentry instructions in the “Non-Agricultural Use Requirements” section of this label.

Aquatic Weed Control (Irrigation ditch bank application) **Control of Weeds and Brush on Banks of Irrigation Canals and Ditches**

APPLICATION TIMING	AMOUNT OF CHALLENGER PER ACRE	DIRECTIONS
Annual broadleaf weeds	2 to 4 pints	Apply using low pressure spray (10 to 40 psi) in a spray volume of 20 to 100 gallons per acre using power operated spray equipment. Apply when wind speed is low, 5 mph or less. Apply working upstream to avoid accidental concentration of spray into water. Do not spray cross stream to opposite banks and avoid-boom spraying over water surface. When spraying shoreline weeds, allow no more than a 2-foot overspray onto water surface with an average of less than 1 foot of overspray to prevent significant water contamination. Apply before the bud stage when weeds are small and growing actively. Apply before flower stalks appear when biennial and perennial species are in the seedling to rosette stage. For hard to control weeds, a repeat application after 30 days at the same rate may be needed. For woody species and patches of perennial weeds, mix 1 gallon of Challenger per 64 to 150 gallons of total spray. Wet foliage by applying about 3 to 4 gallons of spray per 100P sq ft (10.5 X 10.5 steps).
Biennial and perennial broadleaf weeds Susceptible woody plants	4 pints	

Restrictions for Use on Irrigation Canal Ditch Banks

- Do not make more than two treatments per season. Minimum of 30 days between applications.
- Do not apply more than 4.0 pints of Challenger (2 lb ae) per acre per application or no more than a total of 8.0 pints of Challenger (4 lb ae) per acre per use season.
- Do not use on small canals with a flow rate less than 10 cubic feet per second (CFS) where water will be used for drinking purposes. CFS may be estimated by using the formula below.

Determine the approximate velocity needed for the calculation by observing the length of time that it takes a floating object to travel a defined distance. Divide the distance (ft) by the time (sec) to estimate velocity (ft per sec). Repeat three times and use the average to calculate CFS.

$$\text{Average Width (ft)} \times \text{Average Depth (ft)} \times \text{Average Velocity (ft per sec)} = \text{CFS}$$

Ditch Bank Weeds:

- Do not spray cross-stream to opposite bank.
- Do not allow boom spray to be directed onto water.

Shoreline Weeds:

- Boom spraying onto water surface must be held to a minimum and allow no more than a 2-foot overspray onto water with an average of less than 1 foot overspray to prevent introduction of greater than negligible amounts of chemical into the water.

Aquatic Weed Control in Ponds, Lakes, Reservoirs, Marshes, Bayous, Drainage Ditches, Canals, Rivers And Streams that are Quiescent or Slow Moving, Including Programs of the Tennessee Valley Authority

Notice to Applicators: Before application, coordination and approval of local and state authorities may be required, either by letter or agreement or issuance of special permits for aquatic applications.

Emergent and Floating Aquatic Weeds: Including Water Hyacinth (*Eichornia crassipe*):

Application Rate: 2 to 4 quarts per acre.

Application Timing: Spray weed mass only. Apply when water hyacinth plants are actively growing. Reapply as necessary to kill regrowth and plants missed in previous operation. Use the 4 quart per acre rate when plants are mature or when weed mass is dense.

Surface Application: Use power operated sprayers with boom or spray gun mounted on boat, tractor or truck. Thorough wetting of foliage is essential for maximum control. Use 1 00 to 400 gallons of spray mixture per acre. Take special precautions such as use of low pressure, large nozzles and spray thickening agents to avoid spray drift to susceptible crops. Follow label directions for use of any drift control agent.

Aerial Application: Use drift control spray equipment or thickening agent mixed in the spray mixture. Apply 1 gallon of Challenger per acre with standard boom systems using a minimum spray volume of 5 gallons per acre. For Microfoil drift control spray systems, apply Challenger in a total spray volume of 12 to 15 gallons per acre.

Restrictions for Surface Applications to Emergent Aquatic Weeds:

- Limited to two applications per season.
- Do not apply more than 8.0 pints of Challenger per acre (4 lb ae) per surface acre.
- Minimum of 21 days between applications.

Directions

- Fish breathe dissolved oxygen in the water and decaying weeds also use oxygen. When treating continuous, dense weed masses, it may be appropriate to treat only part of the infestation at a time. For example, apply the product in lanes separated by untreated strips that can be treated after vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2 to 3 week period following treatment. Waters having limited and less dense weed infestations may not require partial treatments. Other local factors such as water exchange and sediment load can also influence the dissolved oxygen level.
- Coordination and approval of local and state authorities may be required, either by letter of agreement or issuance of special permits for aquatic applications.

Water Use:

1. **Water for irrigation or sprays:**

- A. If treated water is intended to be used only for crops or non-crop areas that are labeled for direct treatment with 2,4-D such as pastures, turf or cereal grains, the treated water may be used to irrigate and/or mix sprays for these sites at any time after the 2,4-D aquatic application.
- B. Due to potential phytotoxicity considerations, the following restrictions are applicable: If treated water is intended to be used to irrigate or mix sprays for plants grown in commercial nurseries and greenhouses; and other plants or crops that are not labeled for direct treatment with 2,4-D, the water must not be used unless one of the following restrictions has been observed:
 - i. A setback distance from functional water intake(s) of ≥ 600 ft. was used for the application, or,
 - ii. A waiting period of 7 days from the time of application has elapsed, or,
 - iii. An approved assay indicates that the 2,4-D concentration is 100 ppb (0.1 ppm) or less at the water intake. Wait at least 3 days after application before initial sampling at water intake.

2. **Drinking water (potable water):**

- A. Consult with appropriate state or local water authorities before applying this product to public waters. State or local agencies may require permits.

The potable water use restrictions on this label are to ensure that consumption of water by the public is allowed only when the concentration of 2,4-D in the water is less than the MCL (Maximum Contaminant Level) of 70 ppb. Applicators should consider the unique characteristics of the treated waters to assure that 2,4-D concentrations in potable water do not exceed 70 ppb at the time of consumption.
- B. For floating and emergent weed applications, the drinking water setback distance from functioning potable water intakes is ≥ 600 ft.

- C. If no setback distance of ≥ 600 ft. is used for the application, applicators or the authorizing organization must provide a drinking water notification prior to a 2,4-D application to the party responsible for a public water supply or to individual private water users. Notification to the party responsible for a public water supply or to individual private water users must be done in a manner to assure that the party is aware of a water use restrictions when this product is applied to potable water.

The following is an example of an example of notification via posting, but other methods of notification which convey the above restrictions may be used and may be required in some cases under state or local law or as a condition of a permit.

Example:

Posting notification should be located every 250 feet including the shoreline of the treated area and up to 250 feet of shoreline past the application site to include immediate public access points. Posting must include the day and time of application. Posting may be removed if analysis of a sample collected at the intake 3 or more days following application shows that the concentration in the water is less than 70 ppb (100 ppb for irrigation or sprays), or after 7 days following application, whichever occurs first.

Text of notification: Wait 7 days before diverting functioning surface water intakes from the treated aquatic site to use as drinking water, irrigation, or sprays, unless water at functioning drinking water intakes is tested at least 3 days after application and is demonstrated by assay to contain not more than 70 ppb 2,4-D (100 ppb for irrigation or sprays).

Application Date: _____ Time: _____.

- D. Following each application of this product, treated water must not be used for drinking water unless one of the following restrictions has been observed:
- i. A setback distance from functional water intake(s) of ≥ 600 ft. was used for the application, or,
 - ii. A waiting period of at least 7 days from the time of application has elapsed, or,
 - iii. An approved assay indicates that the 2,4-D concentration is 70 ppb (0.07 ppm) or less at the water intake. Sampling for drinking water analysis should occur no sooner than 3 days after 2,4-D application. Analysis of samples must be completed by a laboratory that is certified under the Safe Drinking Water Act to perform drinking water analysis using a currently approved version of analytical Method Number 515, 555, other methods for 2,4-D as may be listed in Title 40CFR, Part 141.24, or Method Number 4015 (immunoassay of 2,4-D) from U.S. EPA Test Methods for Evaluating Solid Waste SW-846.
- E. Note: Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.
- F. Drinking water setback distances do not apply to terrestrial applications of 2,4-D adjacent to water bodies with potable water intakes.
3. Except as stated above, there are no restrictions on using water from treated areas for swimming, fishing, watering livestock or domestic purposes.

Submerged Aquatic Weeds: Including Eurasian Water Milfoil (*Myriophyllum Spicatum*)

AQUATIC SITES WITH SUBMERSED WEEDS	MAXIMUM APPLICATION RATE	DIRECTIONS / TIMING
Aquatic weeds in ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals, rivers and streams that are quiescent or slow moving	2.84 gallons per acre foot	<p>Application Timing: For best results, apply in spring or early summer when aquatic weeds appear. Check for weed growth in areas heavily infested the previous year. A second application may be needed when weeds show signs of recovery, but no later than mid-August in most areas.</p> <p>Subsurface Application: Apply undiluted Challenger directly to the water through a boat mounted distribution system. Treat shoreline areas by subsurface injection application by boat to avoid aerial drift. Surface Application: Use power operated boat mounted boom sprayer. If rate is less than 5 gallons per acre, dilute to a minimum spray volume of 5 gallons per surface acre.</p> <p>Aerial Application: Use drift control spray equipment or thickening agents mixed with sprays to reduce drift. Apply through standard boom systems in a minimum spray volume of 5 gallons per surface acre. For Microfoil drift control spray systems, apply Challenger in a total spray volume of 12 to 15 gallons per acre. Apply to attain a concentration of 2 to 4 ppm (see table below).</p>

Challenger contains 3.8 lb of ae per gallon of product.

Surface Area (Acre)	Average Depth (ft)	For typical conditions – 2 ppm (2,4-D a.e./acre)	For typical conditions – 2 ppm (Challenger gal/acre)	For difficult conditions – 4 ppm ¹ (2,4-D a.e./acre)	For difficult conditions – 4 ppm ¹ (Challenger gal/acre)
1	1	5.4	1.42	10.8	2.84
	2	10.8	2.84	21.6	5.68
	3	16.2	4.26	32.4	8.53
	4	21.6	5.68	43.2	11.37
	5	27.0	7.10	54.0	14.21

¹Examples include spot treatments of pioneer colonies of Eurasian water milfoil and certain difficult to control aquatic species.

Restrictions for Aquatic Sites with Submersed Weeds

- Do not apply within 21 days of previous application.
- Limited to two applications per season.
- Do not exceed 10.8 lb ae per acre foot.
- When treating moving bodies of water, apply while traveling upstream to prevent concentration of 2,4-D downstream from the application.

Directions

- Fish breathe oxygen in the water and a water-oxygen ratio must be maintained. Decaying weeds use up oxygen, but during the period when applications should be made, the weed mass is fairly sparse and the weed decomposition rate is slow enough that the water-oxygen ratio is not disturbed by treating the entire area at one time. If treatments must be applied later in the season when the weed mass is dense and repeat treatments are needed, apply product in lanes, leaving buffer strips which

can then be treated when vegetation in treated lanes has disintegrated. During the growing season, weeds decompose in a 2- to 3-week period following treatment.

- Coordination and approval of local and state authorities may be required, either by letter of agreement or issuance of special permits for such use.

Water Use:

1. Water for irrigation or sprays:

- A. If treated water is intended to be used only for crops or non-crop areas that are labeled for direct treatment with 2,4-D such as pastures, turf or cereal grains, the treated water may be used to irrigate and/or mix sprays for these sites at any time after the 2,4-D aquatic application.
- B. Due to potential phytotoxicity and/or residue considerations, the following restrictions are applicable:
If treated water is intended to be used to irrigate or mix sprays for unlabeled crops, non-crop areas or other plants not labeled for direct treatment with 2,4-D, the water must not be used unless one of the following restrictions has been observed:
 - i. A setback distance described in the Drinking Water Setback Table was used for the application, or,
 - ii. A waiting period of 21 days from the time of application has elapsed, or,
 - iii. An approved assay indicates that the 2,4-D concentration is 100 ppb (0.1 ppm) or less at the water intake. See Table 3 for the waiting period after application but before taking the initial sampling at water intake.

2. Drinking water (potable water):

- A. Consult with appropriate state or local water authorities before applying this product to public waters. State or local agencies may require permits.
The potable water use restrictions on this label are to ensure that consumption of water by the public is allowed only when the concentration of 2,4-D in the water is less than the MCL (Maximum Contaminant Level) of 70 ppb. Applicators should consider the unique characteristics of the treated waters to assure that 2,4-D concentrations in potable water do not exceed 70 ppb at the time of consumption.
- B. For submersed weed applications, the drinking water setback distances from functioning potable water intakes are provided in Table 2 Drinking Water Setback Distance (below).
- C. If no setback distance from the Drinking Water Setback Table (Table 2) is to be used for the application, applicators or the authorizing organization must provide a drinking water notification and an advisory to shut off all potable water intakes prior to a 2,4-D application. Notification to the party responsible for a public water supply or to individual private water users must be done in a manner to assure that the party is aware of the water use restrictions when this product is applied to potable water.

The following is an example of a notification via posting, but other methods of notification which convey the above restrictions may be used and may be required in some cases under state or local law or as a condition of a permit.

Example:

Posting notification should be located every 250 feet including the shoreline of the treated area and up to 250 feet of shoreline past the application site to include immediate public access points. Posting should include the day and time of application. Posting may be removed if analysis of a sample collected at the intake no sooner than stated in Table 3 (below) shows that the concentration in the water is less than 70 ppb (100 ppb for irrigation or sprays), or after 21 days following application, whichever occurs first.

Text of notification: Wait 21 days before diverting functioning surface water intakes from the treated aquatic site to use as drinking water, irrigation, or sprays, unless water at functioning drinking water intakes is tested no sooner than (insert days from Table 3) and is demonstrated

by assay to contain not more than 70 ppb 2,4-D (100 ppb for irrigation or sprays). Application Date: _____ Time: _____.

- D. Following each application of this product, treated water must not be used for drinking water unless one of the following restrictions has been observed:
- A setback distance described in the Drinking Water Setback Distance Table was used for the application, or,
 - A waiting period of at least 21 days from the time of application has elapsed, or,
 - An approved assay indicates that the 2,4-D concentration is 70 ppb (0.07 ppm) or less at the water intake.
Sampling for drinking water analysis should occur no sooner than stated in Table 3. Analysis of samples must be completed by a laboratory that is certified under The Safe Drinking Water Act to perform drinking water analysis using a currently approved version of analytical Method Number 515, 555, other methods for 2,4-D as may be listed in Title 40CFR, Part 141.24, or Method Number 4015 (immunoassay of 2,4-D) from U.S. EPA Test Methods for Evaluating Solid Waste SW-846.
- E. Note: Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.
- F. Drinking water setback distances do not apply to terrestrial applications of 2,4-D adjacent to water bodies with potable water intakes.
3. Except as stated above, there are no restrictions on using water from treated areas for swimming, fishing, watering livestock or domestic purposes.

Table 2: Drinking Water Setback Distance For Submersed Weed Applications			
Application Rate and Minimum Setback Distance (feet) from functioning potable water intake			
1 ppm*	2 ppm*	3 ppm*	4 ppm*
600	1200	1800	2400

*ppm ae target water concentration

Table 3: Sampling for Drinking Water Analysis After 2,4-D Application For Submersed Weed Applications			
Minimum Days After Application Before initial Water Sampling at the functioning potable water intake			
1 ppm*	2 ppm*	3 ppm*	4 ppm*
5	10	10	14

*ppm ae target water concentration

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