

ESTABLISH™

herbicide

TENKÖZ

For use in bean (dry), beets (sugar), corn (field, pop, seed, and sweet), garlic, horseradish, onions (dry bulb, green), peanut, perennial grasses grown for seed, potato, shallots (dry bulb), sorghum (grain), soybean, and winter squash.

Active Ingredient:*Dimethenamid-P: (S)-2-chloro-N-[(1-methyl-2-methoxy)ethyl]-N-(2,4-dimethyl-thien-3-yl)-acetamide	63.9%
Inert Ingredients:**	36.1%
Total	100.0%

* contains 6.0 pounds of active ingredient per gallon

** contains petroleum distillates, xylene or xylene range aromatic solvent

EPA Reg. No. 7969-156-55467 EPA Est. No. _____

NET CONTENTS: _____

**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.)

See inside for complete **First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty,** and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

FIRST AID:

If In Eyes	<ul style="list-style-type: none">• Hold eyes 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 eyes.• Call a poison control center or doctor for treatment advice.
If Swallowed	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Do not induce vomiting unless told to do so by a poison control center or doctor.• Do not give any liquid to the person.• Do not give anything by mouth to an unconscious person.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15 to 20 minutes.• Call a poison control center or doctor for treatment advice.
If Inhaled	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance then give artificial respiration, preferably by mouth to mouth, if possible.• Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact the following for emergency medical treatment information: 1-800-832-HELP (4357)	
Note to Physician: Contains Petroleum Distillates; vomiting may cause aspiration pneumonia.	

Precautionary Statements

Hazards to Humans and Domestic Animals

WARNING. Causes substantial but temporary eye injury. Harmful if inhaled, swallowed, or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse. Wear protective eyewear (such as face shield) and chemical-resistant gloves.

Personal Protective Equipment (PPE)

Some materials that are chemically resistant to this product are listed below. For more options, refer to category F on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.

- Chemical-resistant gloves, such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or viton ≥ 14 mils.
- Shoes plus socks.
- Protective eyewear.

User Safety Requirements

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** re-use them. Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls Statement

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for “**applicators and other handlers**” and have such PPE immediately for use in an emergency, such as a spill or equipment breakdown.

Mixers and loaders for aerial applications must use a closed system that meets the requirements listed in the Worker Protection Standard (WPS) for Agricultural Pesticides (40 CFR 170.240 (d)(4)) for dermal protection, and must:

- wear personal protective equipment required in the PPE section of this labeling for applicators and other handlers,
- wear protective eyewear, if the system operates under pressure,
- either use a closed system that also meets the requirements in the WPS for inhalation protection or wear a NIOSH approved dust-mist respirator with a TC84 cartridge.
- be provided and have immediately available for use in an emergency, such as a spill or equipment breakdown: coveralls, chemical-resistant footwear, and dust mist respirator, or if using a closed system cab that provides respiratory protection, a NIOSH approved dust-mist respirator with a TC84 cartridge.

User Safety Recommendations

Users should:

- Wash hands 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.
- 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.

Environmental Hazards

DO NOT apply directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

Dimethenamid-P has properties that may result in groundwater contamination. Application in areas where soils are

permeable or coarse and groundwater is near the surface could result in groundwater contamination.

Dimethenamid-P has properties that may result in surface water contamination via dissolved runoff and runoff erosion. Practices should be followed to minimize the potential for dissolved runoff and/or runoff erosion.

Point source contamination: To prevent point source contamination, **DO NOT** mix or load this or any other pesticide product within 50 feet of wells (including abandoned wells and drainage wells), sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or dike mixing/loading areas as described below.

Mixing, loading, rinsing, or washing operations performed within 50 feet of a well are allowed only when conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be on or move across the pad. The pad must be self-contained to prevent surface water flow over or from the pad. The pad capacity must be maintained at 110% that of the largest pesticide container or application equipment used on the pad and have sufficient capacity to contain all product spills, equipment or container leaks, equipment washwaters, and rainwater that may fall on the pad. The containment capacity does not apply to vehicles delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.

Care must be taken when using this product to prevent 1) back siphoning into wells, 2) spills, or 3) improper disposal of excess pesticide, spray mixes, or rinsates.

Check valves or anti-siphoning devices must be used on all mixing equipment.

Movement dissolved in runoff or through soil: DO NOT apply under conditions which favor runoff.

DO NOT apply to impervious substrates such as paved or highly compacted surfaces or frozen soils. Groundwater contamination may occur in areas where soils are permeable or coarse and groundwater is near the

surface. To minimize the possibility of groundwater contamination, carefully follow application rate recommendations as affected by soil type in the **General Information** section of this label. **DO NOT** apply if all three criteria exist: coarse soils classified as sand (does not include loamy sand or sandy loam), less than 3% organic matter (as determined by soil tests, if not known) and where depth to groundwater is 30 feet or less.

Movement by water erosion of treated soil. DO NOT apply or incorporate this product by flood or furrow irrigation. Ensure treated areas have received at least 0.5 inch of rainfall before using tailwater for subsequent irrigation of other fields.

Endangered Species Protection

To avoid adverse effects on endangered plant species, applicators must comply with the following mitigation measures when endangered plants occur in proximity of the application site:

- If applied by air, leave a 150-foot untreated buffer between treatment area and endangered plant populations.
- If applied by ground, use low pressure nozzles according to manufacturer's specifications that produce only medium-to-coarse or very coarse droplets AND leave a 35-foot buffer between treatment area and endangered plant populations.

To determine whether your county has an endangered species, consult the Web site <http://www.epa.gov/esp/usa-map.htm>.

Endangered Species Bulletins may also be obtained from extension offices or state pesticide agencies. If the bulletin is not available for your specific area, check with the appropriate local state agency to determine if known populations of endangered species occur in the area to be treated.

The use of any pesticide in a manner that may kill or otherwise harm endangered species or adversely modify their habitat is a violation of federal law.

Directions For Use

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

Unless otherwise directed in supplemental labeling, all applicable directions, restrictions, precautions and **Conditions of Sale and Warranty** are to be followed. This labeling must be in the user's possession during application.

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 **12 hours**. **Exception:** If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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:

- Coveralls.
- Chemical-resistant gloves such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or viton ≥ 14 mils.
- Shoes plus socks.
- Protective eyewear.

Storage and Disposal

DO NOT contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage: **DO NOT** use or store near heat or

open flame. Store in original container in a well ventilated area separately from fertilizer, feed, or foodstuffs and away from other pesticides. Avoid cross-contamination with other pesticides. Groundwater contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material.

Pesticide Disposal: Wastes resulting from this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity \leq 5 gallons) 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 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.

Triple rinse containers too large to shake (capacity $>$ 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 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 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.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. **DO NOT** reuse the container for any other purpose. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Emergency

In case of large-scale spillage regarding this product, call:

CHEMTREC	1-800-424-9300
Hotline	1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment.
- Your local poison control center (hospital).
- 1-800-832-HELP (4357).

Steps to be taken in case material is released or spilled:

Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal. Remove contaminated clothing, and wash affected skin areas with soap and water. Wash clothing before re-use. Keep the spill out of all sewers and open bodies of water.

General Information

Establish herbicide is a selective preemergence herbicide for controlling annual grasses, annual broadleaf weeds, and sedges listed in **Table 1**.

Table 1. Weeds Controlled

Annual Grasses	Sedge
Barneygrass	Flatsedge, Rice
Bluegrass, annual roughstalk	Nutsedge, Yellow ²
Brome, California downy	Annual Broadleaves
Crabgrass, smooth	Amaranth, Palmer
large	Amaranth, Powell
Cupgrass, southwestern woolly ¹	Beggarweed, Florida ¹
Fescue, rattail	Carpetweed
Foxtail, giant green yellow	Chamomile, mayweed
Goosegrass	Eclipta ¹
Johnsongrass (seedling) ¹	Lambsquarters, common ¹
Millet, wild proso ¹	Nightshade ² ,
Panicum, fall Texas ¹	black ²
Red Rice	eastern black ²
Ryegrass, Italian	hairy ²
Sandbur ¹	cutleaf ²
Shattercane ¹	Pigweed, prostrate
Signalgrass, broadleaf ¹	redroot
Witchgrass	smooth
	tumble
	Purslane, common
	Pusley, Florida
	Ragweed, common ¹
	Spurge, nodding
	spotted
	Waterhemp, common ²
	tail ²

- Partial control or suppression only. To complement control, **Establish** should be used in tank mixes or sequential applications with other herbicides that provide additional control of these weed species.
 - For best control of these species, use the highest rate specified by soil type. If dry conditions exist near application or excessive rainfall occurs early in season, a postemergence herbicide or cultivation may be required to help control these weeds.
-

Mode of Action

Establish herbicide is a root and shoot growth inhibitor that controls susceptible germinating seedlings before or soon after they emerge from the soil.

Cleaning Spray Equipment

Clean application equipment thoroughly by using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions and then triple rinsing the equipment before and after applying this product.

Application Instructions

Establish will provide most effective weed control when applied by ground or aerial equipment, and is subsequently incorporated into soil by rainfall, sprinkler irrigation, or mechanical tillage prior to weed seedling emergence from soil. **Establish** can also be applied through herbigation. **Establish** is recommended for preplant incorporated, preplant surface, preemergence, early postemergence or lay-by (corn) treatment. **Establish** may be applied using either water or sprayable fluid fertilizer as the spray carrier. Additionally, **Establish** may be impregnated on and applied with dry bulk fertilizer. Sprayable fluid fertilizer as a carrier is not recommended for use after crop emergence. Refer to **Additives** for more information.

Application Rate

Use rates for **Establish** when used alone, in tank mix, or sequential applications are given in **Table 2**. Refer to **Crop-Specific Information** for additional rate information. Use rates of this product may vary by soil texture and organic matter. Soil texture groupings used in this label are **coarse** (sand, loamy sand, sandy loam), **medium** (silt, silt loam, loam, sandy clay loam), and **fine** (sandy clay, silty clay, silty

clay loam, clay loam, and clay). **DO NOT** apply to sand-textured soil with less than 3% organic matter (as determined by soil tests, if not known) where depth to groundwater is 30 feet or less. When use rates are expressed in ranges, use the lower rates for more coarsely textured soils lower in organic matter and use the higher rates for more finely textured soils that are high in organic matter.

Preplant Surface Applications. For use in minimum tillage or no-tillage production systems, apply **Establish** alone or in tank mixes up to 45 days before planting. When making early preplant applications (15 to 45 days prior to planting), use the highest rate specified for the specific soil type. Early preplant applications are not for use on coarse-textured soils or in areas where average annual rainfall (or rainfall + irrigation) typically exceeds 40 inches. Early preplant applications may be applied as part of a split application program where the second application is made after planting (use 2/3 of **Establish** rate early followed by 1/3 of rate after planting). A split application is recommended when the initial application is made more than 30 days prior to planting. Tank mixes with postemergence herbicides such as glyphosate or Touchdown® (glyphosate), or Gramoxone® Extra (paraquat), must be used when weeds are present at the time of application.

Preplant Incorporated Applications. Apply **Establish** and incorporate into the upper (1 to 2 inches) soil surface up to 2 weeks before planting. Use a harrow, rolling cultivator, finishing disk, or other implement capable of giving uniform shallow incorporation. Avoid deeper incorporation or reduced weed control or crop injury may result.

Preemergence Surface Applications. Broadcast treatment uniformly to the soil surface after planting and before crop emergence. Rainfall, sprinkler irrigation, or shallow mechanical incorporation after application is required to move this product into the upper soil surface where weed seeds germinate. If adequate rainfall or irrigation does not occur and weed seedling emergence begins, a shallow cultivation or rotary hoeing will improve performance.

Early Postemergence Applications. **Establish** must be applied prior to weed seedling emergence or in a tank mix with products that control the emerged weeds. Refer to **Crop-Specific Information** for specific postemergence applications by crop.

Layby Application. Use **Establish** in field corn, seed corn and popcorn. See **Crop-Specific Information - Corn** for more details on layby application.

Table 2. Establish Application Rates Per Acre ^{1,2,3}

As determined by soil texture and organic matter content		
Soil Texture	Organic Matter Content	
	Less than 3%	3% or more
Coarse	12 to 14 fluid ounces	14 to 18 fluid ounces
Medium	14 to 18 fluid ounces	18 to 21 fluid ounces
Fine	14 to 18 fluid ounces	18 to 21 fluid ounces

See tank mix descriptions for the recommended use rate ranges of other herbicides used with **Establish**.
¹The rates listed are intended for full season control of targeted weeds. Reduced rates (8 to 16 ounces of **Establish** per acre) may be used where partial control or reduced length of soil residual control is required, such as postemergence applications, or preemergence applications where cultivation or sequentially applied herbicides will be used for added control of the same targeted weed species. Use 8 to 12 fluid ounces of **Establish** per acre on coarse textured soils, and 12 to 16 fluid ounces on medium and fine soils.
²For all early preplant applications, use 21 fluid ounces of **Establish** per acre.
³On muck soils and high organic matter soils, use **Establish** at 21 fluid ounces per acre.

Split Applications. **Establish** may be used in split application programs where applications are made as part of the methods described above. If applications are less than 2 weeks apart, the total **Establish** rate used must not exceed the maximum rate given for each specific soil type. If applications are 2 weeks or more apart, a total **Establish** use rate of up to 21 fluid ounces per acre per year may be used on any soil type.

Fall Applications.
For use only in the following states: North Dakota, South Dakota, Minnesota, Wisconsin, Iowa, north of Highway 136 in Illinois and north of Highway 91 in Nebraska.

Establish may be used in fall applications to control weeds in minimum tillage or no-till corn or soybean production systems planted the following spring. Apply up to 21 fluid ounces of **Establish** per acre to medium- and fine-textured soils with greater than 2.5% organic matter. Fall applications must be made after October 1. Apply **Establish** in the fall after crop harvest when soil temperatures at the 4-inch depth are sustained at less than 55° F and before the ground freezes. Tillage operations may be conducted before or after applying **Establish**. If following an application, tillage should be no more than 2 to 3 inches deep to uniformly incorporate the herbicide into the upper soil surface. If a sequential application program (fall application followed by spring application of **Establish**) is used, the maximum combined rate of **Establish** that may be applied is 21 fluid ounces per acre, per crop season.

Managing Off-target Movement SPRAY DRIFT

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

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural crops:

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they shall be observed.

The applicator should be familiar with and take into account the following [drift reduction advisory information](#).

INFORMATION ON DROPLET SIZE

The best drift management strategy and most effective way to reduce drift potential is to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable

environmental conditions (see **WIND, TEMPERATURE AND HUMIDITY, and TEMPERATURE INVERSIONS**).

CONTROLLING DROPLET SIZE

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift. **DO NOT** use nozzles producing a mist droplet spray.

BOOM LENGTH

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

APPLICATION HEIGHT

Making applications at the lowest possible height (aircraft, ground driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind. Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety.

SWATH ADJUSTMENT

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

WIND

Drift potential is lowest between wind speeds of 3 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS

Applications should not occur during temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, that 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 smoke from a ground source or an aircraft smoke 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.

SENSITIVE AREAS

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or nontarget crops or plants) is minimal. **DO NOT** apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

WIND EROSION

Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Aerial Application Methods and Equipment

Water Volume: Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

Managing spray drift from aerial applications:

Applicators must follow these requirements to avoid off-target drift movement: 1) **boom length** - the distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor, 2) **nozzle orientation**- nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees, and 3) **application height** - without compromising aircraft safety, applications should be made at a height of 10 feet or less above the crop canopy or tallest plants. Applicators must follow the most restrictive use cautions to avoid drift hazards, including those found in this labeling as well as applicable state and local regulations and ordinances.

Ground Application (Banding)

When applying **Establish herbicide** by banding, determine the amount of herbicide and water volume needed using the following formula:

$$\frac{\text{Bandwidth in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Banding herbicide rate per acre}$$

$$\frac{\text{Bandwidth in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Banding water volume per acre}$$

Ground Application (Broadcast)

Water Volume. Use 5 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

Ground Application (Dry Bulk Fertilizer)

Establish may be impregnated or coated onto dry bulk granular fertilizer carriers for preplant surface, preplant incorporated, or preemergence applications. Impregnation or coating may be conducted by either the in-plant bulk system or the on-board system. When impregnated onto some dry fertilizer blends, **Establish** may exhibit a strong odor. Perform the mixing operation in well-ventilated areas.

Establish may also be applied in herbicide tank mixes where the tank mix companion product is also registered for these application systems. Individuals or agents selling **Establish** in these application systems are responsible for following all state and local regulations regarding fertilizer and herbicide blending.

Addition of a drying agent may be necessary if the fertilizer and herbicide blend is too wet for uniform application due to high humidity, high urea concentration, or low fertilizer use rate. Slowly add the drying agent to the blend until a flowable mixture is obtained. Drying agents are not recommended for use with on-board impregnation systems.

Under some conditions, fertilizer impregnated with **Establish** may clog air tubes or deflector plates on pneumatic application systems. Mineral oil may be added to **Establish** before blending with fertilizer to reduce plugging. **DO NOT** use drying agents when mineral oil is used. To avoid separation of **Establish** and mineral oil mixes in cold temperatures, either keep mixture heated or agitated prior to blending with fertilizer. Mineral oil may be used at in-plant blending stations or on-board injection systems.

Apply 200 to 750 pounds of the fertilizer and herbicide blend per acre. Application must be made uniformly to the soil to prevent possible crop injury and offer satisfactory weed control. Impregnated fertilizer spread at half rate and overlapped to obtain a full rate will offer a more uniform distribution. For granular fertilizer application, to protect small birds and mammals, soil incorporation of the granules is required. A shallow (1 to 2 inches) incorporation is desirable for improved weed control. Deeper incorporation may result in unsatisfactory weed control.

Use the following formula to determine the herbicide rate when using dry bulk fertilizer applications:

$$\frac{\text{Fluid ounces or pounds of herbicide per acre}}{\text{pounds of fertilizer per acre}} \times 2,000 = \frac{\text{Fluid ounces or pounds of herbicide}}{\text{per ton of fertilizer}}$$

Incompatible Mixtures

DO NOT impregnate **Establish** or **Establish** mixes on ammonium nitrate, potassium nitrate, or sodium nitrate fertilizers or fertilizer blends. Single superphosphate (0-20-0) and triple superphosphate (0-46-0) may be impregnated only with **Establish** alone.

Herbigation

Establish herbigation applications must be applied only through center pivot, lateral move, solid set, or hand move irrigation systems. **DO NOT** apply this product through any other irrigation system. Applications may be made alone or in tank mixtures with other herbicides on this label that are registered for use in specified sprinkler irrigation systems. Applications must be made within specific crop stage timings and product use rates given in container directions for use label.

Make application in volume minimums of 0.33 to 0.67 inches of water using the lower volume for coarser textured soils and the higher volume for finer textured soils. Applications made in high volumes of water (more than 1 inch) may result in reduced weed control.

Meter herbicide dilution into irrigation water through the entire time of water application for center pivot and lateral move systems. For solid set and hand move irrigation systems, apply **Establish** through system at the beginning of the set; then follow with additional water to reach volume minimums as listed by soil type. To increase calibration accuracy of injection metering equipment, dilute **Establish** in a minimum of three parts water to one part **Establish**. Maintain agitation in injection nurse tanks to keep a uniform herbicide suspension during application.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts. If the herbigation system needs adjustment, only the person responsible for its operation or under the supervision of the responsible person, should make the necessary adjustments.

Irrigation System Requirements

The irrigation system must contain the following:

- functional check valve.
- vacuum relief valve.
- low pressure drain (appropriately located on the irrigation pipeline to prevent water source contamination from backflow).
- functional interlocking controls (to automatically shutoff the pesticide injection pump when the water pump motor stops).
- metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with a system interlock.

The pesticide injection pipeline must contain the following:

- functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- functional, normally closed solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Herbigation Precautions

DO NOT connect an irrigation system (including greenhouse systems) used for **Establish** application to a public water system.

DO NOT apply when wind speed favors drift beyond the area intended for treatment.

DO NOT apply excessive water that results in runoff during application.

Additives

Spray adjuvants have little or no influence on performance of **Establish** when applications are made prior to weed emergence. However, several tank mixes with **Establish** require adjuvants to improve burndown of emerged weeds. Therefore, surfactants and/or low rate fertilizer (28%, 30%, or 32% urea ammonium nitrate [UAN] or ammonium sulfate [AMS]), or crop oil concentrate may be used with **Establish** tank mixes applied preplant, preemergence, or early postemergence to the crop.

Follow the adjuvant recommendations on the tank mix partner's label.

When an adjuvant (or a specific adjuvant product, such as a drift control agent) is to be used with this product, the use of a Chemical Producers and Distributors Association (CPDA) certified adjuvant is recommended.

Oil Concentrate

A crop oil concentrate must contain either a petroleum or vegetable oil base and must meet all of the following criteria:

- nonphytotoxic,
- contain only EPA-exempt ingredients,
- provide good mixing quality in the jar test
- successful in local experience.

The exact composition of suitable products will vary; however, vegetable and petroleum oil concentrates should contain emulsifiers to provide good mixing quality.

Highly refined vegetable oils have proven more satisfactory than unrefined vegetable oils. For additional information, see **Compatibility Test for Mix Components**.

The use of adjuvants containing penetrants such as petroleum based oils after corn emergence may cause crop injury.

Nitrogen Source

- **Urea ammonium nitrate (UAN):** Use 1 to 2 gallons of UAN (commonly referred to as 28%, 30%, or 32% nitrogen solution) per acre. **DO NOT** use brass or aluminum nozzles when spraying UAN.
- **Ammonium sulfate (AMS):** AMS at 8 to 17 pounds per 100 gallons of spray solution may be substituted for UAN. Use high-quality AMS (spray grade) to avoid plugging of nozzles. Other sources of nitrogen are not as effective as those mentioned. TENKOZ does not recommend applying AMS if applied in less than 10 gallons per acre because of potential problems with precipitation in reduced volumes. Use AMS only if it has been demonstrated to be successful in local experience.

Nonionic Surfactant

The standard label recommendation is 1 to 2 quarts of an 80% active nonionic spray surfactant per 100 gallons of water. For certain weeds, a higher spray surfactant rate is recommended.

General Tank Mixing Information

Establish may be tank mixed with one or more herbicide products according to the specific tank mixing instructions in this label and respective product labels, provided that the product labels do not prohibit such mixing. Follow the most restrictive label use directions and limitations for all products used. Refer to **Crop-Specific Information** to determine which tank mix products can be applied to specific crops. Physical incompatibility, reduced weed control, or crop injury may result from mixing **Establish** with other pesticides (fungicides, herbicides, insecticides, or miticides), additives, or fertilizers. Local agricultural authorities may be a source of information when using other than TENKOZ-specified tank mixes.

Compatibility Test for Mix Components

Before mixing components, always perform a compatibility jar test.

For 20 gallons per acre spray volume, use 3.3 cups (800 ml) of water. For other spray volumes, adjust rates accordingly. Only use water from the intended source at the source temperature.

Add components in the sequence indicated in the **Mixing Order** using 2 teaspoons for each pound or 1 teaspoon for each pint of recommended label rate per acre.

Always cap the jar and invert 10 cycles between component additions.

When the components have all been added to the jar, let the solution stand for 15 minutes. Evaluate the solution for uniformity and stability. The spray solution should not have free oil on the surface, or fine particles that precipitate to the bottom, or thick (clabbered) texture. If the spray solution is not compatible, repeat the compatibility test with the addition of a suitable compatibility agent. If the solution is then compatible, use the compatibility agent as directed on its label. If the solution is still incompatible, **DO NOT** mix the ingredients in the same tank.

Mixing Order

- 1) **Water.** Begin by agitating a thoroughly clean sprayer tank three-quarters full of clean water.
- 2) **Agitation.** Maintain constant agitation through-out mixing and application.
- 3) **Inductor.** If an inductor is used, rinse it thoroughly after

each component has been added.

- 4) **Products in PVA bags.** Place any product contained in water-soluble PVA bags into the mixing tank. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
- 5) **Water-dispersible products** (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions).
- 6) **Water-soluble products.**
- 7) **Emulsifiable concentrates** (such as **Establish** or oil concentrate when applicable).
- 8) **Water-soluble additives** (such as AMS or UAN when applicable).
- 9) **Remaining quantity of water.**

Maintain constant agitation during application.

Restrictions and Limitations

- **Maximum seasonal use rate. DO NOT** apply more than a total of 0.98 pound of active ingredient Dimethenamid-P (21 fluid ounces of **Establish**) per acre, per season.
- **Preharvest Interval (PHI).** Refer to **Crop-Specific Information** for crop-specific preharvest intervals and feeding and grazing restrictions.
- **Restricted Entry Interval (REI). 12 hours**
- **Establish** is not for sale, distribution, or use in Nassau and Suffolk counties in New York State, or in the state of Hawaii.
- **Crop Rotation Restriction.** - If any labeled crop treated with **Establish** is lost to adverse weather or for other reasons, the area treated may be replanted to any of the labeled crops immediately, unless specified otherwise in the **Crop-Specific Information** section of this label.
- If the original **Establish** treatment was broadcast, **DO NOT** make a second application of **Establish**.
- If the original application was banded and the second crop is planted in the row middles, a second band application may be applied.
- **Refer to Crop-Specific Information for crop-specific recropping and rotational cropping recommendations.**
- Fall-seeded cereal crops may be planted 4 months or more following treatment.
- There are no rotational crop restrictions the spring following the previous year's application of **Establish**.

- **Stress:** Applications to crops under stress due to lack of moisture, hail damage, flooding, herbicide injury, mechanical injury, or widely fluctuating temperatures may result in crop injury.
- **DO NOT** contaminate irrigation ditches or water used for domestic purposes.

Crop-Specific Information

Beets, Sugar

Establish may be used as part of a weed management program in sugar beets.

Normal Timing. Apply **Establish** after sugar beets have reached the 2-leaf stage (*at least 2 fully expanded true leaves*) but before sugar beets have exceeded the 8-leaf stage. **DO NOT** harvest sugar beets for at least 60 days after last treatment when sugar beets are treated with **Establish** from 2-leaf through 8-leaf stages. Harvest only mature beets and tops. Applications at 2-leaf stage or later may result in temporary leaf injury. Application made from preemergence up through cotyledon stage of beets may result in significant crop injury including possible stand reduction.

Extended Timing. Apply **Establish** after sugar beets have reached the 9-leaf stage but before sugar beets have exceeded the 12-leaf stage. **DO NOT** harvest sugar beets for at least 95 days after last treatment when sugar beets are treated with **Establish** from 9-leaf through 12-leaf stages. Harvest only mature sugar beets and tops.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Establish may be applied in a single application or two split applications. If **Establish** is applied only as a single application, **DO NOT** exceed 21 fluid ounces per acre. If **Establish** is applied in two split applications, maintain a minimum of 14 days between split applications and **DO NOT** exceed a seasonal total of 24 fluid ounces per acre of **Establish**. If two applications are made, apply no more

than 12 to 16 fluid ounces per acre during the first application (applied during **Normal Timing**: 2- to 8-true-leaf stage) and then the remainder (8 to 12 fluid ounces per acre) of the seasonal maximum rate during the second application (applied during **Extended Timing**: 9- to 12-leaf true-leaf stage).

Sugar Beet Tank Mixes.

Applications may be made alone or in tank mixtures with other registered herbicides on sugar beet. **Establish** may be tank mixed with the following herbicides:

- Assure®
- Betamix®
- Betanex®
- Eptam®
- Poast®
- Progress®
- Select®
- Stinger®
- trifluralin
- Upbeet®

Crop injury is possible when tank mixing these herbicides, as well as any adjuvants such as methylated seed oils, with **Establish**. Read and follow the applicable **Restrictions and Limitations and Directions for Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

Crop-Specific Recropping and Rotational Cropping.

In situations where **Establish** has been applied to sugar beets and crop failure occurs due to adverse weather or other reasons, the replanting (recropping) of sugar beets is **not recommended**. If replanting of a crop is necessary, plant any crop (e.g. corn, dry bean, grain sorghum, soybean) where a soil application of **Establish** is registered.

Corn (Field, Pop, Seed, and Sweet)

NOTE: Use not permitted in California on sweet corn unless otherwise directed by supplemental labeling.

Establish may be applied preplant surface, preplant incorporated, preemergence or postemergence to corn up to 12 inches tall. Corn in this label refers to field corn (grown for grain, silage, or seed), sweet corn, and popcorn. **Establish** may also be applied at layby to field corn, seed and popcorn. Layby applications are made when corn is greater than 12 inches tall but before it is greater than 36 inches. Before applying to seed corn, sweet corn, or popcorn, verify with your local seed company (supplier) the **Establish** selectivity on your inbred line or hybrid to avoid potential

injury to sensitive inbreds or hybrids.

For layby applications for control of late season germinating weeds, make application before weeds emerge from soil or in combination with a herbicide(s) and/or cultivation that controls emerged weeds. For best performance, direct applications beneath the corn canopy. Layby applications may be made to soil previously treated with **Establish** but must not exceed a total combined rate of 21 fluid ounces of **Establish** per acre.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Crop-Specific Restrictions and Limitations

Corn may be grazed or fed to livestock 40 days or more after application of **Establish**.

Sweet corn ears may be harvested 50 days or more after application of **Establish**.

DO NOT make layby applications of **Establish** to sweet corn.

Corn Tank Mixes.

Establish may be tank mixed or applied sequentially in corn with one or more of the following herbicide products according to the specific tank mixing instructions in this label and respective product labels. Refer to the tank mix product labels to confirm that the respective tank mix products are registered for use on the specific corn types, as not all corn products are registered for use on seed corn, popcorn, and sweet corn.

Read and follow the applicable **Restrictions and Limitations** and **Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

- Accent®
- atrazine
- Balance® Pro
- Banvel®
- Basagran®
- Beacon®
- Callisto®
- Clarity®
- Marksman®
- Northstar®
- Option®
- Princep®
- Lightning®²
- Prowl®
- Pursuit®
- Ready Master™ ATZ³

- glyphosate
- Gramoxone® Extra
- Laddok® S-12
- Liberty®¹
- Status®
- Steadfast®
- Touchdown®
- 2,4-D⁴

¹ Use only in Liberty Link® (glufosinate-tolerant) corn hybrids.

² Use only in **CLEARFIELD*** (imidazolinone-tolerant) corn hybrids.

³ includes postemergence tank mixes on Roundup Ready® (glyphosate-tolerant) corn hybrids.

⁴ For preplant or preemergence use only, 2,4-D is not recommended for use within 7 days prior to or 3 days after planting. For preemergence applications, make sure seed furrows are closed and cornseed is covered by a minimum of 1.5" of soil to reduce the chance of injury.

Roundup Ready Corn Programs

Establish may be used preemergence and postemergence to **Roundup Ready** (glyphosate-tolerant) corn hybrids. Refer to the glyphosate (e.g. **Roundup® herbicide**) product label for specific weeds controlled post-emergence.

Sequential Program. Establish may be applied preemergence at the **Roundup Ready** rate of 12 fluid ounces per acre in a planned preemergence followed by glyphosate postemergence sequential program.

For improved postemergence control of tough broadleaf weeds, apply **Status** at 2.5 to 5 ounces per acre as a tank mixture with glyphosate. Use a minimum rate of 5 ounces per acre of **Status** for broadleaf weeds that are suspected or known to be tolerant or resistant to glyphosate.

Postemergence Tank Mix Program. Establish may be applied at a **Roundup Ready** rate of 12 fluid ounces per acre in a postemergence tank mix with glyphosate to corn up to 12 inches tall. Layby applications may also be made when corn is greater than 12 inches tall but before it is greater than 36 inches tall. Drop nozzles are required when corn is 30 to 36 inches tall. Labeled use rates for this tank mix are listed in Table 3. This tank mix with glyphosate should be applied when weeds are 2 to 4 inches in height and before the weed height and/or density become competitive with the crop.

Table 3. Application Rates

Broadcast Rate Per Acre		
Soil Texture Group	Establish™ herbicide	glyphosate
Coarse	10 to 12 fluid ounces	per labeled rate
Medium	12 to 14 fluid ounces	per labeled rate
Fine	12 to 16 fluid ounces	per labeled rate

Dry Beans

NOTE: Use not permitted in California unless otherwise directed by supplemental labeling.

Establish may be applied preplant surface, preplant incorporated, preemergence or early postemergence (first to third trifoliate stage) to dry bean classes (such as black turtle soup, cranberry, great Northern, navy, pink, pinto, red kidney, red Mexican, and small whites). **Establish** may only be applied preplant surface or pre-emergence to garbanzo beans and lentils. **Establish** is not registered for use in succulent beans or cowpeas.

Before applying **Establish** to dry beans, verify with your local seed company (supplier) the selectivity of **Establish** on your specific dry bean class and variety to help avoid potential injury to sensitive classes or varieties.

If extreme conditions of high rainfall and extended periods of water saturated soil occur during dry edible bean germination or early seedling development, **Establish** use may result in temporary growth suppression. This suppression will not reduce dry edible bean yield. **Establish** use post-emergence may occasionally result in some temporary spotting or browning of dry bean leaves.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Establish may be applied in a single application of up to 21 fluid ounces per acre or used in split applications of 10 to 14 fluid ounces of **Establish** per acre applied initially, and

the remaining 7 to 10 fluid ounces of **Establish** per acre in the sequential application. **DO NOT** exceed a total of 21 fluid ounces of **Establish** per acre per season. Additional restrictions specific to dry beans are to use a maximum of 12 fluid ounces of **Establish** per acre on coarse soils with organic matter less than 1.5% for soil applications made prior to crop emergence.

Crop-Specific Restrictions and Limitations

Dry beans may be harvested 70 days or more after application of **Establish**.

Dry Bean Tank Mixes:

Establish may be tank mixed or applied sequentially in dry bean crops with one or more of the following herbicide products according to the specific tank mixing instructions in this label and respective product labels.

- Basagran®
- Eptam®
- Far-Go®
- glyphosate
- Gramoxone® Extra
- Poast®
- Prowl®
- Pursuit®
- Sonalan®
- Treflan®

Read and follow the applicable **Restrictions and Limitations and Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

The following herbicide products may only be applied sequentially with **Establish**.

- Dual Magnum®
- Dual II Magnum®
- Lasso®

Dry Bulb Onions, Garlic, Dry Bulb Shallots

Establish may be used as part of a weed management program in dry bulb onions, garlic and dry bulb shallots grown in muck soils, high organic soils, and in mineral soils. Apply **Establish** after dry bulb onions, garlic and dry bulb shallots have reached the 2 true-leaf stage until a minimum of 30 days before harvest. Application made prior to 2 true-leaf stage may result in significant crop injury including possible stand reduction. If applications are made to transplanted dry bulb onions, garlic and dry bulb shallots, **DO NOT** apply until transplants are in the ground and soil has settled around transplants with several days to recover.

Green Onions

(leeks, spring onions or scallions, Japanese bunching onions, green shallots or eschalots)

NOTE: Use not permitted in California unless otherwise directed by supplemental labeling.

Establish may be used as part of a weed management program in green onions grown in muck soils, high organic soils, and in mineral soils. **Establish** may only be applied by ground (broadcast) applications.

Apply **Establish** after green onions have reached the 2 true-leaf stage until a minimum of 30 days before harvest. Application made prior to 2 true-leaf stage may result in significant crop injury including possible stand reduction. If applications are made to transplanted green onions, **DO NOT** apply until transplants are in the ground and soil has settled around transplants with several days to recover.

Establish may be applied in a single application of up to 21 fluid ounces per acre or used in split applications of 10 to 14 fluid ounces of **Establish** per acre applied initially, and the remaining 7 to 10 fluid ounces of **Establish** per acre in the sequential application. If split applications are made, maintain a minimum of 14 days between sequential applications. **DO NOT** apply more than a total of 21 fluid ounces of **Establish** per acre in a single growing season.

Crop-specific Restrictions and Limitations

DO NOT apply **Establish** within 30 days of harvest.

Green Onion Tank Mixes

Applications of **Establish** may be made prior to, in tank mixture, or after use of registered herbicides for postemergence use in green onions.

Crop injury is possible when tank mixing herbicides, as well as any adjuvants such as methylated seed oils, with **Establish**. Read and follow the applicable **Restrictions and Limitations and Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

Crop-specific Recropping and Rotational Cropping

In situations where **Establish** has been applied to green onions and crop failure occurs due to adverse weather or other reasons, the replanting (recropping) of green onions

Establish may be applied in a single application of up to 21 fluid ounces per acre or used in split applications of 10 to 14 fluid ounces of **Establish** per acre applied initially, and the remaining 7 to 10 fluid ounces of **Establish** per acre in the sequential application. If split applications are made, maintain a minimum of 14 days between sequential applications. **DO NOT** apply more than a total of 21 fluid ounces of **Establish** per acre in a single growing season.

A total maximum combined rate of 21 fluid ounces of **Establish** per acre may be applied on any soil type in a single growing season.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Crop-specific Restrictions and Limitations

DO NOT apply **Establish** within 30 days of harvest.

Dry Bulb Onions, Garlic, Dry Bulb Shallots Tank Mixes:

Applications of **Establish** may be made prior to, in tank mixture, or after use of one or more of the following registered herbicides for postemergence use in dry bulb onions, garlic and dry bulb shallots:

- Fusilade® DX¹
- Prowl®
- Goal®¹
- Select®
- Poast®

¹ Not labeled for use in shallots

Crop injury is possible when tank mixing these herbicides, as well as any adjuvants such as methylated seed oils, with **Establish**. Read and follow the applicable **Restrictions and Limitations and Directions for Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

Crop-Specific Recropping and Rotational Cropping:

In situations where **Establish** has been applied to dry bulb onions, garlic and dry bulb shallots, and crop failure occurs due to adverse weather or other reasons, the replanting (recropping) of dry bulb onions, garlic and dry bulb shallots is **not recommended**. If replanting of a crop is necessary, plant any crop (e.g. corn, dry bean, grain sorghum, soybean) where a soil application of **Establish** is registered.

is **not recommended**. If replanting of a crop is necessary, plant any crop (e.g. corn, dry bean, grain sorghum, soybean) where a soil application of Establish is registered.

Peanut

Establish may be applied preplant surface, preplant incorporated, preemergence, or postemergence (up to 80 days prior to harvest) alone or in tank mix combinations. Use higher rates (16 to 21 fluid ounces of **Establish** per acre) for improved control or suppression of difficult weeds like yellow nutsedge, Florida beggarweed, eclipta, common ragweed, and other broadleaf species.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Establish may be applied in a single application of up to 21 fluid ounces per acre or used in split applications of 10 to 14 fluid ounces of **Establish** per acre applied initially, and the remaining 7 to 10 fluid ounces of **Establish** per acre in the sequential application. **DO NOT** apply more than 21 fluid ounces per acre of **Establish** per season.

Crop-Specific Restrictions and Limitations

Peanut hay or straw may be grazed or fed to livestock 80 days or more after application of **Establish**.

DO NOT use Establish in peanut in California.

Peanut Tank Mixes:

Establish may be tank mixed or applied sequentially in peanut with one or more of the following herbicides products according to the specific tank mixing instructions in this label and respective product labels.

- Balan®
- Basagran®
- Blazer®
- Cadre®
- Classic®
- Dual®
- Lasso®
- Poast®
- Poast Plus®
- Prowl®
- Pursuit®
- Sonalan®
- Starfire®
- Storm®
- Tough®
- Treflan®
- 2,4-DB
- Vernam®
- Zorial®

Read and follow the applicable **Restrictions** and **Limitations** and **Directions For Use** on all products involved in tank mixes.

Perennial Grasses Grown For Seed

For use on perennial grasses grown for seed only in states west of the Mississippi River.

Establish may be used as part of a weed management program in established stands warm- and cool-season perennial grasses grown for seed. Grass seed crops must have been established for at least one year or had a least one seed crop harvested before **Establish** use.

Establish applied as directed will provide preemergence control or suppression of volunteer seedlings from previous grass seed crops in addition to many annual grasses, annual broadleaf weeds, and sedges listed in **Table 1**.

In warm-season perennial grasses, apply 14 to 21 fluid ounces of **Establish** per acre to postharvest grass during the fall, or during winter dormancy, or after the first seed harvest/cutting. **DO NOT** apply to warm-season perennial grasses after green-up in the spring prior to the first seed harvest/cutting. **Establish** may be applied in a sequential use program with other herbicides that control emerged weeds.

In cool-season perennial grasses, apply 14 to 21 fluid ounces of **Establish** per acre to postharvest grass during regrowth in the fall or spring prior to emergence of targeted weeds. **Establish** may be applied in a sequential use program with other herbicides that control emerged weeds. Application to perennial ryegrass and fine fescue stands under stress may cause crop injury.

In both warm- and cool-season perennial grasses, use the higher rate in the rate range where more dense infestations of targeted annual grasses, annual broadleaf weeds, or sedges are expected. Grass straw from the previous harvest must be removed, burned or evenly spread prior to **Establish** application or reduced weed control may result. For effective control or suppression of annual grasses, annual broadleaf weeds or sedges, or volunteer seedlings from previous grass seed crops, this product must be moved into the upper soil surface where weed seeds germinate by rainfall or irrigation before weed emergence.

Applications made in periods of cold temperatures that temporarily limit normal crop growth or in extended cold temperature periods that initiate winter dormancy in grass crops may result in crop injury.

Establish may be tank mixed with **Prowl® H2O herbicide** or with other herbicides labeled for use in perennial grasses grown for seed. Tenkoz recommends testing **Establish** tank mixes on a small portion of the target crop to determine if damage is likely to occur. **Physical incompatibility, reduced weed control, or crop injury may result from mixing Establish with other pesticides (fungicides, herbicides, insecticides, or miticides), additives, or fertilizers.** Subsequent applications of postemergence herbicides may cause crop injury. Consult with your local Tenkoz dealer regarding local tank mix options.

Crop-specific Restrictions and Limitations
DO NOT apply a total of more than 21 fluid ounces per acre of **Establish** per growing season.

From treated fields of warm-season perennial grasses, forage and hay may be grazed by or fed to livestock 30 days after application.

From treated fields of cool-season perennial grasses, forage and hay may be grazed by or fed to livestock 60 days after application.

The grass seed screenings remaining after processing and grass straw remaining after seed harvest may be grazed by or fed to livestock.

Potato, Horseradish

Establish may be used as part of a weed management program in potato and horseradish.

In potato, apply **Establish** preemergence (following planting or after drag-off). In horseradish, apply **Establish** postemergence from the 2-leaf stage to the 8-leaf stage of plant development. **DO NOT** apply within 40 days prior to harvest. **Establish** may only be applied in a single application in potato and horseradish.

In cold and wet growing conditions, **Establish** applications may result in delayed emergence or early season stunting of potatoes and horseradish.

The maximum **Establish** use rates in a single application

are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to Table 2 for specific maximum use rates of **Establish** depending on soil type and organic matter content. **DO NOT** exceed the specified rate by soil type in a single application.

DO NOT use Establish in horseradish in California.

Potato Tank Mixes:

Applications of **Establish** may be made prior to, in tank mixture, or after the use of one or more of the following registered herbicides for use in potatoes.

- metribuzin
- Eptam® 7E
- glyphosate
- Gramoxone® Max
- Lorox®
- Matrix®
- Poast®
- Prowl®
- Treflan® HFP

Read and follow the applicable **Restrictions and Limitations** and **Directions for Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

Crop-Specific Recropping and Rotational Cropping:

In situations where **Establish** has been applied to potato or horseradish and crop failure occurs due to adverse weather or other reasons, the replanting (recropping) of potato or horseradish is **not recommended**. If replanting of a crop is necessary, plant any crop (e.g. corn, dry bean, grain sorghum, soybean) where a soil application of **Establish** is registered.

Sorghum (Grain)

Establish may be used preplant surface, preplant incorporated, preemergence or postemergence to grain sorghum up to 12 inches tall. Single or split application may be used.

DO NOT apply preplant incorporated in California.

Establish is not registered for use on sweet or forage sorghum.

All **Establish** applications must only be made to sorghum seed that has been properly treated by the seed company with an approved chloroacetamide herbicide safener or severe injury may occur.

Under high soil moisture or cool conditions, **Establish**

application may cause temporary stunting or leaf wrapping of sorghum. Sorghum will normally outgrow these symptoms in 10 to 14 days.

For best performance make preemergence surface applications within 5 days of the last preplant tillage. If weeds have emerged, apply **Establish** with herbicides to control the emerged vegetation.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Sorghum forage may be grazed or fed to livestock 60 days or more after application of **Establish**. Grain and fodder may be harvested and fed 80 days or more after application of **Establish**.

Sorghum Tank Mixes.

Establish may be tank mixed or applied sequentially in sorghum with one or more of the following herbicide products according to the specific tank mixing instructions in this label and respective product labels.

- atrazine
- Banvel®
- Basagran®
- Clarity®¹
- Cyclone®
- Fallowmaster®
- glyphosate
- Gramoxone® Extra
- Laddok® S-12
- Landmaster®
- Paramount®
- Peak®
- Permit®

¹ Tank mix applications preplant only.

Read and follow the applicable **Restrictions and Limitations** and **Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

In addition to the tank mix partners listed above, **Establish** can be used in sequential applications with the following:

- Buctril®
- Marksman®
- Weedmaster®
- 2,4-D

Soybean

Establish may be applied preplant surface, preplant incorporated, preemergence or early postemergence (from first to third trifoliate leaf stage) to soybeans as a single or split application.

If **Establish** is applied preplant incorporated, the incorporation must be uniform and shallow (upper 1 to 2 inches of soil). Deeper incorporation may reduce weed control or increase the potential for crop injury. Preplant incorporated treatments are not for use on coarse soils with less than 1.5% organic matter.

If extreme conditions of high rainfall and extended periods of water saturated soil occur during soybean germination or early seedling development, **Establish** use may result in temporary growth suppression. Temporary soybean burn and stunting may occur if application of **Establish**, spray adjuvants and tank mixed herbicides are applied to emerged soybeans up through the unifoliate stage. These suppressions have not resulted in reduced soybean yield potential.

The maximum **Establish** use rates in a single application are 12 to 18 fluid ounces on coarse-texture soils and 18 to 21 fluid ounces on medium- or fine-texture soils, but are also influenced by soil organic matter content. Refer to **Table 2** for specific maximum use rates of **Establish** depending on soil type and organic matter content.

Crop-Specific Restrictions and Limitations

DO NOT graze or feed forage, hay, or straw to livestock.

DO NOT use Establish in soybean in California.

Soybean Tank Mixes.

Establish may be tank mixed or applied sequentially in soybean with one or more of the following herbicide products according to the specific tank mixing instructions in this label and respective product labels. Read and follow the applicable **Restrictions and Limitations** and **Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

- Assure® II
- Authority®
- Backdraft® ²
- Basagran®
- Blazer®
- Canopy®
- Canopy® XL
- Command®
- Extreme™ ²
- FirstRate®
- Flexstar®
- Fusilade® DX
- Lorox®
- Poast®
- Poast Plus®
- Prowl®
- Pursuit®
- Python®
- Raptor®
- Reliance®
- Scepter®
- Select®
- Sencor®
- Sonalan®

- Fusion®
- glyphosate²
- Gramoxone® Extra
- Lexone®
- Liberty®¹
- Storm®
- Synchrony® STS®
- Touchdown®²
- Treflan®

¹ Use only in Liberty Link® (glufosinate-tolerant) soybean varieties.

² Includes postemergence tank mixes on Roundup Ready® (glyphosate-tolerant) soybean varieties.

Winter Squash

Establish may be used as part of a weed management program in winter squash (**Golden Delicious variety only**) in **Oregon** and **Washington** only.

Establish may only be applied by **ground (broadcast) application**.

Establish should be applied as a **Preemergence Surface Application**. Broadcast the treatment uniformly to the soil surface after planting and before crop and weed emergence. If extreme conditions of high rainfall and extended periods of water-saturated soil occur during winter squash germination or early seedling development, **Establish** use may result in growth suppression, which may reduce yields.

Establish may only be applied in single application. **DO NOT** apply **Establish** within 90 days of harvest.

Apply a minimum of 12 to 14 fluid ounces of **Establish** on soils with less than 3% organic matter. Apply a minimum of 16 to 18 fluid ounces on soils with greater than 3% organic matter. **DO NOT** apply more than 21 fluid ounces of **Establish** on any soil in a single application.

Tank mixes with other herbicides or insecticides are not recommended when using this product in winter squash.

Crop-specific Recropping and Rotational Cropping

In situations where **Establish** has been applied to winter squash and crop failure occurs due to adverse weather or other reasons, the replanting (recropping) of winter squash is **not recommended**. If replanting of a crop is necessary, plant any crop (e.g. corn, dry bean, grain sorghum, soybean) where a soil application of **Establish** is registered.

Crop-specific Restrictions and Limitations

DO NOT apply to winter squash by air or through any type of irrigation system.

DO NOT apply when conditions favor drift to adjacent susceptible vegetation.

DO NOT apply more than 21 fluid ounces of **Establish** per acre of winter squash per year.

Pests listed in this label:

Common Name	Scientific Name
Amaranth, Palmer	<i>Amaranthus palmeri</i>
Amaranth, Powell	<i>Amaranthus powellii</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Beggarweed, Florida	<i>Desmodium tortuosum</i>
Bluegrass, annual	<i>Poa annua</i>
Bluegrass, roughstalk	<i>Poa trivialis</i>
Brome, California	<i>Bromus carinatus</i>
Brome, downy	<i>Bromus tectorum</i>
Carpetweed	<i>Mollugo verticillata</i>
Chamomile, mayweed	<i>Anthemis cotula</i>
Crabgrass, Large	<i>Digitaria sanguinalis</i>
Crabgrass, Smooth	<i>Digitaria ischaemum</i>
Cupgrass, Southwestern	<i>Eriochloa gracilis</i>
Cupgrass, Woolly	<i>Eriochloa villosa</i>
Eclipta	<i>Eclipta alba</i>
Fescue, rattail	<i>Vulpia myuros</i>
Flatsedge, Rice	<i>Cyperus iria</i>
Foxtail, Giant	<i>Setaria faberi</i>
Foxtail, Green	<i>Setaria viridis</i>
Foxtail, Yellow	<i>Setaria glauca</i>
Goosegrass	<i>Eleusine indica</i>
Johnsongrass (seedling)	<i>Sorghum halepense</i>
Lambsquarters, Common	<i>Chenopodium album</i>
Millet, Wild Proso	<i>Panicum miliaceum</i>
Nightshade, Black	<i>Solanum nigrum</i>
Nightshade, cutleaf	<i>Solanum triflorum</i>
Nightshade, Eastern Black	<i>Solanum ptycanthum</i>
Nightshade, Hairly	<i>Solanum sarrachoides</i>
Nutsedge, Yellow	<i>Cyperus esculentus</i>
Panicum, Fall	<i>Panicum dichotomiflorum</i>
Panicum, Texas	<i>Panicum texanum</i>
Pigweed, Prostrate	<i>Amaranthus blitoides</i>
Pigweed, Redroot	<i>Amaranthus retroflexus</i>

Pests listed in this label:

Common Name	Scientific Name
Pigweed, Smooth	<i>Amaranthus hybridus</i>
Pigweed, Tumble	<i>Amaranthus albus</i>
Purslane, Common	<i>Portulaca oleracea</i>
Pusley, Florida	<i>Richardia scabra</i>
Ragweed, Common	<i>Ambrosia artemisiifolia</i>
Red Rice	<i>Oryza sativa</i>
Ryegrass, Italian	<i>Lolium multiflorum</i>
Sandbur	<i>Cenchrus ssp.</i>
Shattercane	<i>Sorghum bicolor</i>
Signalgrass, Broadleaf	<i>Brachiara platyphylla</i>
Spurge, Nodding	<i>Euphorbia nutans</i>
Spurge, Spotted	<i>Euphorbia maculata</i>
Waterhemp, Common	<i>Amaranthus rudis</i>
Waterhemp, Tall	<i>Amaranthus tuberculatus</i>
Witchgrass	<i>Panicum capillare</i>

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of TENKOZ or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

TENKOZ warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

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Manufactured For
Tenkoz Inc.
100 North Point Center East
Suite 330
Alpharetta, GA 30022 U.S.A.

