

# Staunch<sup>®</sup> II

## herbicide

TENKÖZ

For use on herbicide tolerant and conventional field corn and silage corn

Group	15	2	4	HERBICIDE
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**Active Ingredients:**

acetochlor: 2-chloro-2'-methyl-6'-ethyl-N-ethoxymethylacetanilide.....	41.67%
flumetsulam: N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo-[1,5a]-pyrimidine-2-sulfonamide .....	1.3%
clopyralid: 3,6-dichloro-2-pyridinecarboxylic acid, monoethanolamine salt .....	4.27%
Other Ingredients:.....	52.76%
Total .....	100.00%

Acid equivalent: clopyralid: 3,6-dichloro-2-pyridinecarboxylic acid – 3.24% (0.29 lb/gal)

Contains 3.75 lb acetochlor, 0.38 lb clopyralid monoethanolamine salt, and 0.12 lb flumetsulam active ingredient per gallon

**Not for Sale, Sale Into, Distribution and/or Use in Nassau and Suffolk Counties of New York State.**

## 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.)

### 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.

**For additional Precautionary Statements, First Aid, Storage and Disposal and other use information see inside this label.**

**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 not acceptable, 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. 62719-679-55467

EPA Est. 11773-IA-001  
99013481

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**Produced for  
Tenkoz, Inc.  
1725 Windward Concourse  
Alpharetta, GA 30005**

**Net Contents 2.5 gal**

## Precautionary Statements

### Hazards to Humans and Domestic Animals

# WARNING

**Causes Substantial But Temporary Eye Injury • Harmful if Absorbed Through Skin • Harmful if Swallowed • Prolonged or Frequently Repeated Skin Contact May Cause Allergic Reactions in Some Individuals**

**Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Avoid contact with skin.**

### Personal Protective Equipment (PPE)

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F or G 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, Nitrile Rubber, Viton, Barrier Laminate
- Shoes plus socks
- Protective eyewear (goggles, face shield, or safety glasses)

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. 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 the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(5)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing 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.

### First Aid

**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 or clothing:** 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.

**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.

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

**Note to Physician:** Probable mucosal damage may contraindicate the use of gastric lavage.

### Environmental Hazards

This product is toxic to fish. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Acetochlor demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the groundwater is shallow, may result in groundwater contamination.

Flumetsulam and clopyralid are known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this product where soils are permeable, particularly where the water table is shallow, may result in leaching to ground water.

Caution should be exercised when handling this product at mixing and loading sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

Acetochlor 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.

## 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 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 made of barrier laminate
- Chemical-resistant footwear plus socks
- Protective eyewear

## Storage and Disposal

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

**Pesticide Storage:** Store in original container only. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with vermiculite, earth, or synthetic absorbent.

**Pesticide Disposal:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

## Storage and Disposal (Cont.)

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

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 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.

## Product Information

Staunch II herbicide is designed for use on herbicide tolerant (such as Roundup Ready® or Liberty Link®) and conventional field corn and silage corn. It may be used in preplant, preemergence, or early postemergence applications. It is designed to provide early season control of grasses and broadleaf weeds to allow for optimal timing of in-crop applications of sequential postemergence herbicides in conventional corn or glyphosate or glufosinate in herbicide tolerant corn.

Staunch II is a unique combination of the herbicides acetochlor, flumetsulam, and clopyralid that controls weeds by interfering with normal germination and seedling development. It may be applied to the soil surface or incorporated into the top 1-2 inches of soil. It is specified for use alone or in tank mix combinations for control or partial control of weeds, as indicated in Table 3 of the Use Rates section of this label. Staunch II may provide postemergence activity on susceptible broadleaf weeds up to 2 inches tall that are present at application but will not provide postemergence activity on emerged grass weeds. If grass and broadleaf weeds are present at the time of application, best results will be achieved by tank mixing a herbicide such as glyphosate (Durango® DMA), glufosinate (Liberty®), paraquat (Gramoxone), and/or 2,4-D with Staunch II.

## Use Precautions and Restrictions

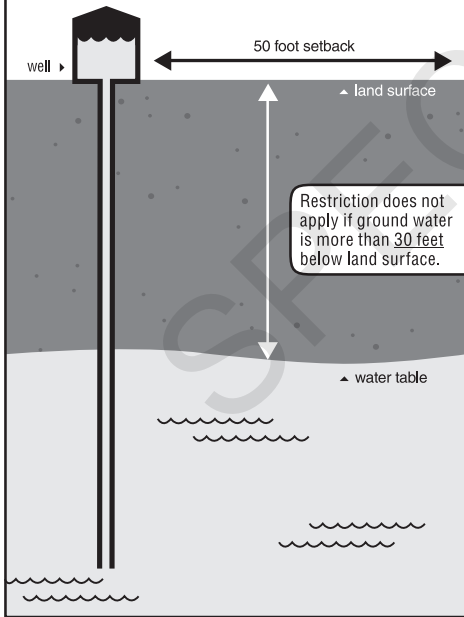
- **Not for Sale, Sale Into, Distribution and/or Use in Nassau and Suffolk Counties of New York State.**
- On the following soil types, do not apply this product within 50 feet of any well where the depth to groundwater is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1 percent organic matter. See the figure for additional clarification.

**Restriction does not apply for areas more than 50 feet from a well.**

### The acetochlor soil restriction is as follows:

On the following soil types, **do not apply** acetochlor within 50 feet of any well where the depth to ground water is 30 feet or less:

- sands with less than 3 percent organic matter;
- loamy sands with less than 2 percent organic matter; or
- sandy loams with less than 1 percent organic matter.



- **Chemigation:** Do not apply this product through any type of irrigation system.
- Do not use flood irrigation to apply or incorporate this product.
- **Do not apply this product using aerial application equipment.**
- This product may not be mixed or loaded within 50 feet of any 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 properly diked mixing/loading areas.
- Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or washwater, and rainwater that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.
- Product must be used in a manner that will prevent back siphoning in wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.
- **Read and follow these Advisories to minimize drift to non-target areas.**
- Minimize drift by using sufficient spray volume to ensure adequate coverage with large-droplet size sprays.
  - Use low pressure application equipment capable of producing a large-droplet spray. Do not use nozzles that produce a fine-droplet spray. Droplet size has been shown to be the single most important factor affecting drift from ground applications.
  - While increasing droplet size does reduce the potential for spray drift, larger droplets do not eliminate drift if environmental or application conditions are inappropriate for application.
  - Use larger capacity nozzles to increase flow rate rather than increasing spray pressure.
  - Keep height of ground-driven spray booms as low as possible above the target to minimize exposure to evaporation and wind while still providing good coverage. Applications made late in the growing season with excessive boom heights drastically increase the potential for spray drift.
  - Make application when the wind velocity favors on-target product deposition (approximately 3 to 10 mph).
- Do not apply when wind is gusting or wind speed exceeds 15 mph as uneven spray coverage and drift may result. Avoid

application to border rows adjacent to susceptible crops such as soybeans, field peas, or sunflowers under windy conditions unless one of the following drift management steps is taken:

- application is made only when the wind direction is such that the susceptible crop is up-wind from the treatment area (wind blowing from the susceptible crop toward the treated crop); or
- the applicator leaves an adequate buffer zone between the treated crop and the susceptible crop and coarse or low drift nozzle configurations are used.
- A drift control or deposition agent may be used with this product to aid in reducing spray drift due to wind when making applications adjacent to susceptible crops, but may not be effective after prolonged pumping of the spray mix.
- On calm days with little or no wind, check for temperature inversions before making herbicide applications. Temperature inversions occur under calm conditions with little or no wind and air temperature increases with increasing height above the ground. Inversion conditions may be indicated by a layer of fog or mist near the ground and, under clear conditions, may be detected by use of a smoke column. A temperature inversion is indicated when smoke does not rise in a column, but layers at some level above the ground. Do not apply herbicides if temperature inversion conditions exist in the treatment area.

- Do not apply under conditions that favor runoff or wind erosion of soil containing this product to non-target areas. To prevent off-site movement due to runoff or wind erosion:
  - Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface must first be settled by rainfall or irrigation.
  - Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow covered soils.
  - Do not use tailwater from the first flood or furrow irrigation of treated fields to treat non-target crops unless at least 1/2 inch of rainfall has occurred between application and the first irrigation.

#### Application Restrictions

- Do not use liquid fertilizers as the carrier for applications of Staunch II after the crop has emerged or crop injury may occur.
- Uneven application or uneven incorporation of Staunch II can result in erratic weed control or crop injury. Over application may result in crop injury or rotational crop damage from soil residue.
- **Maximum Application Rates:** The total cumulative maximum application amount of Staunch II on corn is 3.5 pints per acre per year.
- Do not exceed 3.0 pints per acre in a single application.

### Restrictions And Precautions For Soil Application (Not Applicable To Postemergence Application)

- **Corn Planting Depth:** Plant at a minimum depth of at least 1 1/2 inches.
- Do not apply to areas where the soil pH is greater than 7.8 as this may result in increased crop injury.
- Do not apply to a soil containing greater than 5% organic matter if the soil pH is below 5.9, as reduced weed control will result.

- Use of Staunch II in soil-applied treatments on soils with less than 1.5% organic matter (O.M.) may result in crop injury. Apply as a soil-treatment to fields which have less than 1.5% O.M. only if the risk of crop injury is acceptable.
- If any herbicide with ALS (acetolactate synthase) inhibition mode of action, such as Canopy, Classic, Pursuit, Scepter, Squadron, etc., was applied the previous year, apply Staunch II to corn only if the rotational restrictions applicable to corn for the preceding product have been met.

#### Adverse Weather Conditions

- Extended cold, wet conditions (soil temperatures below 50°F and excessive rainfall with wet soil conditions), following application of Staunch II to herbicide tolerant corn, which persist during germination and/or early crop development may result in crop injury. Injury symptoms, which include yellowing of leaves and/or crop stunting, are usually temporary and affected corn plants usually recover without affecting yield.
- Dry weather following preplant surface or preemergence applications of Staunch II may reduce effectiveness. If sufficient activating rainfall or overhead irrigation does not occur within 7 to 10 days of application, rotary hoe, harrow, or shallowly cultivate to incorporate the herbicide lightly into the soil. Use a preplant incorporated application when a period of dry weather is predicted after application.
- Low humidity and high temperatures increase the likelihood of spray drift to sensitive areas. Avoid spraying during conditions of low humidity and/or high temperatures. Do not apply during air temperature inversion conditions.

#### Soil Insecticide Advisories for Soil Applications of Staunch II

- Soil-applied organophosphate insecticides (except terbufos or phorate, see below) must be applied in a T-band or a band and not in-furrow to avoid potential crop injury.
- Do not use terbufos (Counter) or phorate (Thimet) insecticides.
- Soil insecticides from other classes of chemistry may be applied in-furrow, T-banded, or banded.

#### Soil Insecticide Advisories for Postemergence Applications of Staunch II

- Do not apply Staunch II postemergence if corn was previously treated with terbufos (Counter) or phorate (Thimet) insecticides, as severe crop injury may result.
- Postemergence applications of Staunch II to corn previously treated with T-band, band, or in-furrow applications of other organophosphate insecticides, such as Lorsban®, Aztec, or Fortress insecticides, may cause temporary crop injury.

#### Foliar Insecticide Advisories for Postemergence Applications of Staunch II

- Do not tank mix Staunch II with foliar postemergence organophosphate insecticides as severe crop injury may result. To avoid crop injury, apply the foliar organophosphate insecticide treatment at least 10 days before or 10 days after the application of Staunch II.
- Staunch II may be tank mixed with non-organophosphate foliar insecticides, provided they are labeled for use with postemergence corn herbicides.

#### Other Precautions and Restrictions

- Do not apply Staunch II to sweet corn or popcorn.
- **Hybrid Seed Production:** Corn inbred lines grown for hybrid seed production may be injured by Staunch II. Not all seed corn inbred lines have been tested, nor does Tenkoz have access to all seed company data. Inbred lines should be

thoroughly tested for crop tolerance before treating large acreage. While growers are not prohibited from using Staunch II on seed corn, it is not recommended.

- **Preharvest interval:** An interval of at least 85 days is required between application of Staunch II and field corn harvested for grain.
- **Avoid all direct or indirect contact with non-target plants.** Do not apply near desirable vegetation. Allow adequate distance between target area and desirable plants under conditions of application to minimize potential exposure.
- **Crop Residues from Treated Areas:** Crop residues from treated areas cannot be used for composting or mulching on ground where susceptible crops may be grown the following season. To promote herbicide decomposition, plant material should be evenly incorporated or burned. Adequate moisture is also required to promote breakdown of plant residues, which contain clopyralid.
- **Do not move treated soil.** Avoid situations where soil particles may blow into areas where susceptible crops are grown. The hazard of movement of this product on dust is reduced if treated fields are irrigated or if rain occurs shortly after application.
- **Do not apply under conditions that favor runoff or wind erosion of soil containing Staunch II to non-target areas.**  
**To prevent off-site movement due to runoff or 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 wetted by rainfall or irrigation.
  - Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow covered ground.
  - Do not apply to soils when saturated with water.
  - **Do not apply when weather conditions favor drift to non-target sites.** Spray drift of Staunch II to emerged soybeans or other sensitive crops or soil to which soybeans or other sensitive crops will be planted during the same growing season may cause crop injury.

#### Sprayer Cleanup

To avoid injury to or exposure of non-target crops, thoroughly clean and drain spray equipment used to apply Staunch II after use. Cleaning should occur as soon as possible after application of Staunch II. Spray equipment should be cleaned after use with Staunch II by the following procedure:

1. Drain any remaining Staunch II from the spray tank and dispose of according to label disposal instructions.
2. Hose down the interior surfaces of the tank. Flush tank, hoses, boom, and nozzles with clean water for 10 minutes. Fill the tank with water and recirculate for 15 minutes. Spray part of the mixture through the hoses, boom, and nozzles and drain the tank. All rinse water must be disposed of in compliance with local, state, and federal guidelines.
3. Fill the tank with water and recirculate for 15 minutes. For optimum cleaning, a tank cleaner such as liquid ammonia (1 gallon per 100 gallons of water) or other commercial tank cleaner is recommended in the second rinse if the spray equipment will be used on crops other than field corn. Spray part of the mixture through the hoses, boom, and nozzles and drain the tank. All rinse water must be disposed of in compliance with local, state, and federal guidelines.
4. Remove the nozzles and screens and clean separately.

5. If the spray equipment will be used on crops other than field corn, repeat steps 1 and 2 again and thoroughly wash the spray mixture from the outside of spray tank and the boom.

#### Rotational Crop Restrictions:

When tank mixing with other herbicides, follow the most restrictive crop rotation guidelines on the label of each product used. The following rotational crops may be planted as indicated:

Rotational Crop (1)	Timing or Interval
corn	Anytime - 0 months after application
wheat	4 months after application
alfalfa (2), barley, clover (2), dry beans (2, 3), lespedeza (2), oats, pea (4), popcorn, rye, soybean (2), vetch (2), wild rice	Spring Following Application
sorghum	12 months
potatoes, sunflower, sweet corn (5), tobacco	18 months
canola, sugar Beets, and all other crops	26 months (6)

Numbers within parentheses (-) in the table refer to Specific Rotational Crop Requirements below:

- (1) If crop treated with Staunch II is lost, corn may be replanted immediately. Do not make a second application of Staunch II.
- (2) When annual rainfall and/or irrigation is less than 15 inches on soils with less than 2% organic matter, this crop should not be planted until 18 months after treatment.
- (3) Dry beans include: adzuki, kidney, lima (dry), navy, and pinto.
- (4) Pea includes: blackeyed, chick, cow, Crowder, field, pigeon, and Southern.
- (5) Certain sweet corn varieties may be planted 10.5 months following application. Please refer to the separate Staunch II product bulletin for a list of these varieties.
- (6) Rotation to canola, sugar Beets, and all other crops requires a 26-month rotation interval and a successful field bioassay.

**Field Bioassay Instructions:** In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample field conditions such as soil texture, soil pH, drainage, and any other variable that could affect the seed bed of the new crop. Field bioassay at any time between harvest of the treated crop and the planting of the rotational crop. Observe the test crop for herbicidal activity, such as poor stand (effect on seed germination) chlorosis (yellowing), and necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the test rotational crop; plant only a labeled crop or crop listed in the table above for which the rotational interval has clearly been met.

#### Weed Resistance Management Guidelines

This product contains acetochlor, a Group 15 herbicide, flumetsulam, a Group 2 herbicide, and clopyralid, a Group 4 herbicide. Any weed population can contain plants

naturally resistant to Groups 15, 2, or 4 herbicides but may be effectively managed utilizing another herbicide from a different Group and/or by using cultural or mechanical practices. However, any herbicide mode of action classification by itself may not adequately address specific weeds that are resistant to specific herbicides. Consult your state cooperative extension service, professional consultants, or other qualified authorities to determine appropriate actions for treating specific resistant weeds.

### Best Management Practices

Proactively implementing diversified weed control strategies to minimize selection for weed populations resistant to one or more herbicides is recommended. A diversified weed management program may include the use of multiple herbicides with different modes of action and overlapping weed spectrum with or without tillage operations and/or other cultural practices. Research has demonstrated that using full labeled rates and following directions for use is important to delay the selection for resistance. Scouting after a herbicide application is important because it can facilitate the early identification of weed shifts and/or weed resistance and thus provide direction on future weed management practices. One of the best ways to contain resistant populations is to implement measures to avoid allowing weeds to reproduce by seed or to proliferate vegetatively. Cleaning equipment between sites and avoiding movement of plant material between sites will greatly aid in retarding the spread of resistant weed seeds.

### General principles of herbicide resistance management

1. Apply integrated weed management practices. Use multiple herbicide modes-of-action with overlapping weed spectrums in rotation, sequences, or mixtures.
2. Use the full specified herbicide rate and proper application timing for the hardest to control weed species present in the field.
3. Scout fields after herbicide application to ensure control has been achieved. Avoid allowing weeds to reproduce by seed or to proliferate vegetatively.
4. Monitor site and clean equipment between sites.

### For annual cropping situations also consider the following:

- Start with a clean field and control weeds early by using a burndown treatment or tillage in combination with a preemergence residual herbicide as appropriate.
- Use cultural practices such as cultivation and crop rotation, where appropriate.
- Use good agronomic principles that enhance crop competitiveness
- Use new commercial seed that is as free of weed seed as possible.

**Report any incidence of repeated non-performance of this product on a particular weed to your local retailer, or county extension agent.**

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## Application Directions - Corn

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### Carriers and Spray Volume

**Liquids:** Either water or liquid fertilizers such as solutions, slurries, or suspensions may be used as liquid carriers. Do not use liquid fertilizers as the carrier for applications of Staunch II after the crop has emerged or crop injury may occur. If liquid fertilizers are used, a physical compatibility with these must be

done **before combining** in the spray tank. See Appendix I for details of the compatibility testing procedure. Even if Staunch II is physically compatible with a fluid fertilizer, constant agitation is necessary to maintain a uniform mixture during application.

Apply in a minimum broadcast spray volume of 10 gallons per acre using boom equipment for ground applications. Use low pressure nozzles designed for application of herbicides. Use sufficient operating pressure to produce the desired spray pattern for the nozzle (15 to 40 psi) and follow manufacturer's instructions for nozzle spacing and operating height to ensure uniform spray distribution at the soil surface. Use 50-mesh or coarser screens, if needed.

**Dry Bulk Fertilizer:** Staunch II may be impregnated on dry bulk fertilizer and applied as the fertilizer is spread. Use at least 200 lb of dry bulk fertilizer per acre. See Appendix II for more details including which fertilizers are compatible.

### Adding to Spray Tank

The spray tank must be clean, thoroughly rinsed, and decontaminated before adding either Staunch II alone or in tank mix combinations. If water is used as the carrier, use clean water. All return lines to the spray tank must discharge below the liquid level.

**Used Alone:** If Staunch II is used alone, add the specified amount to the spray tank before the tank is half filled, then add the rest of the water or fluid fertilizer. Provide sufficient agitation to ensure thorough mixing and to maintain a uniform spray mixture during application.

**Tank Mixed:** If a tank mixture is used, it is recommended that a small-scale test of compatibility be done before actual tank mixing. See Appendix I for details on the procedure for such a test.

### Water Carrier

Allow time for complete dispersion/mixing before adding another product to the spray mixture. Add products to the tank mixture in the following order:

- Compatibility agent if needed
- To start, add one-half of the required amount of water to the spray tank. Begin agitation.
- Products in water soluble packaging. Important: Allow time for complete dispersion.
- Wettable powders or dry flowables (slurry if specified by tank mix product label)
- Liquid flowables
- Staunch II or other emulsifiable concentrates
- Suspension concentrates
- Urea ammonium nitrate (UAN) or ammonium sulphate (AMS), if required
- Soluble liquids such as glyphosate, paraquat, 2,4-D amine
- Crop oil concentrate (COC) or nonionic surfactant (NIS), if required
- Finish filling spray tank to required spray volume

### Liquid Fertilizer Carrier

Allow time for complete dispersion/mixing before adding another product to the spray mixture. Add products to the tank mixture in the following order:

- To start, add one-half of the required amount of liquid fertilizer to the spray tank. Begin agitation.
- Compatibility agent if needed
- Products in water soluble packaging. Important: Products in water soluble packaging must be premixed with water (slurried) prior to addition to the spray tank.

- Wettable powders or dry flowables (slurry if specified by tank mix product label)
- Liquid flowables
- Staunch II or other emulsifiable concentrates
- Suspension concentrates
- Ammonium sulphate (AMS), if tank mixing with glyphosate.
- Soluble liquids such as glyphosate, paraquat, 2,4-D amine
- Crop oil concentrate (COC) or nonionic surfactant (NIS), if required
- Finish filling spray tank to required spray volume.

**Note:** For all tank mixtures, maintain agitation during mixing and throughout application to ensure spray mixture remains uniformly suspended.

## Application Timing and Methods

For the optimum period of effective weed control during the time most critical to corn production, preplant and preemergence applications of Staunch II herbicide should occur as close as possible to planting and prior to weed emergence. Postemergence applications may be made from prior to weed emergence up to 1 to 2 inch weeds. If weeds are emerged, apply in tank mix combination with a glyphosate product, such as Durango DMA, or a glufosinate product, such as Liberty, to control emerged weeds in herbicide tolerant corn.

**Fall and Spring Early Preplant Applications:** Staunch II herbicide may be applied in the fall or early spring at 2.0-3.0 pints per acre, as follows:

- **Fall Applications:** Following soybean harvest, apply to soybean stubble after October 15, when the sustained soil temperature at 4-inch depth is less than 50 degrees F, but before ground freezes. Use on medium and fine textured soils with greater than 2.5% organic matter. Only corn may be planted the following spring. Ground may be tilled before or after application. Do not exceed 2-inch incorporation depth if tilled after application. If a spring application is also made, the total rate of the fall plus spring applications must not exceed 3.5 pints per acre.
- **Spring Early Preplant Applications:** On medium and fine textured soils, Staunch II may be applied 21 or more days prior to planting. If the application is made less than 21 days prior to planting, please refer to the use rate table below for specific product rates.

**Preplant Incorporation:** Staunch II and certain tank mixes may be mechanically incorporated into the top 2 inches of the soil by mechanical means such as field cultivators, discs, or spring tooth harrows any time up to 14 days before planting. Improper incorporation, excessive crop residues, or poor soil tillage may result in erratic, streaked, or otherwise unsatisfactory weed control. Do not mix Staunch II deeper than 2 inches into the soil and avoid moving or shaping soil after incorporation.

**Preemergence Surface:** Staunch II and certain tank mixes may be applied to the soil surface as a broadcast or banded application. Precipitation or sprinkler irrigation of at least 0.25 inch is required to bring Staunch II into contact with germinating seeds. If rain or sprinkler irrigation does not occur within 7 days after application, weed control may be improved by using a rotary hoe or similar equipment to incorporate the

herbicide. Incorporation equipment should be run at a shallow depth to avoid disturbance of germinating corn seed. Erratic weed control resulting from exposure of untreated soil may occur if surface soil is moved or reshaped after incorporation.

**Postplant-Preemergence:** Staunch II may be applied after planting but prior to corn emergence. If rain or sprinkler irrigation does not occur within 7 days after application, weed control may be improved by using a rotary hoe or similar equipment to shallowly incorporate the herbicide. Incorporation equipment should be run at a shallow depth to prevent disturbance of the germinating corn. Erratic weed control resulting from exposure of untreated soil may occur if surface soil is moved or reshaped during incorporation.

**Early Postemergence:** Staunch II may be applied early postemergence to corn up to 11 inches tall. Applications may be made prior to or after weed emergence but if weeds are emerged, apply in tank mix combination with a glyphosate product, such as Durango DMA, or a glufosinate product, such as Liberty, to control emerged weeds in herbicide tolerant corn. Read and follow restrictions and directions on tank mix product labels. Staunch II will provide limited activity on emerged susceptible broadleaf weeds up to 2 inches tall but will not control emerged grass weeds present at application listed in the Target Weeds Controlled or Partially Controlled section of this label. If grass and broadleaf weeds have emerged, best results will be achieved by tank mixing a glyphosate product, such as Durango DMA, or a glufosinate product, such as Liberty, with Staunch II. Staunch II will provide soil residual control of the grass and broadleaf weeds listed in the Target Weeds Controlled or Partially Controlled section of this label.

**Note: Postemergence applications of Staunch II tank mixed with glyphosate may be applied only on corn varieties designated as containing the glyphosate tolerant gene. Postemergence applications of Staunch II tank mixed with glufosinate may be applied only on corn varieties designated as containing the glufosinate tolerant gene.**

**Sprinkler Irrigation: Do not apply Staunch II by sprinkler irrigation.** Use a sprinkler system only to incorporate Staunch II after application. After Staunch II has been applied, a sprinkler irrigation system set to deliver 0.25 to 0.75 inch of water per acre may be used to incorporate the product. Using more than 0.75 inch of water could result in reduced performance. On sandy soil low in organic matter, use no more than 0.5 inch of water. Do not use flood irrigation to apply or incorporate Staunch II.

## Cultivation

Cultivation should be delayed as long as possible. If weeds develop, a shallow cultivation or rotary hoeing will generally result in improved weed control. If Staunch II was incorporated, cultivate to a depth of less than half the depth of incorporation.

If cultivation is necessary due to soil crusting or compaction, adjust equipment to run shallow and minimize soil movement. This will decrease the possibility of diluting or moving the herbicide from the weed control zone.



## Soil Texture and Organic Matter

The use rate of Staunch II is determined by a combination of two soil properties, textural class and organic matter content, which must be determined prior to application. Different soil types are grouped into three textural classes (coarse, medium, and fine), as outlined in Table 1. Soil texture and organic matter content may be determined from soil survey information and/or by laboratory analyses and must be known in order to select the appropriate Staunch II rate from Table 2.

**Table 1.** Soil Texture Groupings for Staunch II Use Rate Selection.

Coarse	Medium	Fine
Sand Loamy Sand Sandy Loam	Loam Silt Loam Silt Sandy Clay Loam	Silty Clay Loam Clay Loam Sandy Clay Silty Clay Clay

## Use Rates

Staunch II may be used in conventional, reduced and no-till systems. Optimal weed control will be obtained when applications are made as close as possible to planting but before weeds emerge. However, applications may be made from 30 days prior to planting through 11-inch tall corn. In reduced or no-till systems, it is recommended that a burndown herbicide, such as glyphosate (Durango DMA), glufosinate (Liberty), or paraquat (Gramoxone), and/or 2,4-D be tank mixed with Staunch II, if emerged weeds are present at application. Staunch II may be used at rates from 1.5 to 3.0 pints per acre. Use rates in the higher end of the rate range for soil type (Table 2) for longer residual activity. Apply 2.0-3.0 pints per acre in fall or spring early preplant applications.

**Table 2.** Use Rates for Staunch II by Soil Texture and Organic Matter Content

Soil Texture	Soil Organic Matter Content	
	Less Than 3%	3% or Greater
	Pints/Acre	Pints/Acre
Coarse	1.5 – 2.0	1.5 – 2.0
Medium	1.5 – 2.5	1.75 – 3.0
Fine	2.0 – 3.0	2.0 – 3.0

**Table 3.** Weeds Controlled or Partially Controlled by Staunch II at Specified Use Rates.

Staunch II will provide activity on the following weeds, including glyphosate-, triazine-, and ALS- resistant biotypes, which will allow for optimal timing of an in-crop postemergence application of glyphosate or glufosinate in herbicide tolerant corn. Partially controlled weeds will exhibit reduced height, vigor, and/or population density.

Grasses and Sedges	Broadleaves	
barnyardgrass	amaranth, Palmer	morningglory, tall
crabgrass species	beggarweed, Florida	mustard, wild
crowfootgrass	buckwheat, wild	nightshade species
cupgrass, prairie	carpetweed	pigweed, redroot
cupgrass, southwestern	chickweed, common	pigweed, smooth
cupgrass, woolly	clover, red	poisetia, wild
foxtail, bristly	cocklebur, common	puncturevine
foxtail, giant	galinsoga	purslane, common
foxtail, green	henbit	pusley, Florida
foxtail, robust (purple, white)	horseweed (marestail)	ragweed, common
foxtail, yellow	jimsonweed	ragweed, giant
goosegrass	kochia	shepherd's purse
johnsongrass, seedling	ladysthumb	sicklepod
millet, foxtail	lambsquarters, common	sida, prickly
millet, wild proso	mallow, Venice	smartweed, Pennsylvania
nutsedge, yellow	morningglory, ivyleaf	spurge, nodding

**Table 3. Weeds Controlled or Partially Controlled by Staunch II at Specified Use Rates. (Cont.)**

Grasses and Sedges	Broadleaves
panicum, browntop	spurge, prostrate
panicum, fall	spurge, spotted
panicum, Texas	sunflower, common
rice, red	thistle, Canada (1)
sandbur, field	velvetleaf
shattercane	waterhemp species
signalgrass, broadleaf	wormwood, biennial
sprangletop, red	
witchgrass	

(1) Burndown activity of Canada thistle in minimum and no-till corn only.

Staunch II will provide limited activity on emerged susceptible broadleaf weeds up to 2 inches tall but will not control emerged grass weeds present at application. If grass and broadleaf weeds have emerged, best results will be achieved by tank mixing Staunch II with a glyphosate product, such as Durango DMA, or a glufosinate product, such as Liberty. Staunch II will provide soil residual control or suppression of the grasses and broadleaf weeds listed in Table 3.

### **Tank Mix Combinations**

Additional weeds may be controlled with tank mixtures. Tank mix combinations may be used in conventional, reduced, or no-till systems and may be applied by the same methods and at the same application timing as Staunch II herbicide unless otherwise specified in the tank mix product label.

If emerged grass and broadleaf weeds are present at the time of application, best results will be achieved by tank mixing the appropriate rate of herbicides, such as glyphosate (Durango DMA), paraquat (Gramoxone), and/or 2, 4-D with Staunch II. **Do not** apply Staunch II postemergence in tank mixtures with Basagran, Laddock, or Lightning herbicides, as severe crop injury may result.

Staunch II may be tank mixed with any other herbicide labeled for use on corn provided the compatibility of the tank mix is verified by a jar test and tank mixing with Staunch II is not prohibited by the label of the tank mix product. The compatibility of a tank mixture can be determined by mixing the ingredients of the herbicide mixture in their relative proportions in a glass jar as described for fluid fertilizer mixtures in Appendix I by substituting water for fluid fertilizer. Refer to the label of the tank mix product for applicable use directions, precautions and limitations, including additional weeds controlled. Do not exceed application rates on the respective product labels. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.

### **Use of Spray Adjuvants**

Staunch II is a preemergence herbicide for which spray adjuvants have little or no influence on performance. However, several herbicides used in tank mixtures with Staunch II require use of adjuvants to aid in the control of emerged weeds. Use only those adjuvants specified on the label of the tank mix product and approved for use in growing crops. Surfactants and/or low rate liquid fertilizers (28%, 30%, or 32% UAN) or ammonium sulfate (AMS) adjuvants may be used in tank mixtures with Staunch II applied preplant or preemergence to the crop. Do not use liquid fertilizers as the carrier for applications of Staunch II after the crop has emerged or crop injury may occur.

### **Appendix I**

#### **Procedure for Testing the Compatibility of Staunch II and Tank Mixes with Fluid Fertilizers**

Since fluid fertilizers vary, the following procedure is suggested for determining whether Staunch II herbicide may be combined with a specific fluid fertilizer for spray tank application.

#### **Materials Needed:**

1. Staunch II and any tank mix products
2. Fluid fertilizer to be used
3. Adjuvant for fertilizer tank mix: Use any adjuvant cleared for use on growing crops under 40 CFR 180.1001 to improve the compatibility of Staunch II with fluid fertilizers. The adjuvant that provides the best emulsification depends upon the specific fertilizer under consideration.
4. Two 1 quart, wide mouth glass jars with lid or stopper
5. Measuring spoons (a 25 ml pipette or graduated cylinder provides more accurate measurement)
6. Measuring cup, 8 oz (257 ml)

#### **Procedure:**

1. Pour a pint (about 473 ml) of the fluid fertilizer into each of the quart jars.  
The order of addition is wettable powders first with mixing, followed by flowables with mixing and the ECs last. The rate
2. Add Staunch II and any tank mix combination to the jars.

of wettable powders and dry flowables is 1 1/2 teaspoon per pound of product per acre to be applied. ECs should be added at the rate of 1/2 teaspoon for each pint per acre to be applied. Premixing the wettable powders in 1 oz of water before adding to the pint of fluid fertilizer will improve the compatibility of the final mixture.

3. Add 1/2 teaspoon (2 ml) adjuvant to one of the jars, label it as "with," and mix. The rate of 1/2 teaspoon per pint is equal to 3 pints of adjuvant per 100 gallons of fluid fertilizer.
4. Close both jars with lids or stoppers and mix the contents by turning the jars upside down 10 times.
5. Inspect the surface and body of the mixtures:
  - a. Immediately after completing the jar inversions
  - b. After allowing the jars to stand undisturbed for 30 minutes
  - c. And then again after turning the jars upside down 10 times after the 30 minute inspection

#### Evaluation:

If either mixture remains uniform for 30 minutes, the combination may be used. Should either mixture separate after 30 minutes, but readily remix uniformly with 10 jar inversions, the mixture can be used if adequate agitation is maintained in the tank. If the mixture with adjuvant is satisfactory but the one without adjuvant is not, be sure to use the adjuvant in the spray tank. Add the adjuvant first at a rate of 3 pints per 100 gallons of fluid fertilizer. Foaming may be minimized by using moderate agitation. **If non-dispersible oil, sludge, or clumps of solids form in the mixtures, the combination should not be used.**

## Appendix II

### Dry Bulk Fertilizer Impregnation

All individual state regulations relating to dry bulk fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling Staunch II fertilizer mixtures.

The following table provides a reference to determine the amount of Staunch II to be mixed per ton of dry bulk fertilizer for a range of herbicide rates.

Fertilizer Rate (lb/acre)	Acres Covered (per ton)	Staunch II Rate (pints/acre)					
		1.5	1.75	2.0	2.5	2.75	3.0
		Pints Herbicide/Ton Fertilizer					
200	10	15	17.5	20	25	27.5	30
300	6.7	10	11.7	13.4	16.8	18.4	20.1
400	5	7.5	8.8	10	12.5	13.8	15
500	4	6	7	8	10	11	12
600	3.3	5	5.8	6.6	8.3	9.1	9.9
700	2.9	4.4	5.1	5.8	7.3	8	8.7

To determine the amount of Staunch II needed for other rates of fertilizer, use this formula:

$$\frac{\text{Staunch II (pints/acre)}}{\text{Pounds of fertilizer/acre}} \times 2000 = \frac{\text{Pints of Staunch II}}{\text{per ton of fertilizer}}$$

When applying Staunch II alone or in tank mixes with dry bulk fertilizers, follow all directions for use and precautions on the respective tank mix product labels regarding use rates, soil texture, application methods, and rotational restrictions. Use a minimum of 200 lb of dry bulk fertilizer per acre.

### Approved Dry Fertilizer Ingredients for Use with Staunch II <sup>1</sup>

Fertilizer	N	P	K
Ammonium Phosphate-Sulfate	16	20	0
Ammonium Sulfate	21	0	0
Diammonium Phosphate	18	46	0
Monoammonium Phosphate	11	56	0
Potassium Chloride	0	0	60
Potassium Sulfate	0	0	52
Urea <sup>2</sup>	45	0	0

<sup>1</sup> Do not impregnate on fertilizers containing ammonium nitrate, potassium nitrate, or sodium nitrate.

<sup>2</sup> Some ureas may be phytotoxic when high rates are applied to corn. Use only urea rates known to be safe for corn application.

For impregnating pesticides on dry fertilizers, use suitable mixers equipped with suitable spraying equipment. The spray nozzles should be positioned inside the mixer to provide uniform spray coverage of the tumbling fertilizer. Staunch II should be sprayed uniformly onto the fertilizer using a fine spray pattern. Tank mix components may be applied as separate ingredients with powders and dry flowables added first or they may be mixed in a slurry in the proper ratio and added jointly. Staunch II may also be impregnated on dry bulk fertilizer in the field while the fertilizer is being spread using a pneumatic applicator equipped to impregnate herbicides.

If the herbicide/fertilizer mixture is too wet, use of a drying agent is required to provide a dry, free-flowing mixture. For mixtures to be used in spinning-disc applicators, Micro-Cel E calcium silicate powder (Manville, Filtration & Minerals) is recommended for use as a drying agent. Mixtures to be used in pneumatic applicators should use Micro-Cel E or Agsorb 16/30 RVM-MS granular clay (Oil-Dri Corporation). The drying agents should be added separately and uniformly to the prepared pesticide/fertilizer mixture, in a quantity that is sufficient to provide a suitable free-flowing mixture. Generally, less than 2% Micro-Cel E or 5% Agsorb 16/30 RVM-MS by weight is required.

**Precaution:** To avoid potential for explosion, do not impregnate Staunch II on ammonium sorbate nitrate, potassium nitrate, or sodium nitrate fertilizer or fertilizer blends. Do not impregnate on a single (0-20-0) or triple (0-46-0) super phosphate. Do not attempt to impregnate Staunch II on agricultural limestone as the herbicide will not be adequately absorbed.

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If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

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## Inherent Risks of Use

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It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended

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To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Tenkoz's election, one of the following:

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2. Replacement of amount of product used.

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