



U.S. ENVIRONMENTAL PROTECTION AGENCY
 Office of Pesticide Programs
 Antimicrobials Division (7510P)
 1200 Pennsylvania Ave., N.W.
 Washington, D.C. 20460

EPA Reg. Number:

62719-773

Date of Issuance:

9/13/22

NOTICE OF PESTICIDE:

Registration
 Reregistration
 (under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Vindicate NXTGEN

Name and Address of Registrant (include ZIP Code):

Corteva Agriscience
 Electronic Transmittal: [brian.bret@corteva.com]

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

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

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

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

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.
2. Make the following label changes before you release the product for shipment:
 - Revise the EPA Registration Number to read, "EPA Reg. No. 62719-773."

Signature of Approving Official:

Kathryn V. Montague
 Senior Regulatory Advisor
 Regulatory Management Branch 1
 Antimicrobials Division, 7510M
 US EPA

Date:

9/13/22

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

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the Agency. See FIFRA section 2(p)(2). If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process, FIFRA section 12(a)(1)(B). Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Assurance.

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

- Basic CSF dated 06/07/2022
- Alternate CSFs 1 – 6, all dated 06/07/2022

If you have any questions, please contact Kathryn Montague by phone at 202-566-0681, or via email at montague.kathryn@epa.gov.

Enclosure

(Base label for bulk or tote):

Vindicate NXTGEN™

NITROGEN STABILIZER OPTINYTE™ TECHNOLOGY

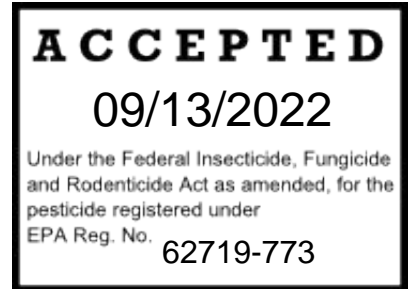
Use to delay nitrification of ammoniacal and urea nitrogen fertilizer compositions in the soil by controlling the nitrification process.

Active Ingredient:	
nitrapyrin: 2-chloro-6-(trichloromethyl) pyridine	25.97%
Other Ingredients	74.03%
Total	100.00%

Contains 2.50 lb of active ingredient per gallon.

Keep Out of Reach of Children

CAUTION



Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing. 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.

Personal Protective Equipment (PPE)

Mixers, loaders, applicators and other handlers must wear:

- Coveralls worn over short-sleeved shirt and short pants
- Chemical-resistant gloves made of barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils, or Viton ≥14 mils
- Chemical-resistant footwear plus socks
- When mixing and loading, or cleaning equipment, wear a chemical-resistant apron

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.

User Safety Recommendations

Users should:

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

First Aid

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

If 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.

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 for emergency medical treatment information.

Environmental Hazards

This pesticide is toxic to oysters/shrimp. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply directly to water, 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 wash waters or rinsate.

This product may contaminate water through runoff. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product.

A level well-maintained vegetative buffer strip between areas to which this product is applied and surface water such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Non-target Organism Advisory Statement

It is unclear how this product may impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated area. Protect the forage and habitat of non-target organisms by minimizing spray drift. For further guidance and instructions on how to minimize spray drift, refer to the Spray Drift Advisories section of this label.

Storage and Disposal

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

Pesticide Storage: Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

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

Nonrefillable containers 5 gallons or less:

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

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

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. 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. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by

incineration, or by other procedures allowed by state and local authorities.

Nonrefillable containers larger than 5 gallons:

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

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Mix or shake well before use.

Refer to inside of label booklet for additional precautionary information including First Aid and Directions for Use.

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

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

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

EPA Reg. No. 62719-xxx

EPA Est. _____

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**Produced for
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268**

NET CONTENTS _____

(Booklet cover / Base label for small containers):

Vindicate NXTGEN™

NITROGEN STABILIZER OPTINYTE™ TECHNOLOGY

Use to delay nitrification of ammoniacal and urea nitrogen fertilizer compositions in the soil by controlling the nitrification process.

Active Ingredient:

nitrapyrin: 2-chloro-6-(trichloromethyl) pyridine	25.97%
Other Ingredients	74.03%
Total	100.00%

Contains 2.50 lb of active ingredient per gallon.

Keep Out of Reach of Children

CAUTION

Agricultural Use Requirements

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

Mix or shake well before use.

Refer to inside of label booklet for additional precautionary information including First Aid and Directions for Use.

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

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Indianapolis, IN 46268**

NET CONTENTS _____

(Booklet page 1 through end):

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

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Personal Protective Equipment (PPE)

Mixers, loaders, applicators and other handlers must wear:

- Coveralls worn over short-sleeved shirt and short pants
- Chemical-resistant gloves made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or Viton ≥ 14 mils
- Chemical-resistant footwear plus socks
- When mixing and loading, or cleaning equipment, wear a chemical-resistant apron

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.

User Safety Recommendations

Users should:

- Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 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.

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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 for emergency medical treatment information.

Environmental Hazards

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This product may contaminate water through runoff. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level well-maintained vegetative buffer strip between areas to which this product is applied and surface water such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Non-target Organism Advisory Statement

It is unclear how this product may impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated area. Protect the forage and habitat of non-target organisms by minimizing spray drift. For further guidance and instructions on how to minimize spray drift, refer to the Spray Drift Advisories section of this label.

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, restricted-entry interval, and notification to workers (as applicable). 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 24 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.

For early entry into 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, wear:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or Viton ≥ 14 mils
- Chemical-resistant footwear plus socks
- Protective eyewear

Storage and Disposal

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

Pesticide Storage: Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

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

Nonrefillable containers 5 gallons or less:

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

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for

10 seconds after the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. 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. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Nonrefillable containers larger than 5 gallons:

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

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Product Information

Vindicate NXTGEN nitrogen stabilizer is a water-based microencapsulated formulation of nitrapyrin that may be used in the application of ammoniacal dry fertilizers (such as urea, MAP, DAP), aqua ammonia, other liquid ammoniacal or urea nitrogen fertilizer compositions (such as 28%, 30% or 32% UAN), or manure. This product is not a substitute for fertilizer.

Incorporation may occur at any time up to 10 days after application and may be either by mechanical means or by moisture (rainfall or overhead irrigation). For moisture incorporation, a minimum of 0.5 inch of moisture is necessary. If 0.5 inch of moisture does not occur within the 10-day window, incorporate mechanically with light tillage.

This product is no more corrosive to standard liquid fertilizer equipment than liquid fertilizer alone or liquid manure alone.

Restrictions

Rotational Crop Restrictions: All crops that are not already registered for nitrapyrin use, except Crop Subgroup 1B Root Vegetables**, may be planted 30 days or more after the last application of this product. Crop Subgroup 1B Root Vegetables may be planted 12 months or more after the last application.

** beet, garden; burdock, edible; carrot; celeriac; chervil, turnip-rooted; chicory; ginseng; horseradish; parsley, turnip-rooted; parsnip; radish; radish, oriental (daikon); rutabaga; salsify; salsify, black; salsify, Spanish; skirret; turnip

Spray Drift Advisories

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size – Ground Boom

- Volume – Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Controlling Droplet Size – Aircraft

Adjust Nozzles – Follow nozzle manufacturer's recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

BOOM HEIGHT – Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, keep the boom level with the crop and minimize bounce.

RELEASE HEIGHT – Aircraft

Higher release heights increase the potential for spray drift. When applying aurally to crops, do not release the spray at a height greater than 10 feet above the crop canopy, unless a greater application height is necessary for pilot safety.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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. Avoid applications during temperature inversions.

WIND

- Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.
- Applicators must be familiar with local wind patterns and terrain that could affect spray drift.

Application Directions

Aerial Application: This product may be applied by aircraft in a liquid carrier such as liquid fertilizer or pesticides, or as impregnated on a granular fertilizer. See Spray Drift Advisories for information to reduce likelihood of drift on other crops or non-target areas.

Ground Application: This product may be applied through ground application equipment that may be used in the application of ammoniacal dry or liquid fertilizers, or manure.

Chemigation: This product may be applied through properly equipped chemigation systems. Unless otherwise indicated in specific use directions, the application rates for chemigation are the same as those specified for broadcast applications.

Directions for Chemigation: This product may be applied through the following irrigation systems: center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, micro sprinkler, drip, hand move, flood (basin); furrow; border or drip (trickle) irrigation and system(s).

Chemigation Equipment Preparation: Thoroughly clean the chemigation system and tank of any fertilizer or chemical residues, and dispose of the residues according to state and federal laws. Flush the injection system with soap and/or a cleaning agent and water. Determine the amount of this product needed to cover the desired acreage. Mix according to instructions in the Mixing Directions section and bring mixture to desired volume. Maintain continuous agitation during mixing and throughout the application period.

Chemigation Equipment Calibration: In order to calibrate the irrigation system and injector to apply the mixture containing this product, calculate or determine the following.

- Calculate the number of acres to be irrigated by the system.
- Calculate the amount of this product required and other crop inputs such as fertilizers, insecticides, or herbicides.
- Determine the irrigation rate and determine the number of minutes for the system to cover the intended treatment area.
- Divide the total gallons of mixture needed by the number of minutes (minus time to flush out) to cover the treatment area. The following value equals the gallons per minute output that the injector or educator must deliver. Convert the gallons per minute to milliliters or ounces per minute, if needed.
- Calibrate the injector pump with the system in operation at the desired irrigation rate. It is suggested that the timed output of the injector pump be checked at least twice before operation and the system monitored during operation.

Chemigation Equipment Requirements

- The system must contain an air gap, an approved backflow prevention device, a functional check valve, vacuum relief valve (including inspection port), and/or low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow. Refer to the American Society of Agricultural Engineer's Engineering Practice 409 for more information or state specific regulations.
- The mixture injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The mixture injection pipeline must also contain a 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 system must contain functional interlocking controls to automatically shut off the mixture injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch that will stop the water pump when the water pressure decreases to the point where the mixture distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with the mixture and capable of being fitted with a system interlock.

- To ensure uniform mixing into the water line, inject the mixture through a nozzle placed in the fertilizer injection port or just ahead of an elbow or tee in the irrigation line so that the turbulence will assist in mixing. The injection point must be located after all back-flow prevention devices on the water line.
- The tank holding the mixture must be free of rust, sediment, and foreign material and equipped with an in-line strainer situated between the tank and the injector point.

Chemigation Operation: Start the water pump and irrigation system and let the system achieve the desired pressure and speed before starting the injector. Check for leaks and uniformity and make repairs before any chemigation takes place. Start the injector system and calibrate according to manufacturer's specifications. This procedure is necessary to deliver the desired rate per acre in a uniform manner. When the application is finished, flush and clean the entire irrigation and injector system prior to shutting down the system to remove any Vindicate NXTGEN, fungicide, herbicide, insecticide, or fertilizer residue from the system.

Chemigation Precautions

- Crop injury, lack of effectiveness, or illegal pesticide residues in crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact state extension service specialist, equipment manufacturers, or other experts.
- A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall operate the system and make necessary adjustments should the need arise and continuously monitor the injection.

Chemigation Restrictions

- The mixture pipeline must contain a functional, automatic quick-closing check valve to prevent the flow fluid back toward the injection
- The mixture injection pipeline must contain a 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 system must contain functional interlocking controls to automatically shut off the mixture injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where the mixture distribution is adversely affected.
- Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with the mixture and capable of being fitted with a system interlock.
- Do not allow irrigation water to collect or run off and pose a hazard to livestock, wells, or adjoining crops.
- Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units.
- Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

Mixing Directions

Mix or shake well before use.

This product may be applied alone or in combination with dry fertilizers (such as urea, MAP, or DAP), liquid fertilizers (such as UAN, aqua ammonia, other liquid ammoniacal, or urea nitrogen fertilizers), liquid manures, fungicides, insecticides, herbicides, and/or water at the use rates specified for each crop.

Liquid Fertilizers

This product may be applied with liquid fertilizers such as UAN or aqua ammonia or other liquid ammoniacal or urea nitrogen fertilizers. This product can be added to urea ammonium nitrate liquid fertilizer without a compatibility agent, although when mixing this product with fertilizer plus herbicides, fungicides, or insecticides, a jar test may indicate that a compatibility agent is needed.

There are two methods which may be used to create a stable emulsion with this product plus a compatibility agent in liquid fertilizer:

Premix Method: The compatibility agent and this product may be mixed together in a separate container and then added to the liquid fertilizer. Continuously agitate as the mixture is added to the fertilizer.

Sequential Method: The compatibility agent may be added to the fertilizer and thoroughly agitated. While the agitation continues, the required amount of this product may be added to the tank.

Most phosphate ester types of compatibility agents are suitable for use in these mixtures. Follow the label directions for the compatibility agent to determine rates and any use precautions.

Liquid Manure

This product may be applied with liquid manure. Apply to the field or directly to the manure immediately prior to or during application. Ensure that this product is uniformly blended with the manure prior to application or properly injected with the manure application equipment to deliver the targeted rate per acre. The best practice for fertilization using manure is to inject the liquid manure into the soil ensuring soil coverage or surface application followed by immediate incorporation. Check local laws and regulations on acceptable manure practices and for the area where manure is to be applied.

Granular Ammonium and Urea

This product may be applied by impregnation on urea, most dry ammoniacal fertilizers, or fertilizer blends containing ammoniacal fertilizers (MAP, DAP, or others). Uniform impregnation on fertilizer and uniform application in the field is necessary to ensure optimum results.

Various types of equipment can be used to impregnate this product onto dry fertilizers, including vertical and horizontal mixers. Once impregnated, fertilizer may be applied with either spinner, airflow, or other suitable equipment.

Use a minimum of 100 lb of dry fertilizer per acre. With lower rates of fertilizer (higher concentrations of this product), the fertilizer may not readily absorb all of the liquid. For a suitable free-flowing mixture, add a drying agent to the mixture. Use a minimum of 1 lb of drying agent per pint of this product unless experience indicates a different amount works well. Do not apply more than 1 lb active ingredient (ai) nitrapyrin per acre per year.

Apply bulk fertilizers impregnated with this product within 24 hours of impregnation for optimal results. Do not store the impregnated fertilizer. Following all individual state regulations, including those related to dry bulk blending registration, labeling, and application, is the responsibility of the individual and/or company selling mixtures of this product and fertilizer.

Do not mix seed with dry fertilizers impregnated with this product.

Tank Mixing

This product may also be applied in tank mixtures with herbicides, fungicides, or insecticides registered for use on the labeled crop. The tank mixes may be in water or in most urea-ammonium nitrate solutions, N-P-K solutions, slurries, or suspensions. Check the physical compatibility of tank mixtures as indicated below before mixing in the tank. Maintain constant agitation during both the mixing and application processes to ensure uniform spray mixture. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Tank Mix Compatibility Test: To test the compatibility of this product with liquid fertilizers and/or herbicide, fungicide, or insecticide mixes, add proportionate amounts of each ingredient to a small jar, then cap, shake, and let stand for 15 minutes. Formation of precipitates or layers that do not readily redispense indicates an incompatible mixture that must not be used.

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, water, or other urea-ammonium nitrate solutions. Begin agitation.
- Add this product (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 recommended by tank-mix product label).
- Liquid flowables.
- Emulsifiable concentrates.
- Suspension concentrates.
- Soluble liquids.
- Add other nutrients.
- Finish filling spray tank to required spray volume.

Note: For all tank-mixtures, maintain agitation during mixing and throughout application to ensure that the spray mixture remains uniformly suspended. If spray mixture is allowed to settle at any time, thorough agitation is required to re-suspend the mixture before spraying is resumed.

Use Sites

Brassica Head and Stem Vegetables (Crop Group 5-16)¹

¹ Brassica head and stem vegetables (Crop Group 5-16) including broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage (napa), including cultivars, varieties, and/or hybrids of these.

Preplant, At Plant, or Preemergence Applications

Use this product at the rate of 24 fl oz (0.5 lb ai) per acre applied prior to planting or at a preemergence timing.

Postplant or Transplant Applications: Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre from crop emergence or transplant up to 30 days prior to harvest as a sidedress, soil-injection, or chemigation application.

The rates specified are on a broadcast per acre basis. For application methods other than broadcast, per-acre rates must be concentrated in the treatment area such as the bed or band. The 24 fl oz (0.5 lb ai) total may be split into two separate applications of 12 fl oz (0.25 lb ai) per acre.

Restrictions

- **Preharvest Interval:** Do not apply within 30 days before harvest.
- Do not apply more than a total of 24 fl oz (0.5 lb ai) per acre per crop.

Bulb Vegetables (Crop Group 3-07)¹

¹ Bulb vegetables (Crop Group 3-07) including chive, fresh leaves; chive, Chinese, fresh leaves; daylily, bulb; elegans hosta; fritillaria, bulb; fritillaria, leaves; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; kurrat; lady's leek; leek; leek, wild; lily, bulb; onion, Beltsville bunching; onion, bulb; onion, Chinese, bulb; onion, fresh; onion, green; onion, macrostem; onion, pearl; onion, potato, bulb; onion, tree, tops; onion, Welsh, tops; shallot, bulb; shallot, fresh leaves; cultivars, varieties, and/or hybrids of these.

Use this product at 24 to 48 fl oz (0.5 to 1.0 lb ai) per acre applied up to 45 days prior to harvest. Alternatively, apply one application at 24 fl oz up to 75 days prior to harvest followed by one application of 24 fl oz up to 45 days prior to harvest.

The rates specified are on a broadcast per acre basis. For application methods other than broadcast, per-acre rates must be concentrated in the treatment area such as the bed or band.

Restrictions

- Do not apply more than 48 fl oz (1.0 lb ai) per acre per application.
- Do not apply more than a total of 48 fl oz (1.0 lb ai) per acre per year.
- **Preharvest Interval:** Do not apply within 45 days of harvest.

Canola**Preplant, At-Plant, Postplant, Preemergence, or Postemergence Application**

Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre from preplant up to the 6-leaf canola growth stage.

Split Application

This product may be applied twice, each at 12 to 24 fl oz (0.25 to 0.5 lb ai) per acre. Make the first application prior to canola emergence and the second application after emergence.

Restrictions

- Do not apply more than 24 fl oz of this product (0.5 lb ai) per acre per application.
- Do not apply more than a total of 48 fl oz of this product (1.0 lb ai) per acre per year.
- Do not apply past the 6-leaf canola growth stage.
- Do not make more than one postemergence application.

Citrus Fruits (Crop Group 10-10)¹

¹ Citrus fruits (Crop Group 10-10) including Australian desert lime; Australian finger-lime; Australian round lime; Brown River finger lime; calamondin; citron; citrus hybrids; grapefruit; Japanese summer grapefruit; kumquat; lemon; lime; Mediterranean mandarin; mount white lime; New Guinea wild lime; orange, sour; orange, sweet; pummelo; Russell River lime; satsuma mandarin; sweet lime; tachibana orange; Tahiti lime; tangelo; tangerine (mandarin); tangor; trifoliate orange; uniq fruit; including cultivars, varieties, and/or hybrids of these.

Use Vindicate at 48 fl oz (1.0 lb ai) per acre applied to orchard floors prior to bloom through fruit development but no later than 30 days prior to harvest. The 48 fl oz rate may be split into two, three, or four separate applications (two applications at 24 fl oz each, three applications at 16 fl oz each, or four applications at 12 fl oz each). [Note to US EPA reviewer: narrower ranges of rates within that overall range may be used on printed labels.]

The rates specified are on a broadcast per acre basis. For application methods other than broadcast, per-acre rates must be concentrated in the treatment area such as the bed or band.

Restrictions

- **Preharvest Interval:** Do not apply within 30 days before harvest.
- Do not apply more than 48 fl oz (1.0 lb ai) per acre per application.
- Do not apply more than a total of 48 fl oz (1.0 lb ai) per acre per year.

Corn (Including Field Corn, Seed Corn, Silage Corn, Sweet Corn, Popcorn)**Preplant, At-Plant, Postplant, or Preemergence Application**

Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre from preplant up to the V6 corn growth stage. Greater rates from 24 to 48 fl oz (0.5 to 1.0 lb ai) per acre may be applied with liquid nitrogen fertilizer prior to corn emergence or with liquid manure in the fall prior to spring corn planting when a greater duration of activity is desired.

Postemergence

This product may be sidedress applied at the rate of 24 fl oz per acre (0.5 lb ai) from crop emergence up to the V6 corn growth stage. Reduced rates of 12 to 18 fl oz (0.25 to 0.35 lb ai) per acre may be applied at the V4 to V6 corn growth stage when severe nitrate leaching and or denitrification are less likely to occur. Applications with liquid fertilizers may be injected, dribbled, or applied as a sidedress band. Applications with dry fertilizers may be broadcast, injected (knived), or banded.

Split Application

A second application may be made postplant following a preplant or at-plant application at 12 to 24 fl oz (0.25 to 0.5 lb ai) per acre. The 24 fl oz rate may be used where nitrogen fertilization is intended for high yield production. The total amount of this product applied in a split application program involving a preplant or at-plant treatment followed by a postplant treatment must not exceed 48 fl oz (1.0 lb ai) per acre per year.

Restrictions

- Do not apply more than 48 fl oz of this product (1.0 lb ai) per acre per application prior to crop emergence.
- Do not apply more than 24 fl oz of this product (0.5 lb ai) per acre per application after crop emergence.
- Do not apply more than a total of 48 fl oz of this product (1.0 lb ai) per acre per year.
- Do not apply past V6 corn growth stage.

Cotton**Preplant, Preemergence, or Postemergence Application**

Apply this product at 24 fl oz (0.5 lb ai) per acre from preplant up to the first flower cotton growth stage. After cotton emergence, this product may be broadcast with urea or applied directly to the soil with liquid fertilizer. Broadcast applications of this product with a liquid carrier after cotton emergence could cause cotton foliar leaf burn and canopy interception could reduce this product's activity.

Split Application: This product may be applied twice, each at 12 to 24 fl oz (0.25 to 0.5 lb ai) per acre from preplant up to the first flower cotton growth stage. If applied twice, allow at least one week between applications.

Restrictions

- Do not apply more than 24 fl oz (0.5 lb ai) of this product per acre per application.
- Do not apply more than two times per year.
- Do not apply more than a total of 48 fl oz (1.0 lb ai) per acre per year.
- Do not apply after the first flower cotton growth stage.

Leafy Vegetables (Crop Group 4-16)¹ and Leaf Petiole Vegetables (Crop Subgroup 22B)²

¹ Leafy vegetables (Crop Group 4-16) including amaranth, Chinese; amaranth, leafy; arugula; aster, Indian; blackjack; broccoli, Chinese; broccoli raab; cabbage, Abyssinian; cabbage, Chinese, bok choy; cabbage, seakale; cat's whiskers; cham-chwi; cham-na-mul; chervil, fresh leaves; chipilín; chrysanthemum, garland; cilantro, fresh leaves; collards; corn salad; cosmos; cress, garden; cress, upland; dandelion, leaves; dang-gwi, leaves; dillweed; dock; dol-nam-mul; ebolo; endive; escarole; fameflower; feather cockscomb; good king henry; Hanover salad; huauzontle; jute, leaves; kale; lettuce, bitter; lettuce, head; lettuce, leaf; maca, leaves; mizuna; mustard greens; orach; parsley, fresh leaves; plantain, buckhorn; primrose, English; purslane, garden; purslane, winter; radicchio; radish, leaves; rape greens; rocket, wild; shepherd's purse; spinach; spinach, Malabar; spinach, New Zealand; spinach, tanier; Swiss chard; turnip greens; violet, Chinese, leaves; watercress (see restriction); including cultivars, varieties, and/or hybrids of these.

² Leaf petiole vegetables (Crop Subgroup 22B) including cardoon; celery; celery, Chinese; fuki; rhubarb; udo; zuiki; including cultivars, varieties, and/or hybrids of these.

Preplant, At-Plant, or Preemergence Applications

Use this product at the rate of 24 fl oz (0.5 lb ai) per acre applied prior to planting or at a preemergence timing.

Postplant or Transplant Applications: Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre from crop emergence or transplant up to 30 days prior to harvest as a sidedress, soil injection, or chemigation application.

The rates specified are on a broadcast per acre basis. For application methods other than broadcast, per-acre rates must be concentrated in the treatment area such as the bed or band. The 24 fl oz (0.5 lb ai nitrapyrin) total may be split into two separate applications of 12 fl oz (0.25 lb ai) per acre.

Restrictions

- **Watercress:** For applications made to watercress, production fields must be drained of water at least 24 hours prior to application and water must not be reapplied to the field for a minimum of 24 hours following the application.
- **Preharvest Interval:** Do not apply within 30 days before harvest.
- Do not apply more than 24 fl oz (0.5 lb ai) per acre per application.
- Do not apply more than a total of 24 fl oz (0.5 lb ai) per acre per crop.

Rice

Preplant, Preemergence, or Postemergence Application

Apply this product at 24 fl oz (0.5 lb ai) per acre from preplant up to early tillering or V7 rice growth stage (collar formation on the 7th main-stem leaf), but prior to flooding. This product may be tank mixed/impregnated with the nitrogen fertilizer or broadcast-applied alone or with other crop protection products immediately prior to or after the nitrogen fertilizer application (up to one week before or after the nitrogen application). Foliar interception of this product broadcast-applied with a liquid carrier may reduce activity in the soil, so apply post-emergence prior to the development of a significant plant canopy (over 25% ground cover).

Split Application: This product may be applied twice, each at 12 fl oz (0.25 lb ai) per acre from preplant up to early tillering (V7 rice growth stage). If applied twice, allow at least one week between applications.

Restrictions

- Do not apply more than 24 fl oz (0.5 lb ai) of this product per acre per application.
- Do not apply more than two times per year.
- Do not apply more than a total of 24 fl oz (0.5 lb ai) per acre per year.
- Do not apply after the V7 rice growth stage.

Sorghum

Preplant or At-Plant Application

Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre as a row or band injection application. Greater rates from 24 to 48 fl oz (0.5 to 1.0 lb ai) per acre may be broadcast applied. The higher rate may be used when fall applications are made to spring-planted crops and a greater duration of activity is desired.

Restrictions

- Do not apply more than 48 fl oz of this product (1.0 lb ai) per acre per application.
- Do not apply more than a total of 48 fl oz of this product (1.0 lb ai) per acre per year.

Sugar Beets and Crop Subgroup 1C Tuberos and Corm Vegetables¹ including Potatoes

¹ Crop Subgroup 1C includes arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; canna, edible; cassava, bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; potato; sweet potato; tanier; turmeric; yam bean; yam, true.

Preplant, At-Plant, Postplant, Preemergence, or Postemergence Application

Apply this product at the rate of 24 fl oz (0.5 lb ai) per acre from preplant up to 60 days prior to harvest.

Split Application: This product may be applied twice, each at 12 to 24 fl oz (0.25 to 0.5 lb ai) per acre from preplant up to 60 days prior to harvest. If applied twice, the first application may be any time from preplant up to 6 weeks after emergence and the second application no later than 60 days before harvest.

Restrictions

- Do not apply more than 24 fl oz of this product (0.5 lb ai) per acre per application.
- Do not apply more than a total of 48 fl oz of this product (1.0 lb ai) per acre per crop.
- **Preharvest Interval:** Do not apply within 60 days before harvest.

Tree Nuts (Crop Group 14-12)¹

¹ Tree nuts (crop group 14-12) including almonds, beech nut, Brazil nut, cashew, chestnut, Chinquapin, filbert (hazelnut), hickory nut, macadamia nut, pecan, pistachio, walnut.

Apply this product to orchard floors at 24 to 48 fl oz (0.5 to 1.0 lb ai) per acre per year. The amount applied may be split into two or more applications per year with each application at least 12 fl oz (0.25 lb ai) per acre.

Restrictions

- Do not apply more than 48 fl oz (1.0 lb ai) per acre per application.
- Do not apply more than 48 fl oz (1.0 lb ai) per acre per year.
- **Preharvest Interval:** Do not apply within 30 days before harvest.

Wheat (Including Spring and Winter)**Preplant, At-Plant, Preemergence, or Postemergence Application**

Apply this product at the rate of 24 to 48 fl oz (0.5 to 1.0 lb ai) per acre. Applications may be injected, dribbled, or broadcast applied to the crop. Liquid fertilizers broadcast across actively growing wheat can cause leaf necrosis.

Restrictions

- Do not apply more than 48 fl oz of this product (1.0 lb ai) per acre per application.
- Do not apply more than 48 fl oz of this product (1.0 lb ai) per acre per year.
- Apply prior to 1st detectable joint (Feekes 6 or Zadoks 31 growth stage).

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1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

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