COPPER | GROUP | NOT CLASSIFIED | HERBICIDE

COLONEL™ XTR SPECIMEN LABEL

COPPER COMPLEX ALGAECIDE/HERBICIDE

ACTIVE INGREDIENTS:	
Copper Ethanolamine Complex[1]	28.2%
OTHER INGREDIENTS:	71.8%
TOTAL:	100.00%

Metallic Copper Equivalent = 9.1%
Contains 0.93 lb. of elemental copper per gallon
[1]Mixed CAS Nos. 82027-59-6 & 14215-52-2

KEEP OUT OF REACH OF CHILDREN

DANGER / PELIGRO

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

See inside booklet for Precautionary Statements, Directions For Use, Storage and Disposal, and Conditions of Sale and Warranty.

FOR CHEMICAL SPILL, LEAK, FIRE, OR EXPOSURE CALL CHEMTREC (800) 424-9300

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 inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
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 the poison control center or doctor. • **DO NOT** give anything by mouth to an unconscious person.

HOTLINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. For non-emergency exposure information on this product, call 1-888- 347-6732 (7 days/ week, 24-hr). For medical emergencies, dial 911.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Manufactured By:
Albaugh, LLC
1525 NE 36th Street, Ankeny IA 50021

ALBAUGH® SPECIALTY PRODUCTS

EPA Reg. No. 89442-71-42750

AD121025

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER/PELIGRO. Corrosive. Causes irreversible eye damage and skin burns. Harmful if inhaled, swallowed, or absorbed through skin. **DO NOT** get in eyes, on skin, or on clothing. Avoid breathing mist or spray vapor. When handling, wear protective eyewear, clothing, and chemical-resistant gloves as described under the section of this label pertaining to Personal Protective Equipment (PPE). Wash skin thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Mixers, loaders, applicators, and other handlers must wear:

- Coveralls worn over long-sleeved shirt and long pants
- Socks and chemical resistant footwear
- Chemical-resistant gloves such as butyl rubber ≥14 mils; nitrile rubber ≥14 mils; neoprene rubber ≥14 mils; polyvinyl chloride (PVC) ≥14 mils; or Viton® ≥14 mils
- Eye Protection (goggles or face shield)

USER SAFETY REQUIREMENTS

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

Engineering Controls: Pilot must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides (40 CFR 170.305).

USER SAFETY RECOMMENDATIONS

Users should:

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

ENVIRONMENTAL HAZARDS

Fish Advisory Statement: This copper product is toxic to fish and aquatic organisms. Unlike most organic pesticides, copper is an element and will not break down in the environment and will therefore accumulate in sediment with repeated applications. Copper is a micronutrient, but its pesticidal application rate exceeds the amount of copper needed as a nutrient.

PHYSICAL OR CHEMICAL HAZARDS

Do not mix or allow coming in contact with oxidizing agents. Hazardous chemical reaction may occur. Combustible. Do not use or store near heat or open flame.

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 this product. Use only according to label directions.

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.

Obtain Required Permits: Consult with appropriate state or local pesticide and/or water authorities before applying this product in or around public waters. Permits and posting or treatment notification may be required by state, Tribal, or local public agencies.

PRODUCT INFORMATION

Colonel™ XTR is a chelated copper formulation that is effective in controlling a broad range of green and blue-green (cyanobacteria) algae, including filamentous, planktonic and macrophytic. Colonel™ XTR is also an effective herbicide on submersed weed species with susceptibility to copper. The ethanolamines in Colonel™ XTR reduce the precipitation of copper with carbonates and bicarbonates in the water.

Treatment with this product will not by itself make water potable. For applications in waters destined for use as drinking water, those waters must receive additional and separate potable water treatment. Do not apply more than 1.0 ppm as metallic copper in any waters during any single application.

Treatment Notes:
Performance of Colonel™ XTR is enhanced under certain conditions. It is recommended to consult your University Extension Aquatic Specialist for guidance in implementing a treatment program to achieve optimal results.

To achieve optimum effectiveness with Colonel™ XTR:

- Treat when growth first begins to appear (if possible) or when target vegetation is actively growing.
- Apply in a manner that will ensure even distribution within the treatment area.
- Use a high-pressure surface spray application to break up dense floating algal mats.
- In heavily infested areas, a second application may be necessary. Retreat areas if regrowth begins to appear or if seasonal control is desired. Repeating application too soon after initial application may have no effect.

Waters treated with this product may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead algae and weeds. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, **DO NOT** treat more than ½ of the water body (excluding water infrastructure and constructed conveyances such as drainage canals, ditches and pipelines or intakes and aqueducts for drinking water or irrigation use) to avoid depletion of oxygen due to decaying vegetation. Wait at least 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State or local agency with primary responsibility for regulating pesticides before applying to public waters, to determine if a permit is required.

Application of algaecides to high density blooms of cyanobacteria can result in the release of intracellular contents into the water. Some of these intracellular compounds are known mammalian hepato- and nervous system toxins. Therefore, to minimize the risk of toxin leakage, manage cyanobacteria effectively in order to avoid applying this product when blooms of toxin-producing cyanobacteria are present at high density. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper at intervals shorter than 14 days should the circumstance demand.

Certain water conditions including low pH (<6.5), low dissolved organic carbon (DOC) levels (3.0 mg/L or lower), and “soft” waters (i.e., alkalinity less than 50 mg/L), increases the potential acute toxicity to non-target aquatic organisms. The application rates on this label are appropriate for water with pH values >6.5, DOC levels >3.0 mg/L, and alkalinity greater than 50 mg/L. Avoid treating waters with pH values <6.5, DOC levels >3.0, and alkalinity less than 50 ppm (e.g., soft or acid waters), as koi, trout or other sensitive species of fish may be killed under such conditions.

Consult your state department of natural resources or fish and game agency before applying this product to public waters. Permits may be required before treating such waters.

Precautions

- Wash spray equipment thoroughly before and after each application.
- Contents may cause bluing where marcite plaster has been etched.

Restrictions

- **DO NOT** apply directly to, or otherwise permit it to come into contact with any desirable plants as injury may result.
- **DO NOT** apply in such a way that concentrated Colonel™ XTR comes in contact with crops, ornamentals, grass or other desirable plants.
- **DO NOT** make applications less than 14 days apart.
- **DO NOT** exceed a concentration of 1 ppm copper (3 gallons of product or 2.74 lbs. metallic copper per acre-foot) during any single application.
- When treating aquaculture ponds when fish are present, **DO NOT** exceed a concentration of 0.4 ppm during any single application when targeting nuisance algae.
- Planktonic and Filamentous algae: Apply 0.6 – 3.0 gallons of Colonel™ XTR per acre-foot (0.55 – 2.74 lbs. metallic copper per acre-foot)
- Macrophytic algae: Apply 1.2 – 3.0 gallons of Colonel™ XTR per acre-foot (1.10 – 2.74 lbs. metallic copper per acre-foot)
- Whole Waterbodies: **DO NOT** apply more than 24 gallons of Colonel™ XTR per acre-foot per year (21.9 lbs. of metallic copper per acre-foot per year).
- Partial Waterbodies: **DO NOT** apply more than 51 gallons of Colonel™ XTR per acre-foot per year (46.6 lbs. of metallic copper per acre-foot per year).
- Whole Waterbodies. **DO NOT** apply more than 21.9 lbs. of metallic copper per acre-foot (8 applications per year at up to 1 ppm).
- Partial Waterbodies. **DO NOT** apply more than 46.6 lbs. of metallic copper per acre-foot per year (17 applications per year at up to 1 ppm).
- Pilot must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides (40 CFR 170.305).

SPRAY DRIFT MANAGEMENT

Aerial Applications

- Do not release spray at a height greater than 10 ft above the vegetative canopy or water, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speed exceeds 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Applicators must use ½ swath displacement upwind at the downwind edge of the application area.
- Do not apply during temperature inversions.

Ground Boom Applications

- Apply with the spray release height recommended by the manufacturer, but no more than 4 feet above the water surface.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NONTARGET 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 manufacturers 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, the boom should remain level with the crop and have minimal bounce.

Release Height - Aircraft

Higher release heights increase the potential for spray drift. When applying aerially to crops, do not release spray at a height greater than 10 ft 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 need to be familiar with local wind patterns and terrain that could affect spray drift.

RESISTANCE MANAGEMENT

Water bodies or management units should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Water bodies or management units should be scouted after application to verify that the treatment was effective.

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

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

Report any incidence of non-performance of this product against a particular weed species to your Albaugh, LLC retailer or representative or call 1-800-247-8013. If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further reproduction.

Implement the Early Detection, Rapid Response practice and Maintenance Control by using the following practices where possible:

- Identify weeds present in a management unit through scouting or history of the water body and understand the biology of target species.
- Applications should target weeds when populations are small and there is low biomass, early in the season to maximize efficacy.
- Applications should be made so that the herbicide contacts the weed. Use the appropriate application method for the use site/weed/chemical combination.
- Weed escapes should not be allowed to go to seed or produce asexual vegetative propagules.
- Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical control, biological management practices, and rotation of MOAs.
- Time applications to have the highest probability for control and minimize need for follow-up control measures. Apply during conditions that minimize herbicide degradation (light/temperature/ microbes) and/or dissipation (water exchange).

Contact your local sales representative, local water management agency, or extension agent to find out if suspected resistant weeds to the MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank mix products so that there are multiple effective mechanisms of actions for each target weed.

APPLICATION INFORMATION

For aquatic weed control (including algae and vascular plants), do not exceed a concentration of 1.0 ppm copper (3 gallons of product or 2.74 lbs. metallic copper per acre-foot) during any single application.

Whole Waterbodies. Maximum annual application rate of 21.9 lbs. of metallic copper per acre-foot (8 applications per year at up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days (at a rate of 2.74 lbs. metallic copper per acre-foot = 1 ppm) for eight months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 lbs. of metallic copper per acre-foot (8 applications per year at up to 1 ppm).

Partial Waterbodies. For large waterbodies such as lakes and reservoirs that support aquatic habitat, this product may be applied in multiple individual treatments to different, discreet sections of a waterbody, or water management units, within the 14-day retreatment interval, provided that the sum of those areas together constitute no more than half of the total area of the entire waterbody. Maximum annual application rate of 46.6 lbs. of metallic copper per acre-foot per year (17 applications per year at up to 1 ppm). This rate/frequency is calculated based on the maximum number of possible applications allowed based on a 14-day minimum (at a rate of 2.74 lbs. metallic copper per acre-foot = 1 ppm) retreatment interval for eight months (244 days). Do not apply more than 46.6 lbs. of metallic copper to a water management unit, regardless of the pest(s) targeted by applications. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 46.6 lbs. of metallic copper per acre-foot per year for a single water management unit.

Pre-Application Dose Determination. For algae and aquatic plant treatments, applicators should conduct an initial dose determination test simulating a full scale treatment program to determine the minimum efficacious concentrations for eliminating the target species, unless an effective dose is already known for the given target pest population.

Surface Spray/Injection Algaecide Application
For effective control, proper rates of Colonel™ XTR should be maintained between 0.2 and 1.0 ppm. The application rates in **Table 1** are based on static or minimal flow situations. Where significant dilution occurs from untreated waters or loss of water, Colonel™ XTR may have to be metered in (refer to the Drip System or Metering Pump Application for Flowing Water Treatments section of this label) to maintain adequate exposure times.

Identify the algae growth present as one of the following types: planktonic (suspended), filamentous (matforming), or macrophytic algae (*Chara*/*Nitella*).

Determine the surface acreage (1 acre = 43,560 ft.^{2}) and average depth of infested area.
Refer to chart below to determine gallons of Colonel™ XTR to apply per surface acre.

Table 1. Colonel™ XTR Application Rates (Gallons per Surface Area)

Algae Type or Species	Dose	Rates	Application Instructions
	PPM Copper	Gallons/Acre Foot	
Planktonic (Suspended)	0.2 – 1.0†	0.6 – 3.0	Apply lower rates for light infestations. Use higher rates on heavy blooms and where algae masses are clumped and accumulated.
Filamentous (Mat-Forming)	0.2 – 1.0†	0.6 – 3.0	Apply lower rates for early season applications, light infestations or treatment of regrowth. Apply higher rates on surface mats and species including *Pithophora*, *Cladophora*, *Lyngbya*, & *Hydrodictyon*.
Macrophytic (*Chara*/*Nitella*/ Starry Stonewort)	0.4 – 1.0	1.2 – 3.0	Apply lower rates for new infestations or early season growth. Apply higher rates on older, established calcified plants. Apply as close to plant growth as possible.

† For planktonic and filamentous algae, Colonel™ XTR may be applied up to 1.0 ppm when growth conditions require higher rates and for difficult-to-control species.

For dense infestations of filamentous algae or where the species of *Hydrodictyon*, *Cladophora* or *Pithophora* are present, apply the higher rate in the rate range. Filamentous algae species are easier to control before floating to the water's surface (when they are forming on the pond/lake bottom). An adjuvant, including d-limonene or similar surfactant, may be added for enhanced control of floating mats or difficult to control species of algae. Follow surfactant labeling instructions for application rates and use directions.

For planktonic (suspended) algae and free-floating filamentous algae mats, application rates should be based on treating to depths where algae are present (e.g., the upper 3 to 4 feet of water). For dense infestations and in certain other situations, it may be necessary to calculate rates based on the depth of known algae infestation (e.g., >4 feet) or require treating the entire water column in the target area. To calculate the application rate per surface acre, multiply the application rate in **Table 1** (0.6 to 3.0 Gallon per Acre Foot) by the average depth of infestation, or average water depth if infestation reaches the entire water column.
As a surface or subsurface application, Colonel™ XTR may be applied diluted or undiluted, whichever is most suitable to ensure uniform coverage of the area to be treated. Dilution with water may be necessary at the lower application rates. Dilute the required amount of Colonel™ XTR with enough water to ensure even distribution in the treated area with the type of equipment being used. For best results, dilute Colonel™ XTR in water to provide a minimum spray mix of 20 to 50 gallons per acre; in areas with heavy infestations of filamentous algae, a total tank mix of >50 gallons per acre may be necessary; break up floating algae mats before spraying or while application is being made.

Submersed Plant Control Applications
Colonel™ XTR can be applied to control hydrilla (*Hydrilla verticillata*), egeria (*Egeria densa*), and other aquatic weeds with susceptibility to copper. Apply Colonel™ XTR at a rate to achieve 0.75 to 1.0 ppm copper (2.3 to 3.0 Gallons Colonel™ XTR/Acre foot). In heavily infested areas, a second application after the 14- day retreatment interval may be necessary.

Drip System or Metering Pump Application for Flowing Water Treatments
For Use in Potable Water, Canals, Ditches, and Irrigation and Drainage Systems
For optimal control, apply Colonel™ XTR as soon as algae begin active growth or interfere noticeably with normal delivery of water (clogging of lateral headgates, suction screens, weed screens, and siphon tubes). Delaying treatment could perpetuate the problem, causing massing and compacting of plants. Heavy infestations and low flow may cause poor distribution resulting in unsatisfactory control. Under these conditions repeated applications or increasing water flow rate during application may be necessary.

Prior to treatment it is important to accurately determine water flow rates. In the absence of weirs, orifices, or similar devices, which give accurate waterflow measurements, volume of flow can be estimated by the following formula:

Cubic feet per second (cfs) = average width (ft) × average depth (ft) × average velocity† (ft/sec) × 0.9

† The velocity can be estimated by determining the length of time it takes a floating object to travel a defined distance. Divide the distance (ft) by the time (sec) to estimate velocity (ft/sec). This measure should be repeated 3 times at the intended application site and then calculate the average velocity.

After accurately determining the water flow rate in cfs or gallons/minute, find the corresponding Colonel™ XTR rate in **Table 2** or use the below formula.

cfs × desired concentration of copper (ppm) = **quarts/hour of application**

Table 2. Colonel™ XTR Application Rates for Flowing Water

Water Flow Rate		PPM Copper	Colonel™ XTR Rate	
CFS	gal/min		qt/hr	mL/min
1	450	0.2 – 1.0	0.2 – 1.0	3.2 – 15.7
2	900	0.2 – 1.0	0.4 – 2.0	6.3 – 31.5
3	1,350	0.2 – 1.0	0.6 – 3.0	9.5 – 47.3
4	1,800	0.2 – 1.0	0.8 – 4.0	12.6 – 63.0
5	2,250	0.2 – 1.0	1.0 – 5.0	15.8 – 78.5
10	4,500	0.2 – 1.0	2.0 – 10.0	31.5 – 157.7
100	45,000	0.2 – 1.0	20.0 – 100.0	315 – 1,577

Calculate the amount of Colonel™ XTR needed to maintain the drop rate for a treatment period of 3 hours by multiplying either:

Quarts/hr × 3 **OR** milliliters/min × 180 **OR** fluid ounces/min × 180

Rates will target 1.0 ppm copper concentration in the treated water for the treatment period. Lower concentrations may be used on highly susceptible algae species or if longer exposure times are maintained. Introduction of the chemical should be made in the channel at weirs or other turbulence-creating structures to promote the dispersion of the chemical. For injection periods longer than three hours (180 minutes), calculate the amount of Colonel™ XTR needed by multiplying the rate by the desired time in minutes or hours, as appropriate.

Use a drum or tank equipped with a valve or other volume control device that can be calibrated to maintain a constant drip rate. Use a stopwatch and appropriate measuring container to set the desired drip rate. Re-adjust accordingly if the canal flow rate changes during the treatment period. A small pump or other metering device may be used to meter Colonel™ XTR into the water more accurately. Application can be made using diluted or undiluted material.

Results can vary depending upon species and density of algae and vegetation, desired distance of control and flow rate, and impact of water quality on efficacy. Periodic maintenance treatments may be required to maintain seasonal control. It is recommended to consult your University Extension Aquatic Specialist to determine optimal use rate, location of treatment stations and treatment period under local conditions.

Pulse Application Method for Flowing Irrigation Canals with No Functioning Potable Water Intakes DO NOT use this method of application in flowing canals with functioning potable water intakes at or downstream from the application site.

For optimal control, apply Colonel™ XTR as soon as algae begin active growth or interfere noticeably with normal delivery of water. Heavy infestations and low flow may cause poor distribution resulting in unsatisfactory control. Under these conditions repeated applications or increasing water flow rate during application may be necessary. Maximum annual application rate of 13 lbs. metallic copper per year per 5 miles of conveyance. Apply Colonel™ XTR into irrigation conveyance system or lateral at up to a maximum rate of 0.5 lbs. metallic copper per cubic foot per second of water per 5 to 30-mile treatment depending on water hardness, alkalinity and algae concentration. This method may only be used in constructed irrigation conveyance systems, laterals and aqueducts.

Chemigation System Maintenance Application

Colonel™ XTR may be applied for the maintenance of chemigation systems. To control algae in chemigation systems Colonel™ XTR should be applied continuously during water application. For continuous addition application apply 0.91 - 9.1 gallons of Colonel™ XTR per 1,000,000 (one million) gallons of water (0.3 - 3.0 gallons of Colonel™ XTR per acre-foot of water). This will produce a concentration of 0.1 to 1.0 ppm of copper. **DO NOT** exceed 1.0 ppm of copper or 0.91 gallons of Colonel™ XTR per 100,000 gallons of water. For additional guidance regarding specific calibrations or application techniques contact application equipment manufacturer, supplier, or pest control advisor. It is not necessary to agitate or dilute Colonel™ XTR in the supply tank before application to chemigation systems.

Table 3. Application Rates for Chemigation System Maintenance

Copper Concentration (ppm)	Amount of Colonel™ XTR			
	Per Acre-foot		Per Million Gallons	
	Gallons	Liters	Gallons	Liters
0.1	0.3	1.1	0.9	3.4
0.2	0.6	2.3	1.8	6.8
0.3	0.9	3.4	2.8	10.6
0.4	1.2	4.5	3.7	14.0
0.5	1.5	5.7	4.6	17.4
0.6	1.8	6.8	5.5	22.8
0.7	2.1	7.9	6.4	24.2
0.8	2.4	9.1	7.3	27.6
0.9	2.7	10.2	8.3	31.4
1.0	3.0	11.3	9.1	34.4

CHEMIGATION SYSTEM APPLICATION

- Apply Colonel™ XTR only through sprinkler and drip irrigation systems including: center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move; flood (basin), furrow, border or drip (trickle) systems.
- Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact your University Extension Aquatic Specialist, State Extension Service, equipment manufacturer, or other experts.
- **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 (refer to the **Chemigation Systems Connected to a Public Water Supply** section of this label).
- A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. The injection system should be inspected, calibrated, and maintained before application of Colonel™ XTR begins.

Chemigation Systems Connected to a Public Water Supply

- Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.
- The pesticide 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 pesticide 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 pesticide distribution is adversely affected.
- Systems must use a metering pump, including a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- **DO NOT** apply when wind speed favors drift beyond the area intended for treatment.

Sprinkler Chemigation Requirements

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide 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 pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 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 pesticides and capable of being fitted with a system interlock.
- **DO NOT** apply when wind speed favors drift beyond the area intended for treatment.

Floor (Basin), Furrow and Border Chemigation Requirements
- Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from back flow if water flow stops.
- Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
  - o The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
  - o The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
  - o The pesticide 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.
  - o The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
  - o The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
  - o 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 pesticides and capable of being fitted with a system interlock.

Drip (Trickle) Chemigation Requirements
- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide 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 pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 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 pesticides and capable of being fitted with a system interlock.

TANK MIXES WITH OTHER AQUATIC ALGAECIDES AND HERBICIDES

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.

Colonel™ XTR may be mixed with other herbicides or algaecides registered for aquatic use provided that no labeling prohibits such mixing. Colonel™ XTR can be tank mixed with other herbicides to improve efficacy; and to control algae in areas where heavy algae growth may cover target submersed plant species and interfere with herbicide exposure. **DO NOT** exceed any labeled rate or dose of any of the products in the combination. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures. To ensure compatibility, a jar test may be used before field application of any tank mix combination. It is advised to consult with Albaugh, LLC for latest tank mix recommendations.

NOTE: Tank mixing or use of Colonel™ XTR with any other product which is not specifically listed on the Colonel™ XTR label shall be at the exclusive risk of the user, applicator and/or application adviser, to the extent allowed by applicable law.

Colonel™ XTR and Endothall
Colonel™ XTR may be applied as a tank mix or simultaneously injected or used with the dipotassium salt of endothall or the mono (N,N-dimethylalkylamine) salt of endothall to broaden the weed control spectrum and/or reduce injection times or rates in canals, ditches, and laterals. In flowing canals, apply Colonel™ XTR via drip or

injection at a rate of 0.1 to 1.0 ppm (see **Table 2**) in conjunction with the mono (N,N-dimethylalkylamine) salt of endotholl (0.05 – 2.0 ppm) or the dipotassium salt of endothall (0.35 – 3.0 ppm) for a minimum of one hour.

Hydrilla Control – Colonel™ XTR + Diquat Tank Mix
Colonel™ XTR can be mixed with diquat (diquat dibromide) in a 2:1 ration of Colonel™ XTR:Diquat, e.g., 4 gallons Colonel™ XTR and 2 gallons diquat (formulated as 2 lbs. a.i./gallon) per acre in waters with an average depth of 4 feet. Lower rates of Colonel™ XTR may also enhance the activity of diquat. Colonel™ XTR must be applied at a minimum of 0.1 ppm in combination with diquat. Higher rates may be needed in areas with dense weeds.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

PESTICIDE STORAGE:
Store in a cool, dry place. **DO NOT** store near feed or foodstuffs. In case of leak or spill, use absorbent materials to contain liquids and dispose in a manner consistent with the pesticide disposal instructions.

PESTICIDE DISPOSAL:
Pesticide wastes are acutely hazardous. 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. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER HANDLING:
Non-refillable container. DO NOT reuse or refill this container.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by other procedures allowed by state and local authorities.

Triple rinse containers small enough to shake (≤ 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Triple rinse containers too large to shake (> 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other side and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use and disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Bulk Containers CONTAINER HANDLING:
Nonrefillable Container. DO NOT reuse or refill this container. Pressure rinse container. Then offer for recycling or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
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. Collect rinsate for later use or disposal or add to application equipment or a mix tank. Insert pressure rinsing nozzle in the container opening, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

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