

Weed	Herbicide and Formulation	Amount of Formulation	Active Ingredient or Concentration	Method of Application and Comments
ALGAE Blue-green	Copper sulfate (99%)	0.67-5.4 lb/acre*ft	0.25-2 ppm	Copper is toxic to fish. Care must be taken in low alkalinity water. Water alkalinity should be tested and copper sulfate should not be applied to water with an alkalinity below 40 ppm or above 250 ppm. Can lead to dissolved oxygen problems when applied to ponds with water temperature above 85°F. To make a copper sulfate solution, mix 1½ lb of copper sulfate crystals with 1 gal of water.
	Copper Sulfate (Copper-Z 6/2 (23.7%))	2.8-22.5 lb/acre*ft	0.25-2.0 ppm	Copper is toxic to fish. Formulation contains zinc. See previous warning about copper toxicity to fish.
	Copper Solution (Various)	See label.	See label.	K-Tea can be tank mixed with diquat and Komeen. See previous warning about copper toxicity to fish.
ALGAE Filamentous and Planktonic	Copper Sulfate (99%)	0.67-5.4 lb/acre*ft	0.25-2 ppm	Copper is toxic to fish. Care must be taken in low alkalinity water. Water alkalinity should be tested and copper sulfate should not be applied to water with an alkalinity below 40 ppm or above 250 ppm. Can lead to dissolved oxygen problems when applied to ponds with water temperature above 85°F. To make a copper sulfate solution, mix 1½ lb of copper sulfate crystals with 1 gal of water.
	Copper Sulfate Copper-Z 6/2 (23.7%)	2.8-22.5 lb/acre*ft	0.25-2 ppm	Copper is toxic to fish. Formulation contains zinc. See previous warning about copper toxicity to fish.
	Copper Solution (Various)	See label.	See label.	K-Tea can be tank mixed with diquat and Komeen. See previous warning about copper toxicity to fish.
	Copper Complexes (Captain, Cutrine Plus, Cutine Plus Granular, AlgaePro)	See label.	See label.	If treated water is potable, rate cannot exceed 1 ppm. Can be mixed with diquat. Dilute with water in ratio of at least 9:1 and apply uniformly. See previous warning about copper toxicity to fish. Copper complexes are reported to be less toxic to fish in low alkalinity ponds due to the binding of the copper molecule to a carbonate ion.
	Diquat (Reward, Weedtrine D, Littora)	See label.	0.7-1.5 ppm (Reward and Littora) 0.5-1.5 ppm (Weedtrine-D)	Suppression only of certain filamentous algae (Pithophora and Spirogyra). Should be tank mixed with algaecide for enhanced control.
	Endothall (Hydrothol 191, Hydrothol 191 Granular)	See label.	0.05-1.5 ppm	May be mixed with copper sulfate, 1 gal plus 5 lb per surface acre. Toxic to fish. Generally rate of 0.05-0.3 ppm is effective. If rates higher than 0.3 ppm, should be applied by commercial applicator only.
ALGAE Chara, nitella	Copper Sulfate (99%)	4.0-5.4 lb/acre*ft	1.5-2.0 ppm	Copper is toxic to fish. Care must be taken in low alkalinity water. Water alkalinity should be tested and copper sulfate should not be applied to water with an alkalinity below 40 ppm or above 250 ppm. Can lead to dissolved oxygen problems when applied to ponds with water temperature above 85°F. To make a copper sulfate solution, mix 1½ lb of copper sulfate crystals with 1 gal of water.
	Copper Sulfate (Copper-Z 6/2 (23.7%))	16.3-22.5 lb/acre*ft	1.5-2.0 ppm	Copper is toxic to fish. Formulation contains zinc. See previous warning about copper toxicity to fish.
	Copper Solution (various)	See label.	See label	K-Tea can be tank mixed with diquat and Komeen. See previous warning about copper toxicity to fish.
	Copper Complexes (Captain, Cutrine Plus, Cutine Plus Granular, AlgaePro)	See label.	See label.	If treated water is potable, rate cannot exceed 1 ppm. Can be mixed with diquat. Dilute with water in ratio of at least 9:1 and apply uniformly.
	Endothall (Hydrothol 191, Hydrothol 191 Granular)	See label.	0.05-1.5 ppm	May be mixed with copper sulfate, 1 gal plus 5 lb per surface acre. Toxic to fish. Generally rate of 0.05-0.3 ppm is effective. If rates higher than 0.3 ppm, should be applied by commercial applicator only.

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FLOATING WEEDS (watermeal, Azolla)	Fluridone	Sonar AS, Avast SC 41.7%, 4 lb ai/gal	1.0-7.7 oz/acre*ft	10-90 ppb (see label)	Use Lake rate for water bodies over 5 surface acres. Do not apply as a spot treatment. Needs minimum of 45 days of contact. May require 30-90 days to achieve weed control. May be mixed with other herbicides and algacides. Greater potential for crop injury if treated water is applied to crops grown on low organic and sandy. Thirty days may be insufficient restriction if pond water will be used to irrigate sensitive crops, such as tomatoes or peppers. Gives only fair control for watermeal. Spray to wet exposed plants with 50-150 gal of water per acre plus 1.0 pt of nonionic surfactant per 100 gal of spray mix. Do not treat more than one-third to one-half of pond at a time. Wait 14 days between treatments. Do not apply directly to water. Application to muddy water may reduce effectiveness.
		Sonar SRP, Sonar PR, Sonar Q, Avast SRP 5%, 0.05 lb ai/lb	0.9-5 lb/acre*ft	10-90 ppb (see label)	
	Diquat	Reward, Littora 37.3%, 2 lb/gal	1-2 gal/surface acre (Reward) 0.5-2.0 gal/surface acre (Littora)	0.74-1.47 ppm 0.37-1.47 ppm	
		Weedtrine-D 8.53%, 0.4 lb/gal	5-10 gal/acre	0.74-1.47 ppm	
FLOATING WEEDS (except watermeal and Azolla)	Imazapyr	Habitat 28.7%, 2 lb/gal Aquapier 27.8%, 2 lb/gal	1-3 pt/acre	0.09-0.28 ppm	Mix with 100 gal water to insure complete coverage. Will not control plants completely or mostly submerged. Do not treat more than one-half of pond surface area in a single operation. Do not exceed 6 pt/acre (1.5 ppb AI/acre). Do not use on food crops. Do not apply within ½ mile upstream of active potable water intake. Can be mixed with glyphosate. Use of spreader-sticker adjuvants will improve results.
	2,4-D	Navigate, Aqua-Kleen 19%	150-200	10.5-14 ppm	Do not apply to entire pond in one application.
		Weedar 64 (46.8%) Weed Rhap (46.7%) A-4D, DMA 4 IVM (46.3%) 3.8 lb ai/gal	0.5-1.0 gal/acre	0.7-1.4 ppm	Do not apply to more than ½ of water body at a time. Do not apply to open water.
		Hardball 19.6%, 1.74 lb ai/gal	2.5-5.0 gal/acre, 0.5-1.0 gal/acre for water hyacinth		If weed mass is dense, it may be appropriate to treat only a portion of the mass.
		Aquacide 17.5%	11-22 lb/acre	0.7-1.5 ppm	If weed mass is dense, it may be appropriate to treat only a portion of the mass. Apply along shore first to allow fish to move to untreated areas. Do not apply in same area more than twice/year
	Glyphosate	Rodeo, AquaPro, Aqua Neat, Aqua- Master, Shore-Klear, Glypro 53.8%, 5.4 lb ai/gal	4-6 pt/acre or 0.75-1.0% solution	1-1.5 ppm	Use of non-ionic surfactant is recommended or required, depending on formulation, read label. Vegetation must be on or above the surface for treatment to be effective. If applying by boat, take care to not create waves that may wash the herbicide off floating leaves. Rainfall within 6 hours may reduce effectiveness.

Weed	Herbicide and Formulation	Trade Name	Amount of Formulation	Active Ingredient Rate or Concentration	Method of Application and Comments
FLOATING WEEDS (except watermeal and Azolla) [cont.]	Diquat	Reward, Littora 37.3%, 2 lb/gal	0.5-0.75 gal/acre (water hyacinth, water lettuce, salvinia) 1-2 gal/acre (duckweed, bladderwort)	0.37-0.56 ppm 0.74-1.47 ppm	Do not treat more than one-third to one-half of pond at a time. Wait 14 days between treatments. Do not apply directly to water. Application to muddy water may reduce effectiveness. Follow dilution and surfactant recommendations.
		Weedtrine-D 8.53%, 0.4 lb/gal	2.5-3.75 gal/acre (water hyacinth, water lettuce, salvinia) 5-10 gal/acre (duckweed, bladderwort)	0.74-1.47 ppm	
	Triclopyr	Renovate 3, Ecotriclopyr 3 SL 44.4%, 3 lb ai/gal	0.5-2 gal/acre	0.75-2.5 ppm	Apply when plants are actively growing. Use higher rate when the weed mass is dense. Thoroughly wet all foliage. Use of nonionic surfactant is recommended.
	Fluridone	Sonar AS, Avast SC 41.7%, 4 lb ai/gal	1.0-7.7 oz/acre*ft	10-90 ppb (see label)	Good to excellent control of duckweed, salvinia and bladderwort, poor control of water hyacinth and water lettuce. Use Lake rate for water bodies over 5 surface acres. Do not apply as a spot treatment. Needs minimum of 45 days of contact. May require 30-90 days to achieve weed control. May be mixed with other herbicides and algacides. Greater potential for crop injury if treated water is applied to crops grown on low organic and sandy. Thirty days may be insufficient restriction if pond water will be used to irrigate sensitive crops, such as tomatoes or peppers.
		Sonar SRP, Sonar PR, Sonar Q, Avast SRP 5%, 0.05 lb ai/lb	0.9-5 lb/acre*ft	10-90 ppb (see label)	
EMERGENT WEEDS	2,4-D Amine	DMA 4 IVM (46.3%) 3.8 lb ai/gal	0.5-1.0 gal/surface acre	1.9-3.8 lb ai/acre	Apply early in season when weeds are small and growing actively before the bud stage. Apply when biennial and perennial species are in the seedling stage and before flower stalks appear. For hard to control weeds, repeat application after 30 days. Thorough wetting of foliage is essential for maximum control. Use 100-400 gal of spray mixture per acre. Do not exceed 2.84 gal/acre*ft of water. Do not apply within 1,500 feet of a potable water intake.
	2,4-D Granular	Navigate, Aqua-Kleen 19%	150-200 lb/surface acre	28.5	Controls arrowhead, bulrush, water primrose, pickerelweed, smartweed, spatterdock, waterlily and water shield. Apply early in season when weeds are actively growing. Rate depends on species and water depth of emergent plant. For hard to control weeds, repeat application after 30 days. pH higher than 8 reduces effectiveness. Do not treat more than one-half pond at a time. Do not apply within 600-2,400 ft of a potable water intake, depending on treatment rate. Always use 2 or more gallons of spray solution/acre.
		Aquacide 17.5%	Up to 11 lb/acre (ditchbank) 11-22 lb/acre (other emergent)	Up to 2 lb ai/acre (ditchbank) 2-4 lb ai/acre (other emergent)	
		Hardball 19.6%, 1.74 lb ai/gal	0.25-1.0 gal/acre (ditchbank) 1-5 gal/acre (other emergent)	Up to 2 lb ai/acre (ditchbank) Up to 8.7 lb ai/acre	

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EMERGENT WEEDS [cont.]	Diquat	Reward 37.3%, 2 lb ai/gal	1-2 gal/acre	2-4 lb ai/acre	Apply 50-150 gal of water plus the labeled rate of a 75% or greater nonionic surfactant per acre for full coverage and thorough weed contact. For best results, apply before flowering (cattail). Repeat as needed. Do not apply directly to water.
		Littora 37.3%, 2 lb ai/gal	0.5-2 gal/acre	28.5	For broadcast treatment, include sufficient carrier along with 1-2 qt/acre of wetting agent. For spot treatment, apply 0.5 gal/100 gal water with wetting agent as 1 qt-1 gal/100 gal water. For cattail, use 2 gal/100 gal water. Retreat as necessary.
		Weedtrine-D 8.53%, 0.4 lb/gal	5-10 gal/acre	2-4 lb ai/gal	Dilute 5 oz Weedtrine/gal water. Add 1 oz nonionic surfactant/10 gal water.
	Glyphosate	Rodeo, AquaPro, Aqua Neat, AquaMaster, Shore-Klear, Glypro 53.8%, 5.4 lb ai/gal	4-6 pt/acre or 0.75-1.0% solution	2.7-4.05 lb ai/acre	Use of nonionic surfactant is recommended or required, depending on formulation; read label. (2 or more qt/100 gal water) Vegetation must be on or above the surface for treatment to be effective. If applying by boat, take care to not create waves that may wash the herbicide off floating leaves. Rainfall within 6 hours may reduce effectiveness.
	Imazapyr	Habitat 28.7%, 2 lb/gal Aquapier 27.8%, 2 lb/gal	1-3 pt/acre	0.25-0.75 lb ai/acre	Mix with 100 gal water to insure complete coverage. Will not control plants completely or mostly submerged. Do not treat more than one-half of pond surface area in a single operation. Do not exceed 6 pt/acre (1.5 ppb AI/acre). Do not use on food crops. Do not apply within ½ mile upstream of active potable water intake. Can be mixed with glyphosate. Use of spreader-sticker adjuvants will improve results.
	Triclopyr	Renovate 3, Ecotriclopyr 3 SL 44.4%, 3 lb ai/gal	0.5-2 gal/acre	1.5-6 lb ai/acre	Apply when plants are actively growing. Use higher rate when the weed mass is dense. Thoroughly wet all foliage. Use of nonionic surfactant is recommended.
SUBMERSED WEEDS	Copper solution	Komeen 8%, 0.8 lb ai/gal	1.7-3.3 gal/acre*ft	0.5-1.0 ppm	Copper is toxic to fish. Can be tank mixed with endothall, diquat or fluridone.
	Copper complexes (chelated)	Captain 15.9%, 9.1% copper 0.91 lb ai/gal	1.2-3 gal/acre*ft	0.4-1.0 ppm	Labeled for hydrilla. Can be tank mixed with diquat.
	2,4-D	Navigate, Aqua-Kleen 19%	100-200 lb/surface acre	7.0-14.0 ppm	pH higher than 8 reduces effectiveness. Do not treat more than one-half pond at a time. Do not apply within 600-2,400 ft of a potable water intake, depending on treatment rate.
		Weedar 64 (46.8%) Weed Rhap (46.7%) A-4D, DMA 4 IVM (46.3%) 3.8 lb ai/gal	2.5-10 gal/surface acre	3.5-14 ppm	
		Hardball 19.6%, 1.74 lb ai/gal	2.5-10 gal/acre*ft		
Aquacide 17.5%	15-60 lb/acre*ft (Aquacide)	1-4 ppm			

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SUBMERSED WEEDS [cont.]	Diquat	Reward, Littora 37.3%, 2 lb/gal	1-2 gal/surface acre (Reward) 0.5-2.0 gal/surface acre (Littora)	0.74-1.47 ppm 0.37-1.47 ppm	Do not treat more than one-third to one-half of pond at a time. Wait 14 days between treatments Do not apply directly to water. Application to muddy water may reduce effectiveness.	
		Weedtrine-D 8.53%, 0.4 lb/gal	5-10 gal/acre (Weedtrine-D)	0.74-1.47 ppm		
	Endothall	Aquathol K 40.3%, 4.23 lb ai/gal	03.-3.2 gal/acre*ft	0.5-5 ppm	If plant infestation is heavy, treat section 5-7 days apart. Not for use in brackish or salt water.	
		Aquathol Super K 63%	2.2-22 lb/acre*ft			
		Hydrothol 191 53%, 2 lb ai/gal	0.6-18 pints/acre*ft	0.5-3 ppm		Toxic to fish in doses higher than 0.3 ppm. Do not treat more than one-tenth of pond or lake with doses in excess of 1 ppm.
		Hydrothol 191 Granular 11.2%	3-81 lb/acre*ft			
	Fluridone	Sonar AS, Avast SC 41.7%, 4 lb ai/gal	1.0-7.7 oz/acre*ft	10-90 ppb (see label)	Do not apply as a spot treatment. Needs minimum of 45 days of contact. May require 30-90 days to achieve weed control. May be mixed with other herbicides and algacides. Greater potential for crop injury if treated water is applied to crops grown on low organic and sandy.	
		Sonar SRP, Sonar PR, Sonar Q, Avast SRP 5%, 0.05 lb ai/lb	0.9-5 lb/acre*ft	10-90 ppb (see label)		
	Triclopyr	Renovate 3, Ecotriclopyr 3 SL 44.4%, 3 lb ai/gal	0.7-2.3 gal/acre*ft (Renovate 3) 0.5-2.0 gal/acre (Ecotriclopyr 3 SL)	0.75-2.5 ppm	Setbacks from potable water intake based on amount of area treated and rate used. Can be tank mixed with 2,4-D amine.	
		Renovate OTF 14%	14-67 lb/acre*ft	0.5-2.5 ppm	Setbacks from potable water intake based on amount of area treated and rate used.	