



Keys to Effective
**Aquatic Vegetation
Management**

Identify • Measure • Select Chemical
Read & Follow Label • Apply



Applied Biochemists, an Arch Chemicals, Inc. company
W175 N11163 Stonewood Dr. Suite 234
Germantown, WI 53022
Ph: (800) 558-5106
Web: www.appliedbiochemists.com
Email: info@appliedbiochemists.com

Keys to Effective Aquatic Vegetation Management



IDENTIFY

Properly identify the nuisance vegetation. For more detailed identification, see *How to Identify and Control Water Weeds and Algae*, or visit our website www.appliedbiochemists.com.



MEASURE

Measure the surface area (acres) of vegetation and/or the volume (acre-ft). Measure average depth for volume calculations.



SELECT CHEMICAL

Select the proper product to control vegetation. Make sure all required application equipment and safety wear is available.



READ AND FOLLOW THE LABEL

Prior to treatment, fully read the label. Follow specifications to prepare and plan application according to directions.

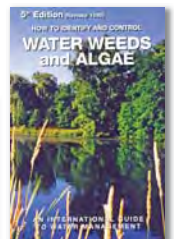


APPLY THE CHEMICAL

Apply the product according to the label, using proper application techniques and safety equipment.

Acknowledgement

Portions of this publication were obtained from "How to Identify and Control Water Weeds and Algae", editors J. Schmidt & J. Kannenberg, 5th edition, copyright 1976 Applied Biochemists.





IDENTIFY VEGETATION

Plants shown on pages 4 - 6 are some of the more common plants in residential lakes and ponds. Recommended chemical is shown after plant name.

For more specific recommendations, see 'How to Identify and Control Water Weeds and Algae'. Contact Applied Biochemists if your distributor does not stock this book.

ALGAE

Algae are primitive plants with no true leaves, stems or root systems.



Filamentous ('moss') -
Cutrine-Plus liquid for top growth, Cutrine-Plus granular for bottom growth

Thread-like, usually grows from bottom and rises to top as greenish surface mats



Planktonic ('Pea Soup') -
Cutrine-Plus liquid

Microscopic plants cause green or brown tinge, algae blooms can cause odor, oxygen loss and fish suffocation

FLOATING PLANTS

Floating plants can be divided into two basic categories: **plants rooted to the bottom with floating leaves** and **free-floating surface plants**.

Free Floating - Surface Plants



Chara (*Muskgrass, Stonewort*) -
Cutrine-Plus granular

Leaf-like structures make this form of algae easily confused with submerged weeds, identify by musky odor when crushed, and bristly feel

Watermeal/Duckweed - Small floating plants with rapid reproduction often mistaken for algae

Above: Pond with Watermeal and Duckweed

Right: Duckweed - **Weedtrine-D with surfactant** small, oval-shaped plant smaller than a pencil eraser, root attached, common in quiet waters

Far Right: Watermeal, smallest flowering plant, rootless, grain-sized, extremely difficult to control



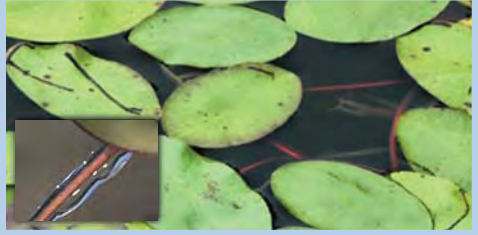
FLOATING

Free Floating - Surface Plants



**Salvinia -
Weedtrine-D with surfactant**
*Rounded paired leaves ½" long
with root-like hairs beneath*

Rooted Floating - Leaf Plants



**Watershield -
Shoreklear-Plus in late season**
*Oval-shaped leaves with slimy coating
underneath and on stems of mature plants,
purple flower in early summer*

EMERGENT PLANTS

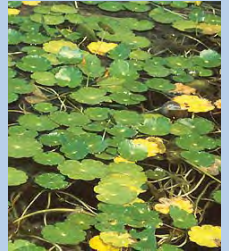
Emergent (Marginal) plants
grow above water in shallow
depths.



**Cattail -
Shoreklear-Plus**
*Up to 9 ft tall stalk with brown
cigar-shaped 'flower'*



**Water Lily -
Shoreklear-Plus in
late season**
*Round notched leaves
with white flowers
Similar to Spatterdock,
with yellow flowers*



**Water Pennywort -
Weedtrine-D with
surfactant**
*Half-dollar sized, shiny,
leathery leaves, long
creeping stems can
form dense mats*



**Creeping Water Primrose -
Shoreklear-Plus in late
season**
*Hollow red stem with many
leaves and yellow flowers*



**Purple Loosestrife -
Shoreklear-Plus**
*2 - 7 ft tall with bright
purple flowers*



**Phragmites -
Shoreklear-Plus in mid
to late season**
*10 -12 ft tall aggressive
grass, thick growth*

Submerged plants are usually rooted at the bottom and entirely under water.



**Pondweed -
Weedtrine-D**

There are many species of pondweed including: Curly-leaf (upper left), American (top center) and Sago (upper right).



Eurasian Watermilfoil -

Weedtrine-D with Cutrine-Plus liquid tank mix

Leaves in whorls of 4 with up to 20 leaf divisions, stalk with tiny reddish flowers may extend above surface



**Naiad -
Weedtrine-D with Cutrine-Plus liquid tank mix**

Slender, branching stem with leaves <1" long that are wider at the base; spines on margins



**Coontail -
Weedtrine-D**

Rootless, leaves crowded at tip



Hydrilla / Elodea -

Weedtrine-D with Cutrine-Plus liquid tank mix

Long-stemmed branching plants with whorled leaves $\frac{5}{8}$ " long. Leaves toothed in Hydrilla, not toothed in Elodea



**Bladderwort -
Weedtrine-D with Cutrine-Plus liquid tank mix**

Bladder-like pods on leaves



MEASURE AND CALCULATE

to aid in purchasing the correct amount of chemical, avoid wasting product and over- or under-dosing the water.

Useful Formulas

$$\text{Rectangular Pond/Lake Surface Acres} = \frac{\text{Length (ft)} \times \text{Width (ft)}}{43,560}$$

$$\text{Circular or Oval Pond/Lake Surface Acres} = \frac{\text{Length (ft)} \times \text{Width (ft)} \times 0.8}{43,560}$$

$$\text{Average Depth} = \frac{\text{Sum of the Depth Measurements Taken}}{\text{Number of Depth Measurements Taken}}$$

$$\text{Acre-Feet} = \text{Surface Acres} \times \text{Average Depth}$$

Converting Gallons to Acre-Feet

$$\frac{\text{Gallons of Water}}{325,869} = \text{Acre-Feet}$$

Sample Calculation

A pond is a 150ft by 250ft oval. The average depth is 4 feet.

To find surface acres of the oval-shaped pond use the calculation above.

Multiply length by width by the constant 0.8, then divide by the constant 43,560.

$$\text{Surface Acres} = \frac{150 \text{ (ft)} \times 250 \text{ (ft)} \times 0.8}{43,560} = \mathbf{0.689 \text{ Surface Acres}}$$

To account for depth, find acre-feet by multiplying by the average depth.

$$\text{Acre-Feet} = 0.689 \times 4 \text{ (ft)} = \mathbf{2.75 \text{ Acre-Feet}}$$

Make sure to read the application instructions, either acre-feet or surface acres will be needed to determine the amount of chemical to use.



SELECT CHEMICAL

by reading label to ensure product will obtain desired results.

	<p>Aquashade®</p> <ul style="list-style-type: none">• Colors water a beautiful, natural aqua-blue just by pouring in• No water use restrictions for animals, swimming or fishing• Maintain concentration for season-long control• 1 gallon treats 4 acre-feet (1.3 mil gal. water) at 0.8 ppm	
	<p>Aqua-Prep®</p> <ul style="list-style-type: none">• Protein blend with surfactants• Accelerates organic debris decay• Use with Weedtrine-D (or Shore-Klear) as a surfactant• Add 3 oz. per gallon of mix as a surfactant	
	<p>Bacti-Klear®</p> <ul style="list-style-type: none">• Available in both liquid and pellet form• Reduces organic muck and odors; improves water clarity• Maintenance applications are necessary for lasting results• Start-up application- 3 gals./acre-ft or 20 lbs. pellets/acre	
	<p>Citrine®-Plus Liquid</p> <ul style="list-style-type: none">• Controls surface filamentous and planktonic algae• 1 - 2 days for results, 7 - 10 days for full results• No water use restrictions• 1 gallon treats 1/3 to 1 2/3 acre-feet	
	<p>Citrine®-Plus Granular</p> <ul style="list-style-type: none">• Controls bottom-growing algae including Chara and Nitella• 1 - 2 days for results, 7 - 10 days for full results• No water use restrictions• 12 lbs. treats 0.2 surface acres (or 8,600 square feet)	
	<p>Weedtrine®-D</p> <ul style="list-style-type: none">• Contact herbicide targets a wide variety of aquatic weeds• Rapid response by target weeds• See label for water use restrictions• 1 gallon treats 0.1 to 0.4 surface acres of vegetation	
	<p>Shoreklear®-Plus</p> <ul style="list-style-type: none">• Systemic herbicide for aquatic/other non-crop sites• Up to 4 weeks for full results down to the roots• Contains a non-ionic surfactant, no additives needed• 1 gallon treats 1 to 5 1/2 acres of emergent vegetation	
	<p>AB Brand Copper Sulfate Crystals</p> <ul style="list-style-type: none">• Fine crystal dissolves easily in water• 1 - 2 days for results, 7 - 10 days for full results• Controls roots in sewer lines• 15 lbs. treats 2.8 to 22.4 acre-feet depending on algae species	

- Treatment times may vary by 1-2 months between regions.
- Always refer to the current product label for complete instructions.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<p>Early Season Bottom Growth Prevention Seasonal Re-growth Prevention Aesthetic Water Color Enhancement</p>											
<p>Accelerated Decay of Organic Muck As Surfactant with Aquatic Herbicides</p>											
<p>Accelerated Reduction of Organic Muck</p>											
<p>Surface Filamentous Algae Mat Control Planktonic "Pea Soup" Algae Bloom Control</p>											
<p>Bottom-growing Filamentous Algae Control Chara/Nitella Control</p>											
<p>Submerged Weed Control Controls Emergent and Floating Weeds when used with surfactant</p>											
<p>Cattail, Lily, Emergent Vegetation Control</p>											
<p>Surface Filamentous Algae Mat Control Planktonic "Pea Soup" Algae Bloom Control</p>											



Read & Follow Label Instructions

to accurately determine the proper amount of product(s).

Accurate measurements are critical in lake or pond treatments. The following application formulas require acre-ft or surface acres as the starting point for calculating product amounts. See page 7 (Measure) for beginning calculations. See page 18 (Conversions) for common conversions.

Aquashade[®]

Dosage: (at 0.8 ppm) 32 ounces per acre-foot (1 gallon treats 4 acre-feet)

_____ acre-ft x 32 oz./acre-ft = _____ ounces to use

Aquashade tints the water to prevent sunlight from reaching submerged plants. For best results, pour in early in the year prior to growth and maintain color for season-long control. Surface weeds and algae will still be able to get sunlight to grow.

Aqua-Prep[®]

Dosage: 0.5 gallons per acre-foot (1 quart treats ½ acre, 1 foot deep)

See container label for amounts to use for maintenance application.

Apply maintenance application amount every two weeks after initial amount.

_____ acre-ft x 0.5 gal./acre-ft = _____ gallons to use

Bacti-Klear[®] liquid or pellets

For Start-up Application

Dosage: 20 pounds per surface acre (Pellets), 3 gallons per acre-foot (Liquid)

Pellets: _____ acres x 20 lbs./acre = _____ pounds to use

Liquid: _____ acre-ft x 3 gal./acre-ft = _____ gallons to use

See container label for amounts to use for maintenance application.

Use maintenance application amount once desired appearance is reached.

Cutrine®-Plus Liquid

Dosage: varies between 0.6 - 3.0 gallons per acre-foot

Parts (by weight) copper per million parts water	*Gallons of Cutrine-Plus per Acre-ft of water
0.2 ppm	0.6
0.4 ppm	1.2
0.6 ppm	1.8
1 ppm	3.0

**Dosage depends on algae type, density and season.*

A 0.2 ppm application is standard for most types of planktonic and filamentous algae.

Refer to the label for requirements.

_____ acre-ft x 0.6* gal./acre-ft = _____ gallons to use

Cutrine®-Plus Granular

Dosage: 60 pounds per surface acre (1 pound treats 720 square feet)

_____ acres x 60 lbs./surface acre = _____ pounds to use

Weedtrine®-D

A surfactant is necessary when treating emergent and floating plants.

Application rate varies by target plant, density and season.

Submerged weeds: 5 - 10 gallons treats 1 acre of vegetation

_____ acres x 5 (up to 10) gal. = _____ gallons to use

Emergent weeds: 5 gallons treats 1 acre of vegetation

_____ acres x 5 gal. = _____ gallons to use

Floating plants: 2.5 - 3.75 gallons treats 1 acre of vegetation

_____ acres x 2.5 (up to 3.75) gal. = _____ gallons to use

Duckweed: 5 gallons treats 1 acre of vegetation

_____ acres x 5 gal. = _____ gallons to use

Watermeal can be very difficult to control. A tank mix of 10 parts Weedtrine-D, 1 part Cutrine-Plus with a non-ionic surfactant (diluted 9:1 with water) is often successful, but re-treatment will likely still be necessary. As listed in "How to Control Water Weeds and Algae", the active ingredient fluridone has also been successful in controlling watermeal.

AB Brand Copper Sulfate Crystals

Dosage: 0.67 - 5.32 pounds per acre-foot

Parts (by weight) Copper Sulfate per million parts water	*Pounds of Copper Sulfate per Acre-ft of water
¼ ppm	0.67
½ ppm	1.3
1 ppm	2.6
2 ppm	5.32

**Dosage depends on algae type and water hardness.*

Have local authorities help with identification prior to application. If identification is not possible, start at low dose of 0.67 pounds per acre-foot and increase if necessary.

_____ acre-ft x 0.67* lbs./acre-ft = _____ pounds to use

Shoreklear®-Plus

1. Refer to Table 3 on pages 8 - 11 of the product label to locate the name of the target plant. Use the chart to determine the amount to use. Refer to Spray Concentration column for hand-held sprayers.
2. Refer to Table 1 on page 3 of the label for the amount of product to mix with water based on spray concentration.

Example,

Table 3 from page 10

Weed Species	Spray Concentration
Spatterdock (Water Lily)	2.75%

Table 1 from page 3

Amounts of product for Spray Concentrations		
Volume of Water (gallons)	2.75%	3.50%
1 gallon	3.50 fl. oz.	4.50 fl. oz.

In Table 3 the recommended spray concentration for Shoreklear-Plus on Spatterdock is 2.75%. Table 1 shows the spray concentration of 2.75% requires 3.50 fluid ounces of Shoreklear-Plus diluted into 1 gallon of water to obtain the properly mixed solution for spot-treatment. The amount of solution needed will vary by density and plant. The concentrations are based on applying enough product to thoroughly wet the plant.

In areas of dense vegetation, treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead plants. This oxygen loss can be harmful to aquatic life. To minimize this hazard, do not treat more than ½ to ⅓ of the water at a time and wait 10-14 days between treatments.


Do not use copper-based products in ponds containing koi or hybrid goldfish. Do not use copper-based products in soft water (<50 ppm) if trout are present.



APPLY THE PRODUCT

according to label instructions.

- Always read and follow the entire product label.
- **Properly dilute liquid products according to the label.**

LIQUID PRODUCTS	DILUTION RATE	APPLICATION	 <p>Purchase a sprayer that will be used exclusively for pond chemicals.</p>
Cutrine-Plus	9:1	9 parts water to 1 part product (12.8 oz. per gal.)	
Weedtrine-D	5:1 see label	Submerged weeds (21 oz. per gal.)	
	19:1	Emergent weeds (6.5 oz. per gal. + surfactant)	
	25:1	Duckweed (5 oz. per gal. + surfactant)	
	64:1	Floating weeds (2 oz. per gal. + surfactant)	
Shoreklear-Plus	varies	Dilution varies with plant species, see label	
Aquashade	none	Apply by pouring directly into water	

Dilution increases volume to ensure even distribution, but does NOT reduce product's potency.

First calculate how much chemical to use, then dilute for application.

For example, Cutrine-Plus is applied at a rate of 0.6 gallons per acre-ft for planktonic algae. If the area to be covered is 0.33 acre-feet, you would need 0.2 gallons (or 25.6 ounces) of Cutrine-Plus to cover the area.

Based on the 9 to 1 dilution, a one gallon sprayer would contain 12.8 oz. of Cutrine-Plus (and 115.2 oz. of water). So using two tankfuls of solution would apply the needed 25.6 oz. to cover the area.

- **Evenly distribute granular products according to the label.**
- **Follow all safety procedures by wearing proper gear and using proper equipment.**

Before applying remember to:

- Correctly identify the target vegetation, and make sure you're using the proper chemical to treat
- Measure the treatment area and calculate the dosage needed, then dilute
- Obtain necessary permits or approvals
- Read product label completely

PRODUCT USE

Questions & Answers

Aquashade

**Can pets drink the water?
Can kids swim in it?**

Yes. Once dispersed evenly, at label rates, there are no restrictions for animals drinking Aquashade treated water or for swimming.

**Why is Aquashade different
than a colorant?**

Colorants only change the color of the water. Aquashade is EPA registered as a pesticide because it controls aquatic plant growth.

**How often do I add
Aquashade?**

Apply in season maintenance dosages, as needed, to restore loss of color due to dilution or dye degradation.

**I spilled Aquashade; how do
I clean it up?**

Don't add water. Soak up as much as you can with absorbent cloths. Scrub stain with oxygenated cleaner or mild bleach solution. If staining skin, use plain foam shaving cream or other alcohol based cleaner to scrub. Try adding baking soda for tough stains. For severe spills, call 800-424-9300.

Copper based products - **Citrine-Plus & AB Brand Copper Sulfate**

**Are there any swimming
restrictions?**

There are no swimming restrictions when either Citrine-Plus or Copper Sulfate are applied at label rates.

**Can domestic animals drink
from treated water?**

Yes. There are no restrictions for animals drinking treated water when applied at label rates. (Sheep, on average, tolerate up to 10 ppm copper in their diet. Be careful of overdosing in water where sheep drink.)

Will it harm my fish?

Copper based products are toxic to koi and hybrid goldfish. Trout are sensitive to copper in soft water (<50ppm carbonate hardness).

**Why use Citrine-Plus
instead of Copper Sulfate?**

Citrine-Plus is chelated, which protects the copper from binding with carbonates in the water. This allows the copper to stay in the water longer, increasing its contact time with algae. The chelated formula is more effective and longer lasting, especially in hard water.

**What do I do if the algae
comes back?**

Chelated copper products stay in the water at a high enough copper concentration to kill algae for about 24 hours. If the algae starts to grow back or turn green again, you will need to reapply.

Weedtrine-D

**What is a non-ionic
surfactant?
And do I need it?**

A non-ionic surfactant is a necessary additive when applying Weedtrine-D to emergent or floating plants. The surfactant helps the chemical "stick" to the plant and penetrate the waxy leaf coating.

Is Weedtrine-D toxic to fish?

There is no toxicity when used at label rates. However, as vegetation dies it consumes oxygen; to avoid dissolved oxygen depletion treat only $\frac{1}{3}$ to $\frac{1}{2}$ of the pond at a time using $\frac{1}{3}$ to $\frac{1}{2}$ of the required chemical. Wait 1-2 weeks between treatments.

Shoreklear-Plus

When will I see results?

Initially 4 -5 days, but complete control can take 2 weeks or more.

Do I need a surfactant?

No, it is included as an additive in Shoreklear-Plus.

Bacti-Klear

**What does the microbial
blend do?**

Microbial blends have naturally occurring bacteria that help to breakdown organic muck. Breakdown is more effective in aerated water.

POST-TREATMENT

Questions & Answers

- When will I see results?** Planktonic algae should subside in 1 to 2 days. Filamentous algae often turn pale yellow or white in 3 to 4 days. Plants take longer, typically wilting or showing discoloration in up to 2 weeks.
- What happens to the dead material?** Decaying plants/algae usually sink to the bottom where microscopic organisms break down plant materials. Plants with thick stems may require manual removal if not broken up by wind or waves action.
- Will my water quality change?** When large masses of vegetation decay, recycling of the plant materials may occur. Nutrients may end up in sediment or enter the water column.
- How long will control last?** Many weeds can be controlled for an entire season with one properly timed treatment. However, herbicides do not kill seeds and some do not get into root systems, which can result in regrowth. Algae often require treatments every 3 to 6 weeks because they are able to rapidly reproduce.
- Will I have fewer plants next year?** Once well established, nuisance plants will often continue to be a problem each year. Treating prior to seed production will yield better long-term results. But improving the water quality is the optimal way to decrease plant growth long-term, including lowering nutrient levels, aerating the water and keeping the pond edges steep.
- What happens to the chemical in the water?** Products recommended in this book do not remain in the water in their original state for extended periods of time (excluding copper sulfate). Chemical and biological actions break down these compounds into common by-products, which are recycled in the environment.
- Are these products safe for my fish?** Decomposing weeds/algae consume oxygen which can result in oxygen depletion which suffocates fish. Treat small sections of the water at a time to reduce this risk. Koi and goldfish are sensitive to copper products; these products are not labeled for ornamental ponds.
- What are common reasons for failure?** Failures can occur, typically due to one or a combination of the following reasons.
- Not completely following the directions on the product label
 - Misidentification of target plant (using the wrong product)
 - Miscalculation of treatment area (using the wrong dosage)
 - Adverse weather conditions (high winds or rain storms) during or closely following treatment
 - Water conditions (high turbidity, low temp., etc.) interfering with product action
 - Weed re-growth or appearance of new vegetation
 - Improper timing of treatment - too early or too late
 - Rapid water exchange causing chemical dilution

APPLICATION SAFETY

For successful results, safe application is crucial when using these products. Read and follow the product labels completely to protect the applicator and environment from product misuse. The following information is general use safety for hazardous materials and pesticides.

- HANDLING** Avoid contact with skin, eyes and clothing.
Wear protective clothing and eyewear as specified.
Avoid prolonged breathing of vapors.
Do not take internally.
Do not eat, drink or smoke during handling.
Promptly wash off spills on clothing skin or equipment.
- STORAGE** Store product in a locked, well-ventilated, cool, dry area away from food, feed, seed and medicines.
Do not subject product to temperature extremes.
Avoid storage of diluted product for next use.
Store in original containers - do not store in or use unlabeled products.
- APPLICATION** Avoid drift - keep application within the intended treatment area.
Treat from the shoreline outward to avoid trapping organisms in shallow water.
In heavily infested waters with low dissolved oxygen, treat only $\frac{1}{3}$ to $\frac{1}{2}$ of the water at a time using $\frac{1}{3}$ to $\frac{1}{2}$ of the product - allow 1 - 2 weeks between treatments.
Make sure that application equipment is made of compatible material with chemical being used.
Keep application equipment functioning properly. In case of a mechanical problem, stop immediately and repair or replace the unit.
Do not treat during adverse or changing weather conditions.
Post signs or notify residents if water use is to be restricted for any reason.
Some states require pre-posting of public areas. Check with your local government agency to ensure compliance with all local laws.
- CLEAN UP** Clean and check application equipment.
Flush out spray tanks, mixing barrels, etc.
Wash hands and remove soiled clothing.
Wash clothing and protective equipment separate from other laundry.
- DISPOSAL** Do not reuse empty containers.
Empty containers should be triple-rinsed and disposed of in accordance with label instructions.
Dispose of unused product properly.

If you are in doubt regarding a product, contact your Department of Agriculture, Fish & Game or a County Agricultural Extension Agent.

For questions regarding the use of an Applied Biochemists product, call 1-800-558-5106.

GENERAL RESTRICTIONS ON USE OF TREATED WATER (Number of Days)

(Always refer to current product label for specific requirements.)

PRODUCT NAME	HUMAN		DOMESTIC ANIMAL		IRRIGATION		
	DRINKING	SWIMMING	CONSUMPTION	DRINKING	TURF	FORAGE	CROPS
AQUASHADE	*	0	0	0	0	0	0
BACTI-KLEAR	0	0	0	0	0	0	0
CUTRINE-PLUS LIQUID	0	0	0	0	0	0	0
CUTRINE-PLUS GRANULAR	0	0	0	0	0	0	0
WEEDTRINE-D	5	1	0	5	5	5	5
SHOREKLEAR-PLUS	**	0	0	0	0	0	0
AB BRAND COPPER SULFATE	0	0	0	0	0	0	0

* Do not apply to drinking water sources. See product label for specific use restrictions.

** See product label for set-back distance required from potable water intake.

Always refer to current product label prior to use.

CALCULATIONS

ACREAGE CALCULATION CHART

<i>WIDTH (in feet)</i>	AREA (in surface acres)																		
	<i>LENGTH (in feet)</i>																		
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
100	0.23	0.34	0.46	0.57	0.69	0.80	0.92	1.03	1.15	1.26	1.38	1.49	1.61	1.72	1.84	1.95	2.07	2.18	2.30
150	0.34	0.52	0.69	0.86	1.03	1.21	1.38	1.55	1.72	1.89	2.07	2.24	2.41	2.58	2.75	2.93	3.10	3.27	3.44
200	0.46	0.69	0.92	1.15	1.38	1.61	1.84	2.07	2.30	2.53	2.75	2.98	3.21	3.44	3.67	3.90	4.13	4.36	4.59
250	0.57	0.86	1.15	1.43	1.72	2.01	2.30	2.58	2.87	3.16	3.44	3.73	4.02	4.30	4.59	4.88	5.17	5.45	5.74
300	0.69	1.03	1.38	1.72	2.07	2.41	2.75	3.10	3.44	3.79	4.13	4.48	4.82	5.17	5.51	5.85	6.20	6.54	6.89
350	0.80	1.21	1.61	2.01	2.41	2.81	3.21	3.62	4.02	4.42	4.82	5.22	5.62	6.03	6.43	6.83	7.23	7.63	8.03
400	0.92	1.38	1.84	2.30	2.75	3.21	3.67	4.13	4.59	5.05	5.51	5.97	6.43	6.89	7.35	7.81	8.26	8.72	9.18
450	1.03	1.55	2.07	2.58	3.10	3.62	4.13	4.65	5.17	5.68	6.20	6.71	7.23	7.75	8.26	8.78	9.30	9.81	10.3
500	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.31	6.89	7.46	8.03	8.61	9.18	9.76	10.3	10.9	11.5
550	1.26	1.89	2.53	3.16	3.79	4.42	5.05	5.68	6.31	6.94	7.58	8.21	8.84	9.47	10.1	10.7	11.4	12.0	12.6
600	1.38	2.07	2.75	3.44	4.13	4.82	5.51	6.20	6.89	7.58	8.26	8.95	9.64	10.3	11.0	11.7	12.4	13.1	13.8
650	1.49	2.24	2.98	3.73	4.48	5.22	5.97	6.71	7.46	8.21	8.95	9.70	10.4	11.2	11.9	12.7	13.4	14.2	14.9
700	1.61	2.41	3.21	4.02	4.82	5.62	6.43	7.23	8.03	8.84	9.64	10.4	11.2	12.1	12.9	13.7	14.5	15.3	16.1
750	1.72	2.58	3.44	4.30	5.17	6.03	6.89	7.75	8.61	9.47	10.3	11.2	12.1	12.9	13.8	14.6	15.5	16.4	17.2
800	1.84	2.75	3.67	4.59	5.51	6.43	7.35	8.26	9.18	10.1	11.0	11.9	12.9	13.8	14.7	15.6	16.5	17.4	18.4
850	1.95	2.93	3.90	4.88	5.85	6.83	7.81	8.78	9.76	10.7	11.7	12.7	13.7	14.6	15.6	16.6	17.6	18.5	19.5
900	2.07	3.10	4.13	5.17	6.20	7.23	8.26	9.30	10.3	11.4	12.4	13.4	14.5	15.5	16.5	17.6	18.6	19.6	20.7
950	2.18	3.27	4.36	5.45	6.54	7.63	8.72	9.81	10.9	12.0	13.1	14.2	15.3	16.4	17.4	18.5	19.6	20.7	21.8
1000	2.30	3.44	4.59	5.74	6.89	8.03	9.18	10.3	11.5	12.6	13.8	14.9	16.1	17.2	18.4	19.5	20.7	21.8	23.0

CONVERSIONS

Area

<p>1 acre = 0.405 hectares 4,047 square meters 43,560 square feet</p>	<p>1 hectare = 2.47 acres 10,000 square meters 107,639 square feet</p>
---	--

Distance

<p>1 foot = 0.0003 kilometers 0.305 meters 0.00019 miles</p>	<p>1 meter = 0.001 kilometers 0.00062 miles 3.28 feet</p>
--	---

Weight

<p>1 pound = 0.45 kilograms 453.6 grams 16 ounces</p>	<p>1 kilogram = 2.2 pounds 1000 grams 35.27 ounces</p>
---	--

Volume

<p>1 ounce = 2 tablespoons 6 teaspoons 0.125 cups</p> <p>1 acre-foot = 43,560 cubic feet 325,869 gallons</p> <p>1 gallon = 128 ounces 3.78 liters 4 quarts 8 pints 16 cups</p>	<p>1 mL = 0.068 tablespoons 0.2 teaspoons 0.034 ounces</p> <p>1 cubic meter = 35.3 cubic feet 264.2 gallons</p> <p>1 liter = 33.8 ounces 1.06 quarts 0.26 gallons 2.11 pints 4.23 cups</p>
--	--

NOTES

