

Clipper Herbicide[®] 2021

ACCREDITATION TRAINING[©]

www.clipperaquatic.com.au

Clipper Herbicide[®]

ACTIVE CONSTITUENT: Each tablet contains 15 g FLUMIOXAZIN

GROUP **14** HERBICIDE

For the control of aquatic weeds in agricultural, non-agricultural, pasture and natural aquatic systems, including all bodies of fresh water which are non-flowing and the margins of streams, lakes, dams and channels which are slow moving or quiescent.

For use by accredited persons only.

POISON

**KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING**

Clipper Training Program



- Online registration.
- Clipper Herbicide® training requirements
- Clipper Herbicide® Profile
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- Results of using Clipper Herbicide®
- How does Clipper Herbicide® work
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- Protecting aquatic life and reducing the risk of an algae bloom.
- Frequency of application and summary.
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- Further question and contacts.

Clipper Herbicide[®] Training Requirements

For use by accredited persons only.

All applicators are required to have undertaken this training. It is recommended that you undertake a refresher course every 5 years.

A 6 Section 32 multiple-choice, true and false etc questionnaire is to be completed as well as some calibration activities to gain accreditation.

The Clipper Herbicide[®] applicator is required under every state and territory regulations to maintain a current Chemical users training (Eg Auschem or Chemcert training) and be the holder of a licence if required. (Refer to your state authority for pesticide use requirements.)

Macspreed Australia is the recognised Clipper[®] supplier and trainer .

Macspreed maintains a data base of all accredited users.

Privacy clause

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Clipper Herbicide[®] General introduction and application

Clipper Herbicide[®] is a fast-acting contact herbicide that controls selected floating, emergent and submerged aquatic weeds and algae.

It is most effective when applied to young, actively growing weeds in water with pH less than 8.0.

Clipper Herbicide[®] is a large-diameter, effervescent herbicide tablet contained in a water-soluble wrapping which can be applied in two ways:

- A. thrown directly into the water body where the target weeds grow, without the aid of spraying equipment, or
- B. dissolved in water and applied with conventional spraying equipment.

Approximately 27 tablets are required per Megalitre of water.

1 tablet per 37.5m³ of water. (37,500L)

Clipper Herbicide® Profile

Clipper Herbicide® is a unique dissolvable effervescing tablet. The size is 75 mm x 28 mm approx. 150 gm weight

For the control of aquatic weeds in agricultural, non-agricultural, pasture and natural aquatic systems.

This includes all bodies of fresh water which are non-flowing and the margins of streams, lakes, dams and channels which are slow moving or quiescent.

Curtains can be used to adjust the waterflow to allow treatment. (If the water flow rate exceeds 1 metre per minute)

<https://aussieenvironmental.com.au/product/silt-curtain-class-1/>

A great profile with low toxicity to fish, crustaceans' frogs etc.

Quite unique compared to acrolein and other products.

Clipper Herbicide® is a game changer for the control of many problematic emergent and submerged aquatic weeds



**One tablet treats 37.5 m³ of water.
(37.5m³) (37,500L)**

17 Weeds Listed to Control

Control of floating, emergent and submerged weeds

- *Alligator weed (Alternanthera philoxeroides)*
- Amazon Frogbit (Limnobium laevigatum)
- Azolla (A.pinnata and A . filiculoides)
- Blunt Blue Water Lily (Nymphaea spp)
- pondweed (Potamogeton ochreatus)
- Cabomba (C. caroliniana)
- Duckweed (Lemna spp)
- Floating filamentous algae (Cladophora spp, Spirogyra spp)
- Hornwort (Ceratophyllum demersum)
- Leafy Elodea (Egeria densa)
- Mexican Water lily (N.mexicana)
- *Sagittaria (S.platyphylla)*
- Salvinia (S. molesta)
- Slender knot or Smartweed (Persicaria decipiens)
- Water Lettuce (Pistia stratiotes)
- *Water stargrass (Heteranthera zosterifolia)*
- Yellow water poppy (Hydrocleys nymphoides)

Note: Italic.. treat usually both sub surface and surface application for best results.

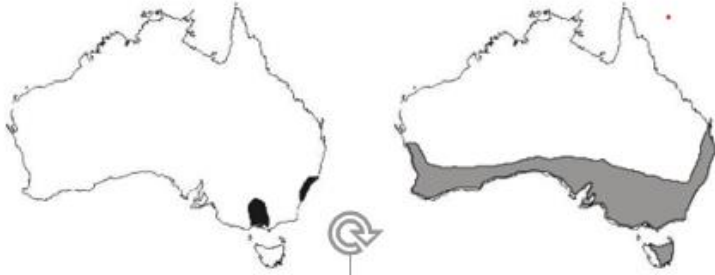
Limited Aquatic weed control tools available until now.



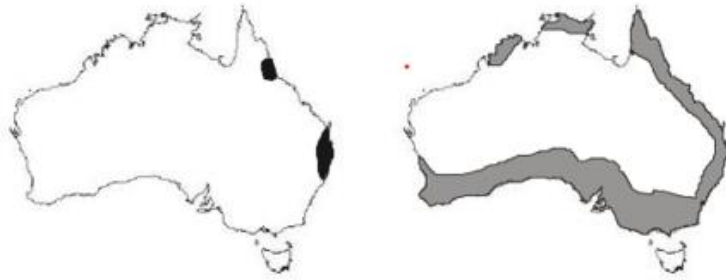
Current

Potential

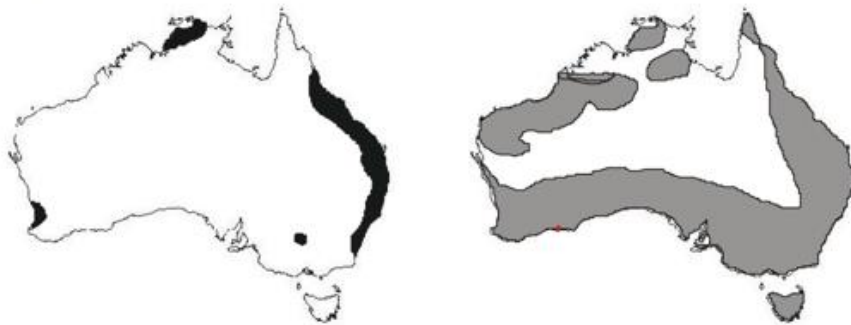
Alligator weed



Cabomba



Salvinia



NATIONAL WEEDS STRATEGY



Fact Sheet

Weeds of National Significance

Clipper Herbicide[®] Treatment results



Duckweed Before and After 13 Days after application

Clipper Herbicide[®] Treatment results

Before



After



Azolla, sagittaria, duckweed algae. Belmont NSW

Clipper Herbicide[®] Treatment results



Duck weed control 13 days

Clipper Herbicide[®] Treatment results

Mt Poverty Salvinia



Clipper Herbicide[®] Treatment results

Before



After



Water lettuce, Salvinia. Cairns QLD

Clipper Herbicide[®] Treatment results

Before



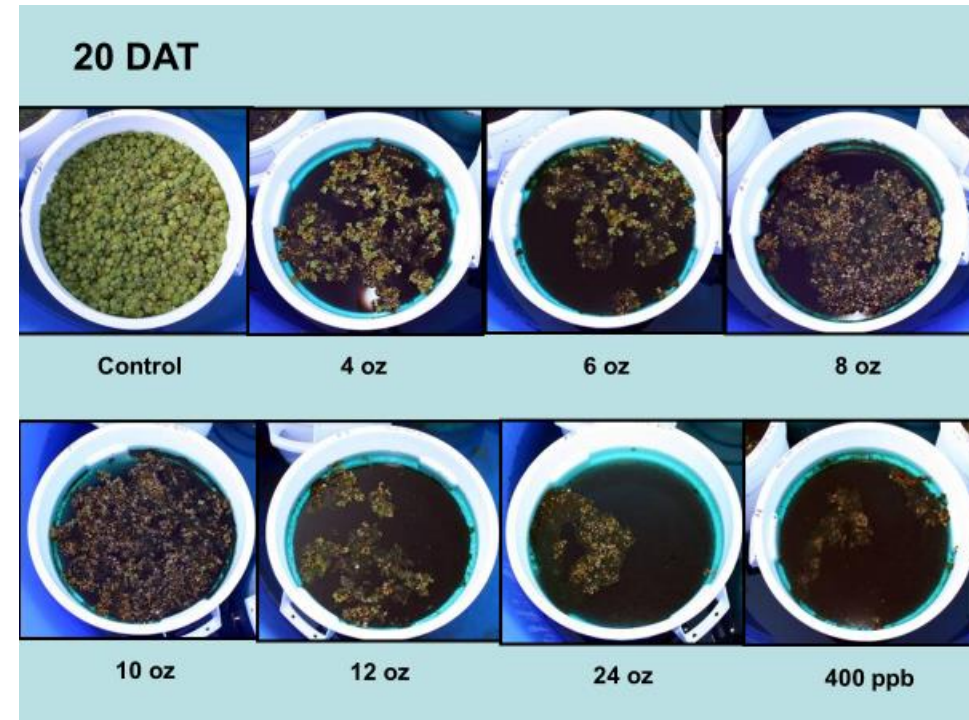
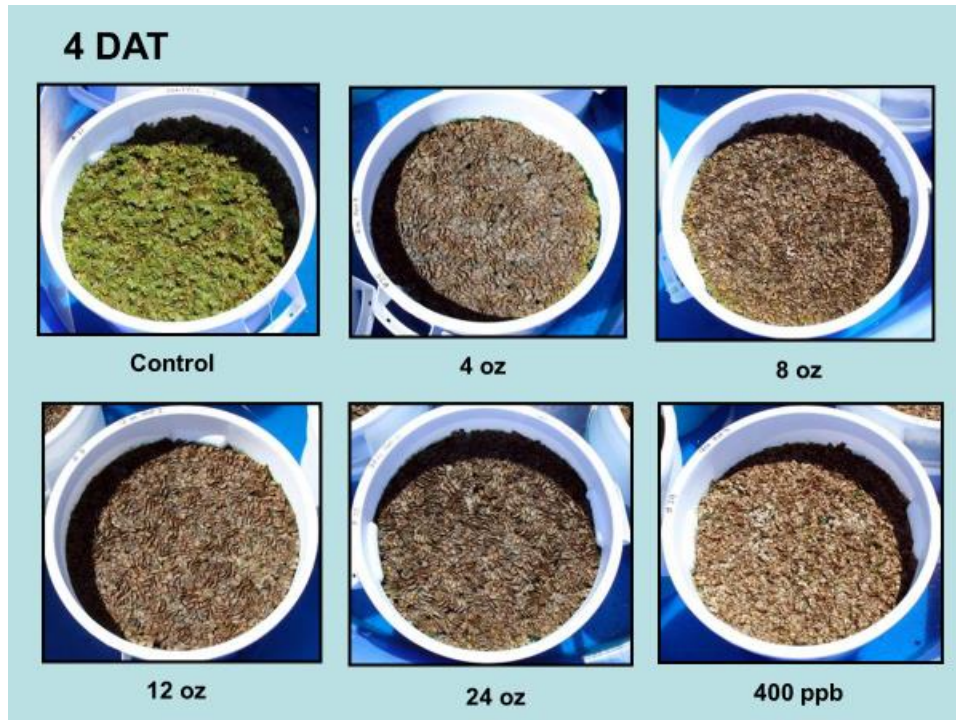
After



Amazon frogbit. Cairns QLD

Clipper Herbicide[®] Treatment results

Giant Salvinia



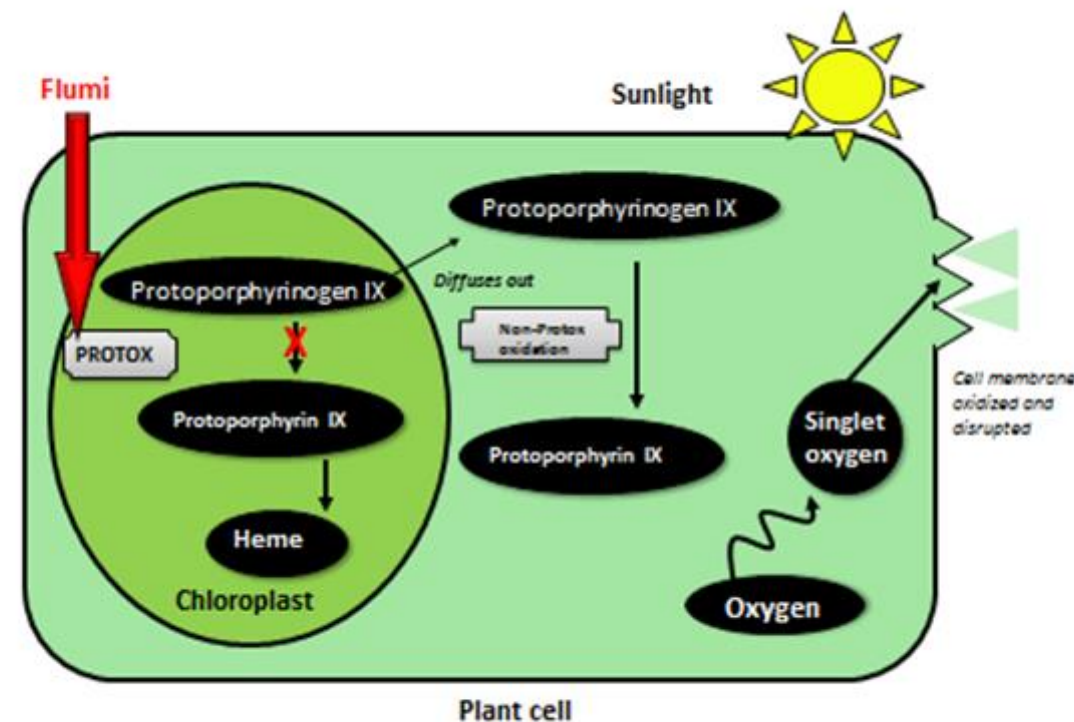
How does Clipper Herbicide[®] work

Clipper Herbicide[®] is a Group 14 (the old group G) Herbicide it is a fast-acting contact herbicide that controls selected submersed, emergent and floating aquatic weeds.

It is most effective when applied to young, actively growing weeds in water with a pH of less than 8.0.

Clipper Herbicide[®] is a member of the N-phenylphthalimides group of herbicides.

The mode of action of Clipper Herbicide[®] is to inhibit protoporphyrinogen oxidase (Protox), **an enzyme important in the synthesis of chlorophyll.**



This active needs Sunlight to activate it.
It works faster in warm weather and water as the plants take it up and it acts quicker

Clipper Herbicide[®] Restrictions

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**DO NOT use unless accredited by the Supplier.
Contact the Supplier for details.**

DO NOT apply to intertidal or estuarine areas.

DO NOT apply to water bodies or areas where the herbicide cannot be contained.

DO NOT apply if treated water can overflow or spill into unintended areas.

**DO NOT apply to areas where the water is flowing.
Any water movement should be contained by the use of a temporary water curtain.**

If flow rates outside the treated area exceed 1 metre/minute, a temporary water curtain is required to limit product movement.

Shade cloth and floats can be used for this.



Clipper Herbicide® Restrictions



DO NOT apply as a direct tablet application or water column treatment to water bodies where the pH exceeds 8.0 at the time of application.

DO NOT use in water utilised for commercial fish or crustacean farming.

DO NOT apply during the months May to September (NSW, VIC, TAS, WA south of 28th S latitude) or June to August (NT, QLD and WA north of 28th S latitude).

Observe the withholding periods when applying Clipper Herbicide® to water that may be used for irrigation.

Application of Clipper Herbicide® to *public aquatic areas may require special approval and/or permits. Consult with local authorities, if required.*

CLIPPER Herbicide® Application Restrictions

28 th S Parallel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North (NT, QLD, WA)	✓	✓	✓	✓	✓	[Red]			✓	✓	✓	✓
South (Vic, NSW, Tas WA)	✓	✓	✓	✓	[Red]					✓	✓	✓



28TH S PARALLEL

The latitude of Geraldton, WA, Australia is -28.782387

The latitude of Byron Bay, NSW, Australia is -28.643057.

The latitude of Lake Eyre SA Australia is -28.366667.



Label listed Application methods

SUB-SURFACE application (Based on a water volume)

- Tablets applied directly at a recommended number to achieve a ratio of 200 to 400 *ppb* (1 tablet per 37.5 m³ or 37,000 L)

SUB-SURFACE Linear application (Surface spray based on surface area m²)

- Boom/handgun application of dissolved tablets applied directly to the water surface or weed at a ratio of 200 to 400 *ppb (Label instructions)*

Add aquatic surfactant like ProForce Manta Ray @ 0.5 – 1 % v/v.

SURFACE Injection of a Spray solution

- Hand gun / nozzle injection application of 200ppb (1 tablet per 75m³ or 75,000L) or 400ppb (1 tablet per 37.5 m³ or 37,000 L). (As per the Label instructions)

Application method calibration.

2. Surface area of the water body.

This is required to calculate the appropriate Clipper Herbicide[®] rate when spraying the surface of the pond for control of floating weeds, or when spraying the foliage of emergent weeds that grow from the water.

The simplest method to calculate the Area is to use basic equations for common shapes - which can be applied if the water body closely resembles a circle, square, rectangle or trapezoid.

You can use google maps to help in some instances.

Drop a pin and select measure.

Application method calibrations cont.

Circular shape

Measure Circumference at the edge of the water. Then calculate the radius using the formula $r = C/2\pi$. Then calculate the Area using the formula $A = \pi r^2$.

Square or rectangular shape

Measure the width and the length of the water body. Multiply length by width to determine Area in square metres.

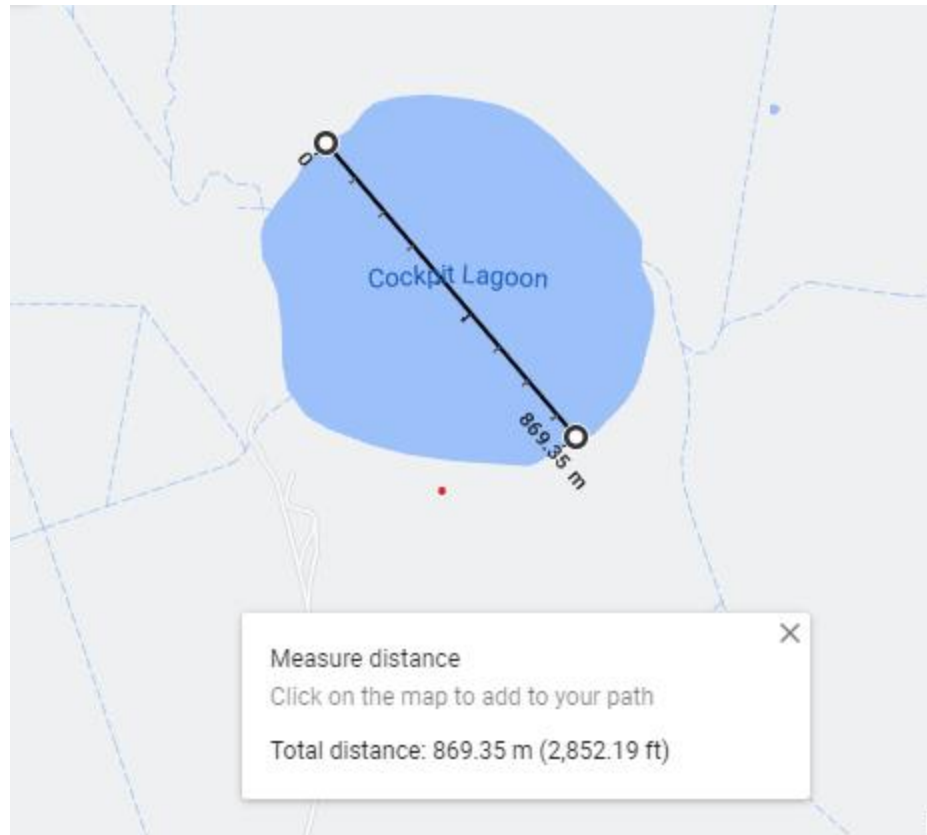
Trapezoid shape

Measure the length of the unequal sides and calculate the average length. Multiply by the width to determine Area in square metres.

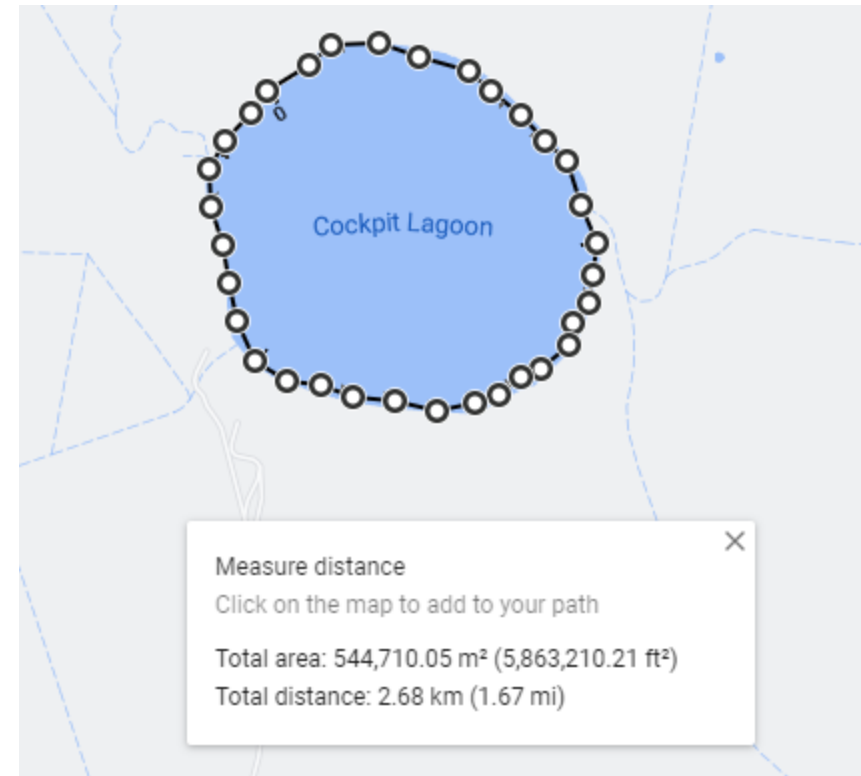
Irregular shapes

Firstly, calculate the average depth of the water body by taking a representative number of depth measurements from all areas of the water body. Then use one of the following methods to determine the Area in square metres:

Measuring using Google Maps Cockpit Lagoon



Method 1 Diameter measurement



Method 2 Circumference measurement,,

Application method calibrations Cockpit Lagoon

Method 1 Diameter measurement

Average depth 1.5 m

Diameter 869.35m /2 = 434.65 m radius (r)

Calculate the Area using the formula $A = \pi r^2$.

($\pi = 3.14159$) $A = 3.142 \times (435\text{m})^2$

Area = 594,544.95 m² x 1.5 m = 891,817.4 m³

(1 Megalitre of water = 1000 m³)

891,817.4 m³ / 1000 = 891.82 Megalitre

26.666 (400 ppm) x 891.82 Megalitre

= 23,722 tablets

Method 2 circumference measurement

Average depth 1.5 m

Circumference = 2.68 km = 2680 m

calculate the radius using the formula $r = C/2\pi$. ($\pi = 3.14159$)

Then calculate the Area using the formula $A = \pi r^2$.

2680 m / (2 x 3.14159 (π))= 426.53 m radius

$A = 3.14159 (\pi) \times (426.53 \text{ m})^2 = 571,542.69 \text{ m}^2$

Volume = Area m² x Depth m = m³

= 571,542.69 m² x 1.5 m = 857,314 m³

857,314 m³ / 1000 = 857.31 Megalitre

Golf course Application to known volumes .



Dam A - 12,000 m³ *1000= 12,000,000 L = 12 Meg/L

(12 meg X 26.6 Tablets per Meg/L) = 314.4 tablets total /2 = 157.2 tablets per treatment

Treatment 1. 157.2 tablets

Treatment 2 after 14 days. 157.2 Clipper[®] tablets (Note: this treatment may be targeted at areas that appear least affected by the first treatment and may not require full number of tablets)

Dam B, C & E treatment not required (Na)

Golf course Application to known volume's part treatment.

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Dam D - 5,000 m³ *1000= 5,000,000 L = 5 Meg/L
(50% treatment)

(5 meg X 26.6 Tablets per Meg/L) = **133**
tablets total /2 = **66.5 or 66** tablets per
treatment

Treatment 1. **66** tablets

Treatment 2 after 14 days. **66** Clipper[®] tablets
(Note: this treatment may be targeted at areas that
appear least affected by the first treatment. They may
not require full number of tablets)

Use your calculator to check these answers

Calibration of a surface treatment to a dam

Dam F –surface area 3,000 m²



Surface application

Apply at a rate of 12 – 15 L of spray solution to an area of 100m²

1 Clipper[®] Tablet for every 50 L of water.

$3,000\text{m}^2 / 100\text{m}^2 = 30$ times

$30 \times 15\text{L solution} = 450 \text{ L total.}$

$450 \text{ L total} / 50 \text{ L water} = 9 \text{ tablets}$

Allow time for tablets to dissolve.

Clipper Herbicide [®] Online rate calculator

Or refer to the Clipper Label

alternative manual calculation methods:

- SUB-SURFACE application
- SUB-SURFACE Linear application
- SURFACE application

Rate Calculator

Please select your application method

Sub Surface application

Sub Surface boom application

Surface application

Clipper Herbicide[®] Withholding

Between treatment and re-entering treated water: not required

Between treatment and using treated water for drinking by pets and livestock: not required

Between treatment and using treated water to irrigate pasture for grazing: 2 days

Between treatment and using treated water to irrigate couch or kikuyu turf and lawns: 2 days

For other turf species – contact your supplier

Between treatment and using treated water for recreational fishing: 3 days

Clipper Herbicide[®] With holding cont.

Between treatment and using treated water, with pH greater than 6.8, to irrigate gardens and ornamentals: 7 days

Between treatment and using treated water, with pH greater than 6.8, to irrigate food crops: 14 days

Between treatment and using treated water for drinking by humans: 10 days

NOTE:

- 1. Water being held and then used for irrigation typically has pH higher than 6.8. If a lower pH occurs then consult your supplier before using.**
- 2. Appropriate warning signs should be posted to limit use of treated water as per the above withholding periods.**



Protecting aquatic life and reducing the risk of an algae bloom.

Rapid decomposition of vegetation from herbicide treatment can result in loss of oxygen from the water.

A sudden decrease in dissolved oxygen can result in fish suffocation.

When treating dense vegetation, it is advisable to treat the water body in sections (not more than 50% at one time) to avoid an overall decrease in dissolved oxygen.

Applications should be at least 14 days apart.

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A graphic element consisting of a blue and yellow wavy line with a red dot, resembling a stylized wave or a fish tail, positioned below the word "CLIPPER".

Frequency of application.

Treatment of a water body may involve one, or sequential applications.

If more than one, frequency of application is influenced by the same factors that influence the number of applications as listed on the label.

Summary Number and timing of applications Refer to CLIPPER Herbicide Label for more details Page 4 & 5

Treatment of a water body may involve one, or multiple applications. If multiple, the number of applications is determined by:

- 1. The number and diversity of weeds to be controlled.**
- 2. Density of the weeds. Very dense populations of the target weed with corresponding high biomass may require multiple applications of CLIPPER Herbicide.**
- 3. Differences in susceptibility to CLIPPER Herbicide between weeds. For example, *Egeria densa* is known to be slower to respond to treatment with CLIPPER Herbicide.**

Applications summary continued



4. Temperature and the amount of direct sunlight received by the water body. CLIPPER Herbicide works better under sunny warm conditions and when the treatment area is fully exposed to direct sunlight. DO NOT apply CLIPPER Herbicide during the winter months when weeds are not growing actively and/or when low temperatures and low light intensity combine to create less favourable conditions for the herbicide to work.

5. CLIPPER Herbicide breaks down by hydrolysis and has a short half-life in water. The half-life of CLIPPER Herbicide tablets in water is directly affected by pH of the water. The higher the pH, the shorter the half-life. DO NOT apply CLIPPER Herbicide to the water column when the pH of the water exceeds 8.0 at the time of application. Use only as a foliar application in a buffered spray solution against floating weeds in such conditions.

6. The pH of the water body can increase and exceed 8.0 by mid-day due to photosynthesis. To fully utilize herbicidal activity of CLIPPER Herbicide related to pH, available heat and light intensity during daylight hours, always apply CLIPPER Herbicide early in the morning. DO NOT apply CLIPPER Herbicide in the afternoon or when prolonged cloud cover is expected. Semi-shaded or permanently shaded sections of the water body may require additional applications compared to sunn areas.



Frequency of application continued.

In addition, timing of subsequent applications is influenced by:

- 1. Whether or not the dominant weed or weeds controlled by the initial application are still present and growing. In some instances, it may be advisable to postpone follow-up applications until the dominant target weed is completely controlled or affected by the herbicide before making a follow-up application.**
- 2. Re-application interval for Clipper Herbicide ® tablets is 14 days or longer depending on the situation. DO NOT re-apply within the first 14 days.**
- 3. DO NOT apply more than three times in a single treatment. Only one treatment per year should be required, not including spot-spraying or targeted clean-up sprays to remove weed survivors or re-infestations.**

Environmental fate

Half-lives and Koc estimated from the environmental fate laboratory studies for Flumioxazin

Fate Property	Status	Half-life or Koc
Hydrolysis	pH 5	4.2 days
	pH 7	1 day
	pH 9	0.01 days
Aqueous photolysis (pH 5)		1 day
Soil photolysis		3.2 and 8.4 days
Aerobic soil metabolism		11.9 and 17.5 days
Anaerobic aquatic metabolism		0.2 and 0.2 days

* USA EPA 2003

Clipper Herbicide[®] Product Stewardship Summary.

- Not suitable for home garden use.
- Must be applied by an Accredited applicator with current chemical user training and or a licenced contractor. Refresher required training every 5 years
- Must be applied and used in accordance with the label and the state requirements.
- Must not exceed. 400 ppb.
- Must be used in the recommended treatment period.
- Must be applied using the required PPE.
- Application records to be kept for the required period as listed in each state or territory.

CLIPPER STORAGE AND DISPOSAL HERBICIDE

Store in a locked room or place away from children, animals, food, feedstuffs and fertilizers. Store in the closed, original container in a dry, cool well-ventilated area out of direct sunlight.

DO NOT store in or expose product to wet conditions. Rough handling of product may cause breakage of water soluble wrapping.

DO NOT dispose of undiluted chemicals on-site. Use an approved waste management facility or designated landfill.



Wet / damp tablet





SAFETY DIRECTIONS.

Poisonous if absorbed by skin contact or swallowed. May irritate the eyes and skin.

Avoid contact with eyes and skin. Open packets only as needed and never remove the water-soluble wrapping around the tablet.

When opening the container and using the product, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. In addition, when preparing spray and using the prepared spray wear goggles.

After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use wash gloves, goggles, and contaminated clothing.



PRECAUTIONS

While using elbow long gloves, tear the bag open and throw the contained tablets wrapped in water soluble covering directly into a waterbody infested with aquatic weeds at appropriate spacing; or add the contained tablets wrapped in water soluble covering directly into the spray tank.

When dissolving in the spray tank, add individual tablets slowly, one at a time.

USE ALL TABLETS.

Safety of treated water on gardens and ornamentals has not been tested and therefore, it is recommended that small areas of gardens or a small number of ornamental plants be tested for safety before largescale application occurs.



Recommended equipment.

Electronic Calculator

Cotton overalls (or equivalent clothing)

Elbow-length chemical resistant gloves.

Surface application Goggles, (or equivalent.)

Height Pole if required

Tape measure 50 m

Water pH tester

Optional depending on application method.

Boat or canoe for Surface application

Water curtains / modified shade cloth.

Appendix and references

1 Megalitre of water = 1000 m³

Megalitres to Litres 1 Megalitre: A megalitre is exactly 1,000,000 litres

26.666 (> 27) tablets per 1 Megalitre of water or 1000m³ = 400 ppb.

1 tablet per 37.5 m³ = 400 ppb (Lower rate 200 ppb) (37,500L)

Measure Circumference at the edge of the water. Then calculate the radius using the formula $r = C/2\pi$. ($\pi = 3.14159$) Then calculate the Area using the formula $A = \pi r^2$.

Volume

$V = \pi r^2 h$ (h = depth)

Length (m) X width (m) x depth (m) = Volume m³

Desired PPM Amount of product to add (mL/g) = $\frac{\text{Desired PPM} \times \text{water Volume (L)}}{\text{Product concentration in (mL/L or g/L or g/kg)}}$ Eg. ai.
Note PPM x 1000 = PPB

Applied PPM = $\frac{\text{Product Added (mL or g)} \times \text{product concentration (mL/L or g/L or g/kg)}}{\text{Water volume in L}}$ Eg. ai.



Training Quiz.

PLEASE COMPLETE THE 6 SECTION WITH 20 LABEL BASED MULTIPLE CHOICE / QUIZ QUESTIONS AND THE CALIBRATION ACTIVITIES

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Questions

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For further information and aquatic
weed control solutions

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