

Mosquiron 2010 Field Trials in Canada and the United States

Portage la Prairie - MB Site



Mosquiron 2010 Field Trials in Canada and the United States

Abbotsford - BC Site



2010 Field Trial Results

- ▶ Study results demonstrate Mosquiron formulations provided 100% Control for duration of study at all locations



MOSQUIRON 0.12CRD

U.S. APPROVED LABEL

PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals CAUTION

Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to freshwater and estuarine/marine invertebrates. Runoff can be hazardous to aquatic organisms in water adjacent to treated areas. This product is for use only in sites listed on the label that do not drain directly into natural water bodies. Do not apply to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters or rinsate. Aquatic organisms may be killed in waters where the pesticide is used. Consult with the State agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is needed.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Mosquiron® 0.12CRD Novaluron Insecticide can be used in governmental mosquito control programs, by professional pest control operators, by homeowners or in other mosquito or midge control operations.

PRODUCT INFORMATION

Mosquiron® 0.12CRD Novaluron Insecticide provides an effective means for preventing the emergence of adult mosquitoes from small water bodies by preventing the development of aquatic immature life-stages. Mosquiron® 0.12CRD Novaluron Insecticide affects only developing immature stages by disrupting the molting process. Consequently, fully developed adult stages of pest and beneficial species are not affected. For best results, read all directions thoroughly.

READ ALL DIRECTIONS COMPLETELY BEFORE USE

Application Instructions: Mosquiron® 0.12CRD Novaluron Insecticide is formulated to be placed in catch basins that can harbor mosquito larvae and release the active ingredient to provide control for up to 90 days. The period of control may be limited in areas of high turnover or high organic matter content and retreatment may be necessary. Unlike other formulations of larvicides which can be flushed out of the treatment area, Mosquiron® 0.12CRD Novaluron Insecticide is formulated into control blocks which disintegrate and adsorb to the area being treated and slowly release active ingredient into the site.

APPLICATION SITES:

Mosquiron® 0.12CRD Novaluron Insecticide can only be applied to sites which do not drain directly into natural water bodies.

Temporary or permanent sites which support mosquito larval development:

Catch basins, unventilated agricultural and non-agricultural non-roof areas, dredging spoil sites, drainage areas, ditches, waste water treatment facilities, dairy or poultry lagoons, other animal waste lagoons, livestock runoff lagoons, sewage effluent, retention ponds, harvested timber stacks, swales, storm water drainage areas, sewers, catch basins, tree holes, bird baths, landfills, rain barrels, flooded roof tops, abandoned swimming pools, gutters, junk yards, abandoned vehicles, water-holding receptacles (e.g., tires, urns, flower pots, cans & other containers), potable water containers and other natural and manmade depressions.

Application Rates for Mosquiron® 0.12CRD Novaluron			
Water Volume (gallons)	Number of Control Blocks (low organic matter content)	Number of Control Blocks (high organic matter content)	Application Rate (Lbs)
50	1	2	0.04 - 0.08
100	2	4	0.04 - 0.08
150	3	6	0.04 - 0.08
200	4	8	0.04 - 0.08

Note: RE-TREAT EVERY 90 DAYS

Application Method: Mosquiron® 0.12CRD Novaluron Insecticide Control Blocks will be applied to the specified application sites by hand (wearing protective gloves), since the product is not suitable for dispersal through any equipment.

For application to shallow surface pools (up to 6" depth), apply 8 to 16 Mosquiron® 0.12CRD Novaluron Insecticide Control Blocks per 100 sq ft of surface area. Use the higher rate for deeper pools or high organic matter.

Timing: Mosquiron® 0.12CRD Novaluron Insecticide works only against larval stages of mosquitoes so begin treatment at the beginning of the mosquito season. Continue treatments up to the last brood of the season. Mosquiron® 0.12CRD Novaluron Insecticide provides up to 90 days of control in sites with limited turn-over of water. The active ingredient in Mosquiron® 0.12CRD Novaluron Insecticide will continue to be released after multiple wetting and drying events. Applications can be made to areas prior to flooding and still provide control.



Distributed By:

Tumaini Controlled Release Technologies Inc.
501 Rennie St., Hamilton ON Canada
L8H 3P6 Ph: 1 866 648-7773

MOSQUIRON®
0.12CRD



Novaluron Insecticide

A Controlled Release Formulation of the Insect Growth
Regulator Novaluron for Control of Mosquito Larvae

Contains:

ACTIVE INGREDIENT:	% BY WT
Novaluron: N-[[[3-chloro-4-[1,1,2-trifluoro-2-(trifluoromethoxy)ethoxy]phenyl]amino]carbonyl]-2,6-difluorobenzamide	0.12%
Inert Ingredients:	99.88%
Total	100.00%

KEEP OUT OF REACH OF CHILDREN

CAUTION

EPA Reg. No. 66222-232-89382

EPA Est. 89593-ITA-001

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 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 and advice
- IF SWALLOWED:**
 - Call a poison control center or doctor immediately for treatment advice.
 - Do not give any liquid to the person.
 - Do not induce vomiting unless told to do so by a poison control center or doctor
 - Do not give anything by mouth to an unconscious person.
- IF INHALED:**
 - Move person to fresh air.
 - If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
 - Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact SafetyCall® at (866) 897-8050 for emergency medical treatment information.

Net Contents: 22 lbs

LOT #

Label ID# CRD03-18-13

STORAGE AND DISPOSAL

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

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

CONTAINER DISPOSAL: Do not reuse or refill this container. Completely empty contents before disposal of container. Puncture and dispose of in a sanitary landfill, or by incineration if allowed by state and local authorities. If burned, stay clear of smoke.

CONTAINER HANDLING:

Nonrefillable Container (flexible-bag all weights): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available.

Nonrefillable Container (rigid-fifty lbs or less): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water 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. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Nonrefillable Container (rigid-greater than fifty lbs): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Refillable Container: Refillable container. Refill this container with novaluron only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into the application site. Do not exceed label rate. For final disposal, offer for recycling or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **Conditions, Disclaimer of Warranties, and Limitations of Liability.**

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Tumaini Controlled Release Technologies Inc. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, Tumaini Controlled Release Technologies Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Tumaini Controlled Release Technologies, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Tumaini Controlled Release Technologies, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Tumaini Controlled Release Technologies Inc.'s election, the replacement of product.

Mosquiron is a registered trademark of Makhteshim Chemical Works Ltd.

Manufactured For:

Makhteshim Agan North America Inc.
3120 Hollywode Blvd., Suite 100
Raleigh, NC 27604

MOSQUIRON 0.12P

U.S. APPROVED LABEL

PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

CAUTION
Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to freshwater and saltwater invertebrates. Runoff can be hazardous to aquatic organisms in water adjacent to treated areas. This product is for use only in sites listed on this label that do not drain directly into natural water bodies. Do not apply to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters or rinsate. Aquatic organisms may be killed in waters where the pesticide is used. Consult with the State agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is needed.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Mosquiron® 0.12P Novaluron Insecticide can be used in governmental mosquito control programs, by professional pest control operators, by homeowners or in other mosquito or midge control operations.

PRODUCT INFORMATION

Mosquiron® 0.12P Novaluron Insecticide provides an effective means for preventing the emergence of adult mosquitoes from small bodies of water by preventing the development of aquatic immature life-stages. **Mosquiron® 0.12P Novaluron Insecticide** affects only developing immature stages by disrupting the molting process. Consequently, fully developed adult stages of pest and beneficial species are not affected. For best results, read all directions thoroughly.

READ ALL DIRECTIONS COMPLETELY BEFORE USE

Application Instructions: **Mosquiron® 0.12P Novaluron Insecticide** is formulated to be placed in small bodies of water that may harbor mosquito larvae and release the active ingredient to provide control for up to 90 days. The period of control may be limited in areas of high turnover or high organic matter content and retreatment may be necessary. Unlike other formulations of larvicides which can be flushed out of the treatment area, **Mosquiron® 0.12P Novaluron Insecticide** is formulated into pellets which disintegrate and adsorb to the area being treated and slowly release active ingredient into the site.

APPLICATION SITES:

Mosquiron® 0.12P Novaluron Insecticide can only be applied to sites which do not drain directly into natural water bodies.
Temporary or permanent sites which support mosquito larval development:
Uncultivated agricultural and non-agricultural non-flow areas, dredging spoil sites, drainage areas, ditches, waste water treatment facilities, dairy or poultry lagoons, other animal waste lagoons, livestock runoff lagoons, sewage effluent, retention ponds, harvested timber stands, swales, storm water drainage areas, sewers, catch basins, tree holes, bird baths, landfills, rain barrels, flooded roof tops, abandoned swimming pools, gutters, junk yards, abandoned vehicles, water-holding receptacles (e.g., tires, urns, flower pots, cans & other containers), potable water containers and other natural and manmade depressions.

Application Rates for Mosquiron® 0.12P Novaluron Insecticide					
Water Volume (gallons)	Water Volume (liters)	Number of Pellets (low organic matter content)	Number of Pellets (high organic matter content)	Application Rate (g/gal)	Application Rate (g/liter)
2.68 or less	10 or less	1	2	1 - 2	0.036 - 0.076
13.2	50	5	10	5 - 10	0.175 - 0.35
66	250	25	50	25 - 50	0.875 - 1.75
132	500	100	200	100 - 200	3.5 - 7.0
330	1250	250	500	250 - 500	8.75 - 17.5

Note: RE-TREAT EVERY 90 DAYS

Application Method: **Mosquiron® 0.12P Novaluron Insecticide** can be applied by hand (wearing protective gloves) where only a small number of pellets (1 to 10) is needed, e.g., breeding sites that hold small quantities of water such as flower pots, bird baths, cans, and other small containers. This product can also be applied using hand operated fertilizer spreaders which would require calibration to insure that the application rate is correct. The product would also be suitable for application through motorized backpack spreaders or specialized equipment by air, after the appropriate calibration. Top has been performed.

For application to shallow surface pools (up to 6" depth), apply 5 to 10 ounces of **Mosquiron® 0.12P Novaluron Insecticide** per 100 sq ft of surface area. Use the higher rate for deeper pools or high organic matter.

Timing: **Mosquiron® 0.12P Novaluron Insecticide** works only against larval stages of mosquitoes so begin treatment at the beginning of the mosquito season. Continue treatments up to the last brood of the season. **Mosquiron® 0.12P Novaluron Insecticide** provides up to 90 days of control in sites with limited turn-over of water. The active ingredient in **Mosquiron® 0.12P Novaluron Insecticide** will continue to be released after multiple wetting and drying events. Applications can be made to areas prior to flooding and still provide control.



Distributed By:
Tumaini Controlled Release Technologies Inc.
501 Rennie St., Hamilton ON Canada
L8H 3P6 Ph: 1-866-648-7773

MOSQUIRON®
0.12P



Novaluron Insecticide

A Controlled Release Formulation of the Insect Growth Regulator Novaluron for Control of Mosquito Larvae

Contains:

ACTIVE INGREDIENT:	% BY WT
Novaluron: N-[[[3-chloro-4-(1,1,2-trifluoro-2-(trifluoromethoxy)ethoxy]phenyl]amino]carbonyl]-2,6-difluorobenzamide	0.12%
Inert Ingredients:	99.88%
Total	100.00%

KEEP OUT OF REACH OF CHILDREN

CAUTION

EPA Reg. No. 66222-231-89382 EPA Est. 89593-ITA-001

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 and advice.

IF SWALLOWED: • Call a poison control center or doctor immediately for treatment advice.
• Do not give any liquid to the person.
• Do not induce vomiting unless told to do so by a poison control center or doctor.
• Do not give anything by mouth to an unconscious person.

IF INHALED: • Move person to fresh air.
• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
• Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also call **SafetyCall®** at (866) 897-8050 for emergency medical treatment information.

Net Contents: 22 lbs

LOT # _____ Label ID# P03-18-13

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.
PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.
CONTAINER DISPOSAL: Do not reuse or refill this container. Completely empty contents before disposal of container. Puncture and dispose of in a sanitary landfill, or by incineration if allowed by state and local authorities. If burned, stay clear of smoke.

CONTAINER HANDLING:

Nonrefillable Container (flexible bag-all weights): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available.

Nonrefillable Container (rigid-fifty lbs or less): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water 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. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Nonrefillable Container (rigid-greater than fifty lbs): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Refillable Container: Refillable container. Refill this container with novaluron only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into the application site. Do not exceed label rate. For final disposal, offer for recycling or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **Conditions, Disclaimer of Warranties, and Limitations of Liability.**

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Tumaini Controlled Release Technologies Inc. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, Tumaini Controlled Release Technologies Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Tumaini Controlled Release Technologies, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Tumaini Controlled Release Technologies, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Tumaini Controlled Release Technologies Inc.'s election, the replacement of product.

®Mosquiron is a registered trademark of Makhteshim Chemical Works Ltd.

Manufactured For:

Makhteshim Agan North America Inc.
3120 Hollywood Blvd., Suite 100
Raleigh, NC 27604

Mosquiron Research – 2011/12

Mesocosm Study Conducted at the University of Guelph, Canada



- 15 mesocosms were used
 - 5 treatments with 3 replicates:

0.12%
Added
Sediment

0.12%
No Added
Sediment

0.48%
Added
Sediment

0.48%
No Added
Sediment

Control
(no active)



MESOCOSM STUDY RESULTS

The label rate of Mosquiron 0.12P, regardless of organic matter, provided at least 95% inhibition of adult emergence 318 days after application (winter months included).



MOSQUIRON FIELD TRIALS 2013

United States

Catch Basins

Abandoned Tires

Tree Holes

Environmental Fate

Plastic Water Containers

Canada

Standing Water

Potable Water Containers

Ecuador

Potable Water Containers

Malaysia

Small Water Containers

Brazil



PEST ALTO

LABEL - APPLICATION SITES

- ▶ Catch basins
- ▶ Wood lots
- ▶ Drainage areas
- ▶ Waste water treatment facilities
- ▶ Animal waste lagoons
- ▶ Retention ponds
- ▶ Swales
- ▶ Storm water drainage areas
- ▶ Sewers
- ▶ Tree Holes
- ▶ Bird Baths
- ▶ Watering troughs
- ▶ Abandoned swimming pools
- ▶ Tires, urns, flower pots,
- ▶ **Drinking Water Containers**



POTABLE WATER CONTAINERS



[illegible]

Acknowledgements

Makhteshim Chemical Works

Dr. Rob Everich, MANA

Dr. Chris Hall, U of Guelph

Paddy McManus, U of Guelph

Ken Michelson, International Ag Research

Dr. Jack Peterson & Ken Shafer, Panama City, Florida

Dr. Rudy Xue, AMCD, Florida

Dr. Abu Ahmad, Universiti Sains Malaysia

Dr. Graham White, US Armed Forces Pest Management Board

Dr. Tom Wilmot, MCMC, Michigan

Dr. Ildefonso Fernandez-Salas, UANL, Mexico

MOSQUIRON® NEW Mosquito Larvicide Formulations

Canadian Developed • Registered in the U.S.A. • Available for Sale Globally



Safe, Effective Biological Control of
DENGUE & MALARIA MOSQUITOES
Range of Dengue and Malaria



**OPPORTUNITIES FOR PARTNERS/DISTRIBUTORS
OUTSIDE OF NORTH AMERICA**

Contact: Dr. Barry Tyler • 519.829.8373 • barry.tyler@pestalto.com



