GROUP | 11 | INSECTICIDE

grubTERMINATOR™

Biological Insecticide Granule

Live Organism

Natural Active Ingredient*

COMMERCIAL

Controls Listed Beetle Grubs in Turf and Ornamentals

READ THE LABEL BEFORE USING
KEEP OUT OF REACH OF CHILDREN

ACTIVE INGREDIENT: *Bacillus thuringiensis* subsp. *galleriae* strain SDS-502 – 1×10^9 CFU/g

REGISTRATION NO.: 33319 PEST CONTROL PRODUCTS ACT

CAUTION SKIN IRRITANT
POTENTIAL SENSITIZER

NET CONTENTS: 2- 1050 kg

Date of Manufacture

Manufacturer:
Phyllom BioProducts Corporation
484 Lake Park Avenue #23
Oakland, California 94610
1 (650) 322-5000
info@phyllom.com

Distributor:
Plant Products, Inc.
50 Hazelton Street
Leamington, Ontario N8H 3W1
(800) 387-2449 for Canada
info@plantproducts.com

**If used inappropriately, any pest control product, including those with natural ingredients, may have health, safety or environmental risks: use this product only in accordance with label instructions.*

PRODUCT USE INFORMATION

grubTERMINATOR™ is a beetle specific biological insecticide. When applied at label rates, it is active against grubs (larvae) of annual bluegrass weevil (*Listronotus maculicollis*), Asiatic garden beetle (*Maladera castanea*), black turfgrass ataenius (*Ataenius spretulus*), European chafer (*Amphimallon majalis*), green June beetle (*Cotinis nitida*), Japanese beetle (*Popillia japonica*), May or June beetles (*Phyllophaga* spp.), northern masked chafer (*Cyclocephala borealis*), oriental beetle (*Anomala orientalis*) and southern masked chafer (*Cyclocephala lurida*).

Rainfall or irrigation releases the active ingredient of **grubTERMINATOR**, *Bacillus thuringiensis* (*Bt*) subspecies *galleriae* strain SDS-502, from the granule. Once released, *Bt* subspecies *galleriae* strain SDS-502 is carried into the soil and root zone of turf and ornamental plants. In the soil**, grubTERMINATOR** will control larvae of the listed beetle species upon ingestion of *Bt* subspecies *galleriae* strain SDS-502. Mortality varies with larval developmental stage (instar), species, and dose of active ingredient consumed.

DIRECTIONS FOR USE

grubTERMINATOR™ is for control of listed beetle larvae in landscape and recreational turf grasses and ornamental plants. Use sites include golf courses, residential lawns, commercial grounds (e.g., office and shopping complexes and airports), parks, athletic fields, pet care facilities, cemeteries, sod farms, interior plantscapes, greenhouses, nurseries, fields, and other turf grass-covered or landscape ornamental-planted areas.
As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

DO NOT apply by air.

APPLICATION TO TURF GRASS

Sites of Application: grubTERMINATOR can be used for applications to landscape and recreational turf grasses. Use sites include golf courses (e.g., greens, tees, collars, roughs, and fairways), residential lawns, commercial grounds (e.g., office and shopping complexes and airports), parks, athletic fields, pet care facilities, cemeteries, sod farms, and other turf grass-covered areas.
grubTERMINATOR is not known to be phytotoxic to any turf grass species.

Application Methods: Apply **grubTERMINATOR** as a broadcast application to turf grass for control of listed beetle larvae and to prevent their damage to turf grasses. With calibrated granular equipment, uniformly broadcast **grubTERMINATOR** over the area being treated. Maintain adequate soil moisture before and after application for optimum control of insect pests and healthy turf grass growth. Excessively wet or dry conditions may impact the performance of ~~**grubGONE!® G**~~ **grubTERMINATOR**. ~~**grubGONE! G**~~ **grubTERMINATOR** must move to the site of infestation, such as in the root zone of the host plant.

Sprinkler irrigation of about 1.25 cm or moderate rainfall shortly after application

improves performance for all applications by moving **grubTERMINATOR** into the root zone where the grubs feed. Do not mow the turf until the treated area has been irrigated or moderate rainfall has occurred so that granules are not removed from the treated area.

Spreader Settings for ~~grubGONE!®~~ ~~G~~ grubTERMINATOR: Spreader settings are influenced by factors such as speed, equipment wear, and condition of spreader, but mainly by the type or brand of spreader. Use the adjustment chart provided with the kind of spreader used as a guide to establish accurate calibration of your spreader and to properly apply **grubTERMINATOR** at label rates. Spreaders may also be calibrated by collecting deposited granules on a plastic sheet and comparing the amount of **grubTERMINATOR** applied on a given area with spreader adjustment settings.

Note: The specified spreader settings should be used as starting points when calibrating a spreader to achieve the desired application rate of **~~grubGONE!®~~ ~~G~~ grubTERMINATOR**. After calibration, regularly observe the amount of **grubTERMINATOR** that is applied to a known area and adjust as necessary to maintain the appropriate application rate. Calibrate spreaders regularly to ensure that equipment wear or other factors have not altered the flow rate of **~~grubGONE!®~~ ~~G~~ grubTERMINATOR**. Calibration instructions are included in the Owner's Manual that was provided by the equipment manufacturer at the time of purchase. Additional information may be available from local horticultural specialists**.**

Application Timing: grubTERMINATOR is effective when applied at label rates (see table directly below) to control the listed beetle larvae and prevent their damage to turf. Apply **grubTERMINATOR** when target insect pests are present. For optimum control, apply **grubTERMINATOR** from adult flight through egg hatch of the primary insect pest species being targeted. For specific information about developmental stages of the target insect pest, associated damage, and action thresholds to properly time applications, consult with local horticultural specialists.
Application Rates: **grubTERMINATOR** is to be applied at the rate ranges on the label. The product is to be irrigated into the soil profile to perform well and to prevent point of contact of product with people, pets and beneficial surface insects such as bees. The low rate can be used at the time, typically late summer or early fall, when newly hatched grub larvae are feeding on the roots of turfgrass. The timing to target these newly hatched grubs is within two weeks of peak flight and egg laying by beetle adults. Consult with local horticultural specialists to access information, including growing degree day models, for beetle pests found in your community, The high rate is to be used if the following is observed in turfgrass: 1). wilted turfgrass blades, followed by brown turf patches or 2). spongy, damaged turf that lifts easily off the soil with possibly the presence of grubs underneath or 3). The presence of secondary foraging damage to the turfgrass by various birds and animals such as crows, skunks, moles, pigs and raccoons which may damage turf in search for grubs.

Insect Pests	**Application Timing of grubTERMINATOR to Turf Grass**	**Application Rate of grubTERMINATOR to Turf Grass**

Larvae (grubs) of: Asiatic garden beetle (*Maladera castanea*) Black turfgrass ataenius (*Ataenius spretulus*) European chafer (*Amphimallon majalis*) Green June beetle (*Cotinis nitida*) Japanese beetle (*Popillia japonica*) May or June beetles (*Phyllophaga* spp.) Northern masked chafer (*Cyclocephala borealis*) Oriental beetle (*Anomala orientalis*) Southern masked chafer (*Cyclocephala lurida*)	Apply when the insect pest species being targeted are present. For optimum control, apply from adult flight to egg hatch of the primary insect pest species being targeted. Additional applications may be made no earlier than 7 days after the preceding application as long as the annual maximum of 3.36 kg of **grubTERMINATOR** per 100 square metres, (equivalent to 336 kg of **grubTERMINATOR** per hectare) is not exceeded.	Apply 1.12 kg to 1.68 kg of **grubTERMINATOR** per 100 square metres of turf grass (equivalent to 112-168 kg of **grubTERMINATOR** per hectare of turf grass). Do not apply more than 3.36 kg of **grubTERMINATOR** per 100 square metres (equivalent to 336 kg of **grubTERMINATOR** per hectare) of turf grass per year.
Annual bluegrass weevil larvae (*Listronotus maculicollis*)	For annual bluegrass weevil, target applications when or soon after larvae emerge from stems.	

Note: For turf grass with heavy thatch (more than 2cm), use the higher rates within the specified rate range.

APPLICATION TO ORNAMENTAL LANDSCAPE PLANTS

Sites of Application: grubTERMINATOR can be used for applications to ornamental landscape plants. Use sites include golf courses, residential plantings, commercial grounds (e.g., office and shopping complexes and airports), parks, , playgrounds, athletic fields, pet care facilities, cemeteries, and other landscape ornamental-planted areas.

grubTERMINATOR is not known to be phytotoxic to any ornamental species.

Application Methods: Apply **grubTERMINATOR** as a broadcast application to soil for control of listed beetle larvae and to prevent damage to ornamental plant roots. With calibrated granular equipment, uniformly broadcast **grubTERMINATOR** over the soil in the area being treated. Use the adjustment chart provided with the kind of spreader used as a guide to establish accurate calibration of your spreader and to properly apply

grubTERMINATOR at label rates. Maintain adequate soil moisture before and after application for optimum control of insect pests and healthy ornamental plant growth. Excessively wet or dry conditions may impact the performance of **grubGONE!® G**.

grubTERMINATOR must move to the site of infestation, such as in the root zone of the host plant. Sprinkler irrigation of about 1.25 cm or moderate rainfall shortly after application improves performance for all applications by moving **grubTERMINATOR** into the root zone where the grubs feed.

Application Timing: grubTERMINATOR is effective when applied at label rates (see table directly below) to control the listed beetle larvae and prevent their damage to ornamental plants. Apply **grubTERMINATOR** when target insect pests are present. For optimum control, apply **grubTERMINATOR** from peak adult flight through peak egg hatch of the primary insect pest species being targeted. For specific information about developmental stages of the target insect pest, associated damage, and action thresholds to properly time applications, consult with local horticultural specialists.

Insect Pests	**Application Timing of grubTERMINATOR to Ornamental Landscape Plants**	**Application Rate of grubTERMINATOR to Ornamental Landscape Plants**

Larvae (grubs) of: Asiatic garden beetle (*Maladera castanea*) European chafer (*Amphimallon majalis*) Green June beetle (*Cotinis nitida*) Japanese beetle (*Popillia japonica*) May or June beetles (*Phyllophaga* spp.) Northern masked chafer (*Cyclocephala borealis*) Oriental beetle (*Anomala orientalis*) Southern masked chafer (*Cyclocephala lurida*)	Apply when the insect pest species being targeted are present. For optimum control, apply from adult flight to egg hatch of the primary insect pest species being targeted. Additional applications may be made no earlier than 7 days after the preceding application as long as the annual maximum of 3.36 kg of **grubTERMINATOR** per 100 square metres, (equivalent to 336 kg of **grubTERMINATOR** per hectare) is not exceeded.	Apply 1.12 kg to 1.68 kg of **grubTERMINATOR** per 100 square metres of ornamental plants (equivalent to 112-168 kg of **grubTERMINATOR** per hectare of ornamental plants). Do not apply more than 3.36 kg of **grubTERMINATOR** per 100 square metres (equivalent to 336 kg of **grubTERMINATOR** per hectare) on landscape ornamental landscape plants per year.

APPLICATION TO ORNAMENTAL PLANTS GROWN IN NURSERIES, FIELDS, GREENHOUSES OR INTERIOR PLANTSCAPES

Sites of Application: grubTERMINATOR can be used for applications to nursery, field, greenhouse, or interior plantscape grown ornamental plants. The plants may be field or container grown.

grubTERMINATOR is not known to be phytotoxic to any ornamental species.

Application Methods: If the plants are in large numbers of closely grouped pots or in the field, it may be possible to use a granular applicator followed by watering in with about 1.25 cm water applied with overhead sprinklers. If there are individual pots, use 13 to 17 g of **grubTERMINATOR** per 1 square metre of combined surface area of the closely arranged containers. For individual round planting pots or plant containers, the area of the pot surface is π (pi) r^2, where pi is 3.142 and r is the radius or half the diameter. For example, a 30 cm diameter pot surface is 730 square centimetres, which is about 0.073 square metres. At the higher rate of **grubTERMINATOR** application, the application rate is then 1.25 g. **grubTERMINATOR** must then be watered in as described earlier in this paragraph; do not drench, as excessive watering may reduce the effectiveness of **grubTERMINATOR.**

Application Timing: grubTERMINATOR is effective when applied at label rates (see table directly below) to control the listed beetle larvae and prevent their damage. Apply **grubTERMINATOR** when target insect pests are present. For optimum control, apply **grubTERMINATOR** from adult flight through egg hatch of the primary insect pest species being targeted. For specific information about developmental stages of the target insect pest, associated damage, and action thresholds to properly time applications, consult

with local horticultural specialists.

Insect Pests	**Application Timing of grubTERMINATOR for Ornamental Plants Grown in Nurseries, Fields, Greenhouses, or Interior Plantscapes**	**Application Rate of grubTERMINATOR for Ornamental Plants Grown in Nurseries, Fields, Greenhouses, or Interior Plantscapes**
Larvae (grubs) of: Asiatic garden beetle (*Maladera castanea*) European chafer (*Amphimallon majalis*) European chafer (*Rhizotroqus majalis*) Green June beetle (*Cotinis nitida*) Japanese beetle (*Popillia japonica*) May or June beetles (*Phyllophaga* spp.) Northern masked chafer (*Cyclocephala borealis*) Oriental beetle (*Anomala orientalis*) Southern masked chafer (*Cyclocephala lurida*)	Apply when the insect pest species being targeted are present. For optimum control, apply from adult flight to egg hatch of the primary insect pest species being targeted. Additional applications may be made no earlier than 7 days after the preceding application as long as the annual maximum of 3.36 kg of **grubTERMINATOR** per 100 square metres, (equivalent to 336 kg of **grubTERMINATOR** per hectare) is not exceeded.	Apply 1.12 kg to 1.68 kg of **grubTERMINATOR** per 100 square metres of ornamental plants (equivalent to 112-168 kg of **grubTERMINATOR** per hectare of ornamental plants). For individual plant containers, measure the soil surface area, apply **grubTERMINATOR** at a proportional rate equivalent to that listed above, and water in to disperse the product into the soil substrate. Do not apply more than 3.36 kg of **grubTERMINATOR** per 100 square metres (equivalent to 336 kg of **grubTERMINATOR** per hectare) of ornamental plants grown in nurseries, fields, greenhouses, or interior plantscapes per year.

RESISTANCE-MANAGEMENT RECOMMENDATIONS

For resistance management, **grubTERMINATOR** contains a Group 11 insecticide. Any insect population may contain individuals naturally resistant to **grubTERMINATOR** and other Group 11 insecticides. The resistant individuals may dominate the insect population if this group of insecticides is used repeatedly in the same sites. Other resistance mechanisms that are not linked to site of action but are specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay insecticide resistance:

- Where possible, rotate the use of **grubTERMINATOR** or other Group 11 insecticides with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group that is effective on the target pest when such use is permitted.
- Insecticide use should be based on an IPM program that includes scouting and record keeping, and considers cultural, biological and other chemical control practices.

- Monitor treated pest populations for resistance development.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance contact Phyllom BioProducts at 1-650-296-2574 or at info@phyllom.com.

PRECAUTIONS:
KEEP OUT OF REACH OF CHILDREN. May cause sensitization. May irritate the skin. Avoid contact with skin or clothing. Avoid inhaling/breathing dusts. Wear a long-sleeved shirt, long pants, water-proof gloves, shoes with socks, and a minimum of a NIOSH-approved particulate filtering facepiece respirator with any N, R or P filter when handling, mixing/loading, or applying the product, and during all clean-up/repair activities. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Restricted Entry Interval: DO NOT enter or allow worker entry into treated areas for 4 hours or until dusts have settled, unless wearing waterproof gloves, long-sleeved shirts, long pants, socks with shoes, and a minimum of a NIOSH-approved particulate filtering facepiece respirator with any N, R or P filter.

ENVIRONMENTAL PRECAUTIONS:
To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

FIRST AID:

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 - 20 minutes. Call a poison control centre or doctor for treatment advice.
IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for treatment advice.
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 centre or doctor for treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION: Treat symptomatically.

STORAGE: Keep in original container during storage. Store product in a cool, dry, well-ventilated place. Keep away from direct sunlight, fire or open flame, or other source of heat. Store at temperatures between 4–25°C. Close opened packages tightly. This product should be used within 17 months from the date of manufacture.

To prevent contamination store this product away from food or feed.

DISPOSAL:
1. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
2. Make the empty container unsuitable for further use.
3. Dispose of the container in accordance with provincial requirements.
4. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer or the provincial regulatory agency in case of a spill, and for clean-up of spills.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label.