BASF
We create chemistry

Bacillus amyloliquefaciens strain MBI 600	Group	44	Fungicide

Serifel® M

Biofungicide

A Wettable Powder Biofungicide

Serifel M is an agricultural biofungicide product for use in mushroom production.

OMRI LISTED
For Organic Use

Active Ingredient:

Bacillus amyloliquefaciens strain MBI 600*†	11.0%
Other Ingredients:	89.0%
Total:	100.0%

* **Serifel M** contains a minimum of 5.5 x 10^{10} colony forming units per gram.
† Formerly named *Bacillus subtilis* strain MBI 600

EPA Reg. No. 71840-18 **EPA Est. No.**

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See inside for complete **First Aid**, **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

Batch Code: (Printed on Bottle)

Net Weight:

BASF Agricultural Solutions US LLC
2 TW Alexander Drive
Research Triangle Park, NC 27713

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Agricultural Solutions US LLC (hereafter "BASF") for emergency medical treatment information at 1-800-832-HELP (4357).

Precautionary Statements

Hazards to Humans and Domestic Animals

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

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear
- A NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. (Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.)

Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards

For terrestrial uses, **DO NOT** apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater or rinsate.

Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. **DO NOT** apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval (REI). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

DO NOT enter or allow worker entry into treated areas during the restricted-entry interval (REI) of **12 hours**.

EXCEPTION: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water) is:

- Coveralls
- Chemical-resistant gloves (made of any waterproof material)
- Shoes plus socks
- Protective eyewear

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

Pesticide Storage

Store in a cool, dry place until used. **DO NOT** store this product near food, feed, seed, fertilizers, or other pesticides.

Pesticide Disposal

To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling

{for plastic containers}
Nonrefillable Container. DO NOT reuse or refill this container. 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. Then, offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. **DO NOT** burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

{for drums with plastic liners}
Nonrefillable Container. DO NOT reuse or refill this container. Completely empty liner by shaking and tapping sides to loosen clinging particles. Empty residue into application equipment. Then, offer for recycling if available or dispose of liner in a sanitary landfill or by incineration. If drum is contaminated and cannot be reused, dispose of it in the manner required for its liner.

In Case of Emergency

In case of large-scale spill of this product, call:

- CHEMTREC 1-800-424-9300
- BASF 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF 1-800-832-HELP (4357)

Product Information

This package contains **Serifel® M biofungicide**, a wettable powder (WP). The active ingredient in **Serifel M** is *Bacillus amyloliquefaciens* strain MBI 600, a beneficial microbe providing suppression of Green Mold in mushroom production. Apply **Serifel M** preventively in low to medium disease pressure situations. Mix **Serifel M** with mushroom spawn grains or mushroom growing supplement, or apply **Serifel M** as a drench alone to the surface of mushroom beds or in tank mixes with other pesticide products registered for use in mushroom production.

Integrated Pest Management (IPM)

Serifel M can be integrated into an overall disease and pest management program. Follow cultural practices known to reduce disease development. Consult your local extension specialist, certified crop advisor and/or BASF representative for additional IPM strategies established for your area. **Serifel M** may be used in agricultural extension advisory (disease forecasting) programs, which recommend application timing based on environmental factors favorable for disease development.

Application Instructions

For all treatments of **Serifel M**, carefully read and follow all label directions, use rates and restrictions. For treatment of mushroom spawn grains and growing supplement, use the stated maximum label rates when heavy disease development is anticipated. For drench applications, application of **Serifel M** prior to or in the early stages of disease development provides the best suppression of Green Mold. Use the stated maximum label rates for conditions conducive to rapid disease development or when disease development is anticipated. For proper application, determine the number of square feet of bed surface to be treated and the label use rate. For drench applications, prepare only the amount of spray solution required to treat the measured square feet of bed surface. Accurate spray equipment calibration is essential prior to use.

Cleaning Spray Equipment

Spraying equipment must be cleaned thoroughly before and after applying this product, particularly if a product with potential to injure crops was used prior to **Serifel M**.

Consult BASF Representatives for additional information regarding agitation and recirculation.

Directions for Use through Drip and Sprinkler Chemigation Systems

Sprayer Preparation

Clean chemical tank and injector system thoroughly. Flush system with clean water.

Application Instructions

Apply **Serifel M** at rates and timings as described in this label.

Use Precautions for Drip and Sprinkler Irrigation Applications

- Apply this product only through sprinkler (solid set and hand move) or drip type irrigation systems. **DO NOT** apply this product through any other type of irrigation system.

- Add **Serifel® M biofungicide** to the pesticide supply tank under agitation containing sufficient water to maintain a continuous flow by the injection equipment. In continuous moving systems, inject this product-water mixture continuously, applying the labeled rate.
- **DO NOT** apply when wind speed favors drift beyond the area intended for treatment.
- Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. Maintain good agitation during the entire application period.
- If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.
- **DO NOT** connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Specific Instructions for Public Water Systems

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. The pesticide supply tank must be under agitation containing sufficient water to maintain a continuous flow by the injection equipment. In continuous moving systems, inject this product-water mixture continuously, applying the labeled rate per acre for that crop.
8. **DO NOT** apply when wind speed favors drift beyond the area intended for treatment.

Solid State and Hand Move Irrigation Equipment

- Determine acreage (square footage) covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10- to 30-minute interval.
- Determine the amount of **Serifel M** that is required to treat the area.
- Add the required amount of **Serifel M** into the same quantity of water used to calibrate the injection equipment.

- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures specified by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject **Serifel® M biofungicide** at the end of the irrigation cycle or as a separate application to maximize fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until **Serifel M** solution has cleared the last sprinkler head.

Additives and Tank Mixing Information

Serifel M can be tank mixed with most recommended registered pest control products, liquid fertilizers, biological control products, adjuvants, and additives. Before using any tank mix (bactericides, fungicides, insecticides, herbicides, liquid fertilizers, biological control products, adjuvants, and additives), test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

Consult a BASF representative or local agricultural authorities for more information concerning additives.

If tank mixes are used, observe the most restrictive of labeling limitations and precautions of all products used in mixtures.

Compatibility Test for Tank Mix Components

Using a suitable container, add proportional amounts of product to water following the tank mixing order below.

Tank Mix Components

1. **Water.** For 100 gallons spray volume, use 16 cups (1 gallon) of water. For other spray volumes, adjust rates accordingly. Use only water from the intended source at the source temperature.
2. **Water-dispersible products** (dry flowables, wettable powders, suspension concentrates, or suspoemulsions). Cap the jar and invert 10 cycles.
3. **Water-soluble products.** Cap the jar and invert 10 cycles.
4. **Emulsifiable concentrates.** Cap the jar and invert 10 cycles.
5. **Water-soluble additives.** Cap the jar and invert 10 cycles.
6. Let the solution stand for 5 minutes.

Evaluate the solution for uniformity and stability. The spray solution should not have free oil on the surface, nor fine particles that precipitate to the bottom, nor thick (clabbered) texture. Simulate tank agitation by inverting the jar for another 10 cycles to ensure that the mixture resuspends. If the tank mix combination does not settle or can be resuspended by agitation, it is considered physically compatible. **DO NOT** use any spray solution that could clog spray nozzles.

Mixing Order

1. **Water** - Begin by agitating a thoroughly clean sprayer tank 3/4 full of clean water. The pH of the spray solution must be between 4 and 9. The product mixture must be applied shortly after mixing. **DO NOT** store mixed slurries of **Serifel M** overnight.
2. **Agitation** - Maintain constant agitation throughout mixing and application.
3. **Inductor** - If an inductor is used, rinse it thoroughly after each component has been added.
4. **Products in polyvinyl alcohol (PVA) bags** - Place any product contained in water-soluble PVA bags into the mixing tank. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
5. **Water-dispersible products** (such as **Serifel M**, dry flowables, wettable powders, suspension concentrates, or suspoemulsions).
6. **Water-soluble products**
7. **Emulsifiable concentrates** (such as oil concentrates when applicable).
8. **Water-soluble additives** (such as ammonium sulfate (AMS) or urea ammonium nitrate (UAN) when applicable).
9. **Remaining quantity of water**

Make sure that each component is thoroughly mixed and suspended before adding tank mix partners. Maintain constant agitation during application.

See **Application Rates and Instructions Table** for rates ranges and use instructions.

Restrictions and Limitations

- **Crop Rotation Restriction** - None
- **Preharvest Interval (PHI)** - 0 Day
- **Re-entry Interval (REI)** - 12 hours

Application Rates and Instructions Table

Crop	Target Diseases	Application Instructions and Rates for Serifel® M biofungicide
Mushroom Growing Beds (Compost incorporation)	Green Mold *Trichoderma* spp. *(e.g. T. aggressivum, T. harzianum)*	For suppression of Green Mold in mushroom compost (e.g. Phase II growing systems). For optimum performance, **Serifel M** must be well mixed into the compost. Wet mixing: Apply 1.5 to 5 lbs of **Serifel M** in a sufficient amount of water to thoroughly mix it into the volume of compost required for 8,000 square feet of bed surface area. Dry mixing: Thoroughly mix 1.5 to 5 lbs **Serifel M** with 80 to 100 lbs of gypsum, limestone or chalk and thoroughly mix into the volume of compost required for 8,000 square feet of bed surface area.
Mushroom Growing Beds (Surface drench)		For suppression of Green Mold on the surface of mushroom beds. **Serifel M** should be applied as a preventative treatment. Apply 1.5 to 5 lbs of **Serifel M** in 150 gallons of irrigation water as a drench to 8,000 square feet of bed surface at casing. Repeat applications can be made before 1st flush, between 1st and 2nd flush and between 2nd and 3rd flush according to disease pressure. During application, maintain adequate agitation in the irrigation tank to prevent product sedimentation. Thorough coverage of beds is essential for effective disease suppression. **Serifel M** can be applied with commonly used ground equipment: hose-end, pressurized, greenhouse and hand-held sprayers. To achieve good coverage, use proper spray pressure, gallonage per square feet of bed surface, nozzles, nozzle spacing and ground speed.
Mushroom Spawn Grains		For suppression of Green Mold in mushroom compost applied with spawning media. Thoroughly mix 1.5 to 5 lbs of **Serifel M** with 80 to 100 lb of gypsum, limestone or chalk. Use this mixture to coat spawn grains (approximately 1,600 units). Bed surface at spawning (e.g. Phase II growing systems): Apply treated spawn to 8,000 square feet of bed surface area. Compost incorporation (e.g. Phase III growing systems): Mix the treated spawn into the mushroom growing substrate. Apply treated spawn to the volume of compost required for 8,000 square feet of bed surface area.
Mushroom Growing Supplement		For suppression of Green Mold in mushroom compost applied with supplement. Thoroughly mix 1.5 to 5 lbs of **Serifel M** with 80 to 100 lbs of gypsum, limestone or chalk. Use this mixture to coat supplement (approximately 2,000 lb). Bed surface at spawning (e.g. Phase II growing systems): Apply supplement to 8,000 square feet of bed surface area. Compost incorporation (e.g. Phase III growing systems): Mix the treated supplement into the mushroom growing substrate. Apply treated supplement to the volume of compost required for 8,000 square feet of bed surface area.

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently 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 use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF Agricultural Solutions US LLC ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

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We create chemistry