

Bartlett Tree Research Laboratories  
13768 Hamilton Rd.  
Charlotte, NC 28278

January 12, 2024

Maine Department of Agriculture, Conservation & Forestry  
Mary Tomlinson, Pesticide Registrar, Maine Board of Pesticides Control  
28 State House Station Augusta, ME 04333

***Subject: EXPEDITED REQUEST FOR SPECIAL LOCAL NEEDS (FIFRA 24C) LABEL  
FOR ARBOTECT 20-S USE IN MAINE***

Dear Ms. Tomlinson:

The R.A. Bartlett Tree Research Laboratories has been involved in research into managing beech leaf disease since 2018. Numerous field and laboratory trials have been conducted with several active ingredients currently available or not available for use in the residential tree use site. Through these trials we have partnered with chemical companies, universities, and government agencies to help find the best management tactics for this emerging threat. Our research staff has invested much time and resources into finding solutions to this problem to better serve our clientele, the public at large, and the green industry.

Beech leaf disease (BLD) is an emerging and devastating disease of beech trees in the eastern United States caused by the foliar-feeding nematode *Litylenchus crenatae mccannii*. This nematode is presumed to be the result of an introduction likely from somewhere in Asia, where this nematode species was originally described from leaf galls on *Fagus crenatae* (Japanese beech). This disease has spread in North America from its original detection in northeastern Ohio to fourteen additional states and Ontario, Canada.

Beech is a keystone species in natural landscapes feeding many wildlife and providing overstory canopy for many shade-loving perennials and annuals. Beech leaf disease progresses rapidly by depleting the carbohydrate storage from the nematode-feeding on leaves. Furthermore, since large trees have more carbohydrate reserves than small trees, there is a negative relationship, where smaller trees die much more rapidly. This results in less successful forest regeneration.

This disease is not unique to natural landscapes, and it is also resulting in mortality and decline in planted American and European beech in botanical gardens, arboreta, and residential/commercial landscapes. While we are still learning about the possibility of transient vectors of the nematode such as by numerous bird species reported in a recent press release from the Holden Arboretum, it is not looking promising that management of vectors is going to be feasible. This disease will have significant economic and ecological consequences and is

spreading rapidly. If management is not attempted, we will be guilty of having failed to protect this important group of tree species.

While managing entire forests with pesticides may not be feasible or desirable, management in public plant collections and in home landscapes should be attempted. The American chestnut near-extinction was also caused by a disease resulting from an introduced pathogen, and as environmental stewards we should try everything in our power to reduce the risk of this happening to the American beech and planted European beech even if saving these trees is limited to plants in public gardens and arboreta or in residential/commercial gardens due to cost and feasibility.

Foliar-feeding plant parasitic nematodes are inherently difficult organisms to manage, and only a few systemic products are labeled specifically for nematodes in trees. Emamectin benzoate and abamectin are two systemic active ingredients with labeled products that have activity against the bole infesting pine wilt nematode *Bursaphelenchus xylophilus* when injected into the root flare of trees. Although laboratory experiments showed good efficacy with emamectin benzoate (Addendum Figure 1) against *Litylenchus crenatae mccannii*, numerous field trials over the last four years in Ohio and New York have yielded subpar results (Addendum Figure 2). The foliar fungicides with the active ingredient fluopyram have been successful for small to medium sized trees, but full coverage from ground sprays and drift management are challenges. A need for a systemic product for management of BLD in large trees is imperative and would limit impacts to non-target organisms and the environment.

Arbotect 20-S is a systemic fungicide labeled for root flare injections of elms and sycamores to prevent Dutch elm disease and anthracnose, respectively. The active ingredient thiabendazole is in the benzimidazole class of chemistry and has both antifungal and nematocidal properties. In summer of 2022, a field trial on private land in Ohio investigated the potential of root flare injections of Arbotect 20-S in managing beech leaf disease. Trees were injected prior to the dispersal period of the nematodes moving from leaf galls to buds to overwinter. In March of 2023, dormant buds were collected from Arbotect 20-S treated beech and non-treated controls, and there were fewer nematodes in buds from the Arbotect 20-S treated trees relative to non-treated controls. In July 2023, trees were visually inspected and trees treated with Arbotect 20-S significantly improved ( $P=0.0006$ ) in canopy area showing BLD symptoms, while controls did not improve ( $P=0.1714$ ) when conducting a T-test between pre-treatment and post-treatment disease severity ratings (Addendum Figure 3). At this trial site there were no acute phytotoxicity symptoms observed when trees were injected with the 1 year Dutch elm disease prevention rate of 0.4 fl. oz. Arbotect 20-S/in DBH diluted in 16 fl. oz water/in DBH.

Due to these promising results a second experiment was installed on beech trees on a separate private landowner's property in Ohio in July of 2023. In this trial we used the Sycamore anthracnose preventive rate on the Arbotect 20-S label of 1.6 fl. oz. Arbotect 20-S/in DBH diluted in 32 fl. oz. water/in DBH. Efficacy data will be collected in the summer of 2024, but no acute phytotoxicity was observed in the trees up to three weeks following injections.

Thiabendazole has low toxicity to mammals and birds, and environmental concerns are limited due to the application being applied directly to the xylem of the trees by root flare injections. Arbotect 20-S represents a solution for managing beech leaf disease in large trees in an integrated pest management program for this emerging disease of beech.

There is an urgent need for the included special local needs label under FIFRA 24(c) for Arbotect 20-S for use in Maine. Summaries of the efficacy data of research trials using foliar Arbotect 20-S to manage BLD are outlined in the attached addendum of this request letter. As this disease continues to spread, it will cost the government, landowners, and nurserymen significant amounts of money, and the environment is likely to change for the worse as beech trees continue to decline and die. The Arbotect 20-S data is the most compelling data to date for showing efficacy of the North American beech leaf nematode on large beech trees. The product has low mammalian toxicity, with caution signal word, and approval from the EPA. Please grant this emergency use for the trees and people of Maine and consider this request with a sense of urgency. Do not hesitate to reach out with any questions or comments from us or our supporters.

Thank you for your time and consideration.

Sincerely,



Andrew L. Loyd, PhD  
Plant Pathologist  
[aloyd@bartlett.com](mailto:aloyd@bartlett.com)  
980-279-7677



Matthew A. Borden, DPM  
Plant Pathologist  
[mborden@bartlett.com](mailto:mborden@bartlett.com)  
540-908-8722



*Diagnostic and Research Laboratory*

January 19, 2024

Maine Department of Agriculture, Conservation & Forestry  
Mary Tomlinson, Pesticide Registrar, Maine Board of Pesticides Control  
28 State House Station Augusta, ME 04333

I am writing this letter to support the approval of the Section 24(c) submission by Syngenta Crop Protection for the use of Arbotect 20-S in managing beech leaf disease (BLD) in Maine. BLD is very severe in Maine, having been reported in 10 of the 16 counties and showing continual spread across our state's forests. In the Plant Disease Diagnostic Lab, we have confirmed beech leaf disease in the following Maine counties: Cumberland, Hancock, Kennebec, Piscataquis, and Washington. This disease caused by foliar nematodes has become an increasingly difficult problem not just for forest health but also for the managed landscapes in Maine.

Upon learning of Dr. Andrew Loyd and Bartlett's pioneering research in finding a management strategy for this disease, I was very intrigued to hear of a solution to stopping the spread of this disease in the Northeast. Dr. Loyd and Bartlett have found measures that can provide effective treatments for this disease. Having reviewed the data, I can confirm that the findings are statistically valid and provide excellent evidence that treatment with thiabendazole injection has the potential to be a very valuable tool for managing BLD while also minimizing environmental impact.

It is with great urgency that I recommend support of Syngenta's interest in a 24(c) registration that extends the use of Arbotect 20-S to include beech trees. This product already has great management applications for elms suffering from Dutch Elm Disease, another disease that has proven to be devastating to Maine forests and landscapes. Until further research is conducted on how beech leaf disease spreads, management options for this disease are of utmost importance to the fate of Maine forests and landscapes. Please feel free to contact me if you'd like to discuss this further.

Sincerely,

Alicyn Smart, D.P.M.  
Associate Extension Professor and Plant Pathologist  
& Director of the Plant Disease Diagnostic Laboratory  
alicyn.smart@maine.edu

Patricia (Pat) Dinnen  
Regulatory Manager  
State Registration/State  
Affairs

Syngenta Crop Protection, LLC  
P.O. Box 18300  
Greensboro, NC 27419-8300  
www.syngenta.com

Tel. 336 632 2494  
Fax: 336 632 2884  
pat.dinnen@syngenta.com



February 28, 2024

Ms. Mary E. Tomlinson  
Pesticides Registrar & Water Quality Specialist  
Board of Pesticides Control  
Maine Department of Agriculture, Conservation and Forestry  
28 State House Station  
Augusta, ME 04333-0028

Dear Ms. Tomlinson:

On behalf of Dr. Andrew Loyd and Dr. Matthew Borden, Plant Pathologists of Bartlett Tree Research Laboratories and Dr. Alicyn Smart, Associate Extension Professor and Plant Pathologist & Director of the Plant Disease Diagnostic Laboratory at The University of Maine, Syngenta Crop Protection, LLC respectfully requests a Section 24(c) for Arbotect 20-S as a tree injection treatment to beech trees for management of Beech Leaf Disease, a new pest that is threatening the health of beech trees in managed landscapes and forests in the state of Maine. The rationale is that there is not another registered product as efficacious as Arbotect 20-S as a tree injection treatment to manage this disease. This is a non-food, non-feed use.

Dr. Andrew Loyd, Dr. Matthew Bordon, and Dr. Smartt have written letters of support explaining the need for this tree injection treatment to manage Beech Leaf Disease in beech trees.

There are existing SLN's for this use recently approved in Connecticut, Massachusetts, New Jersey, New York, and Ohio.

Enclosed in support of this submission are:

- SLN Label
- EPA SLN Application Form 8570-25
- Support Letter from Dr. Andrew Loyd and Dr. Matthew Borden of Bartlett Tree Research Laboratories
- Support Letter from Dr. Alicyn Smart of The University of Maine
- Efficacy Data
- Arbotect 20-S Federal Label
- Arbotect 20-S SDS

If you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink that reads "Pat Dinnen".

Pat Dinnen  
Regulatory Manager

Enclosures

Bartlett Tree Research Laboratories  
13768 Hamilton Rd.  
Charlotte, NC 28278

January 12, 2024

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***Addendum: SUPPORTING FIGURES FOR EXPEDITED REQUEST FOR SPECIAL LOCAL NEEDS (FIFRA 24C) LABEL FOR ARBOTECT 20-S USE IN MAINE***

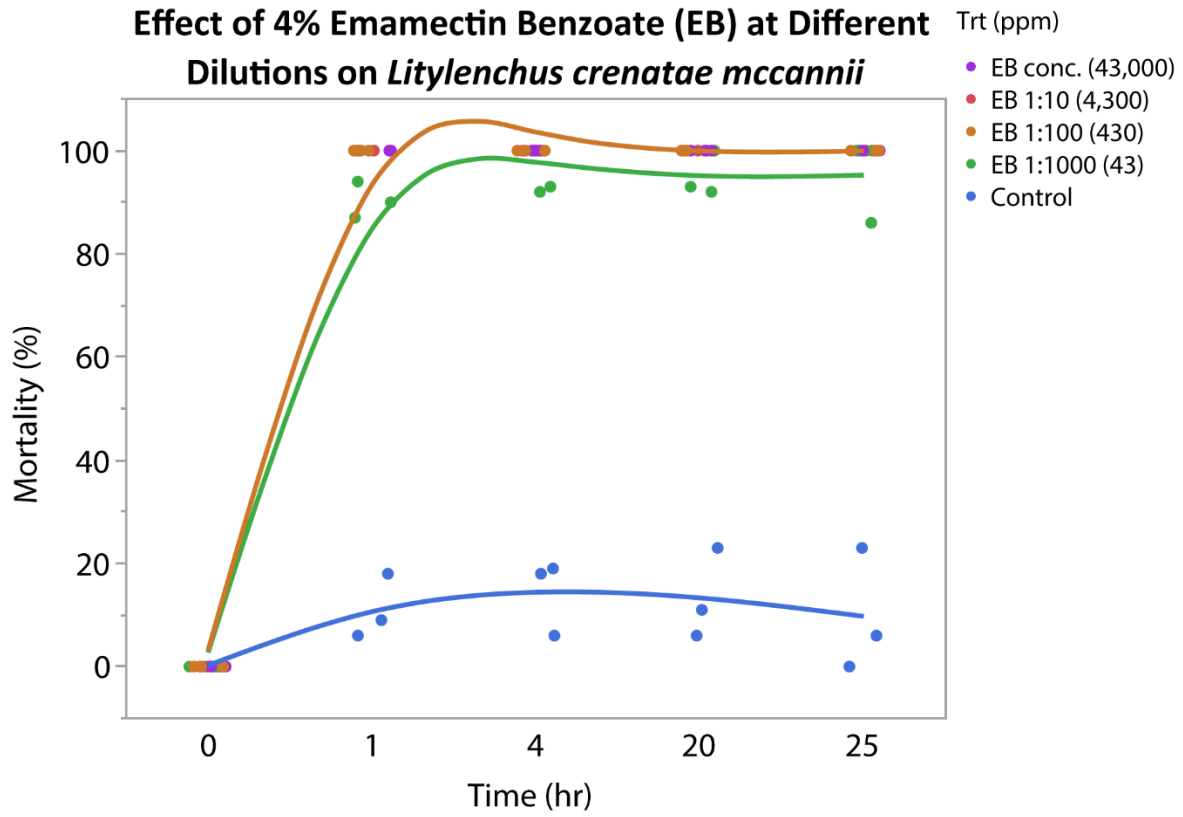
**ATTACHED:**

**Figure 1.** In-vitro bioassays showed encouraging acute toxicity from exposure to emamectin benzoate (Eb) at 43,000, 4,300, 430, and 43 ppm compared to a distilled water control over a 24 hr period.

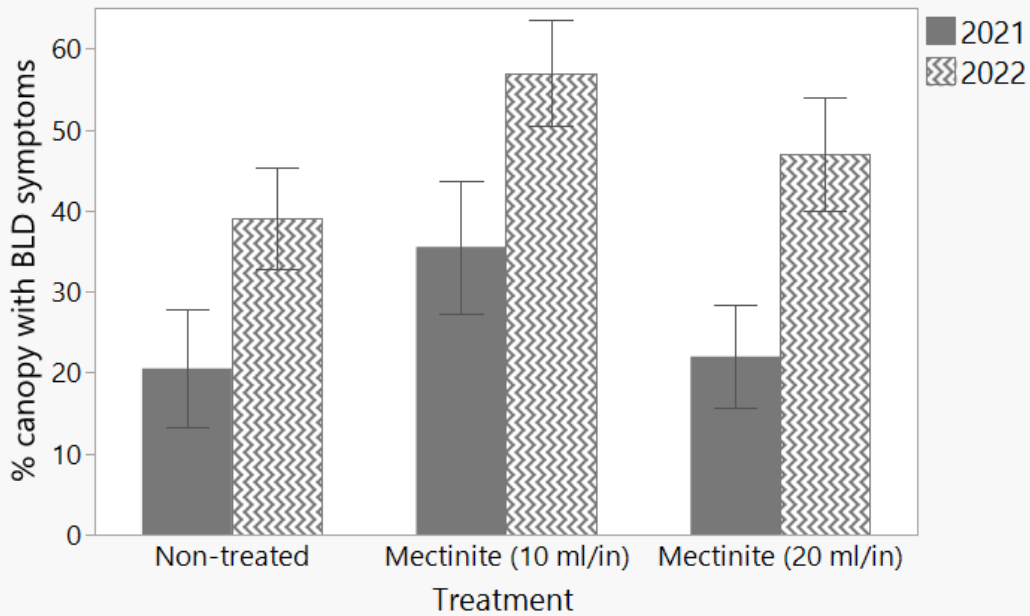
**Figure 2.** Multiple field trial results of emamectin benzoate product injection in 2021 at two rates did not show an improvement in symptom severity compared to the non-treated control.

**Figure 3.** Efficacy of root flare injections of Arbotect at 0.4 fl. oz product diluted in 16 fl. oz. of water/in DBH relative to non-treated control beech trees in Ohio. The pre-treatment and post-treatment ratings were statistically compared with a t-test for Arbotect 20-S and non-treated control trees independently.

**Figure 1.** *In vitro* lab assay testing toxicity of emamectin benzoate exposure to *Litylenchus crenatae mccannii*

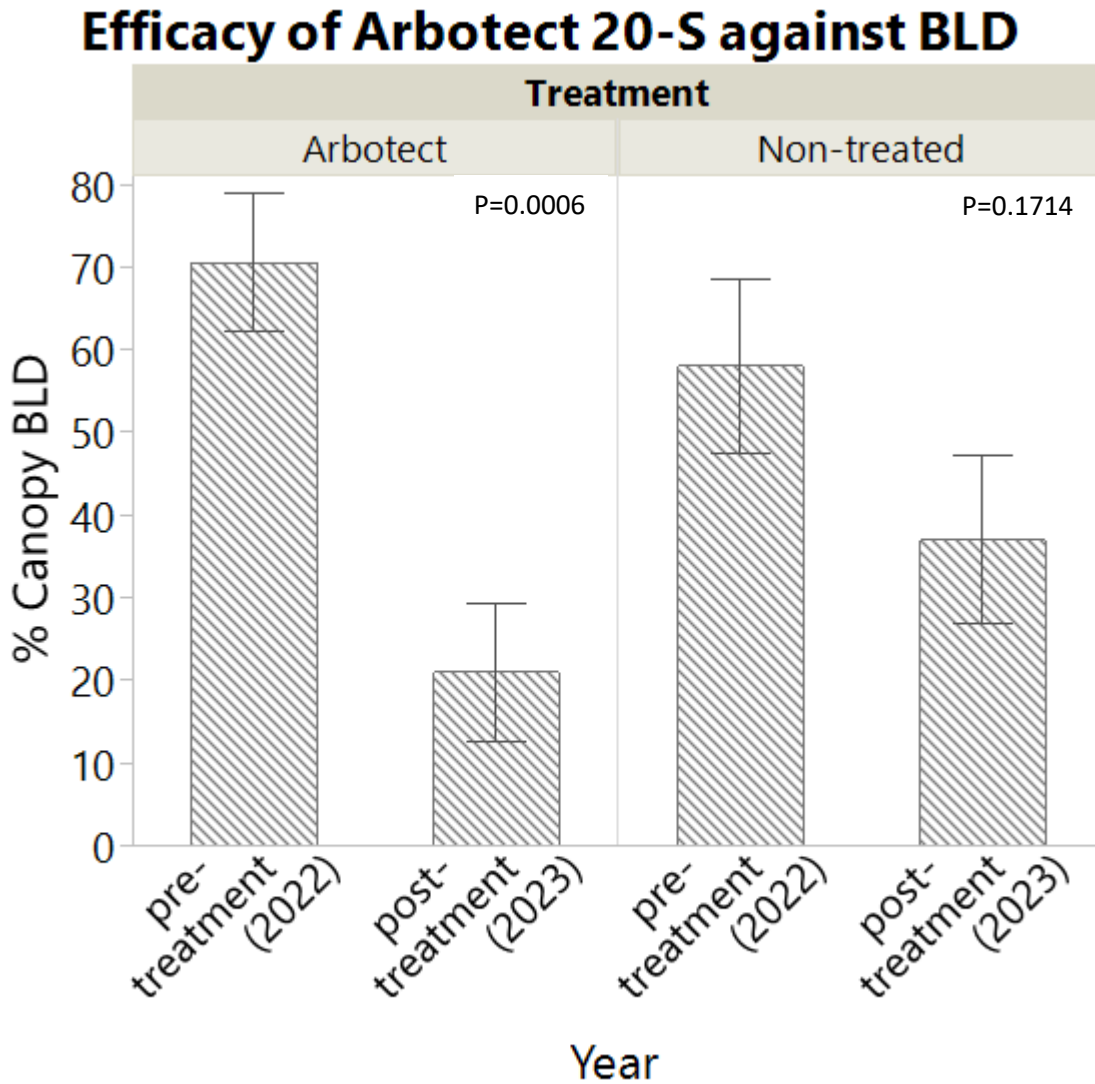


**Figure 2. BLD severity change: emamectin benzoate injection (representative of 3 trials)**





**Figure 3.** Field trial testing the efficacy of Arbotect 20-S in managing beech leaf disease in Ohio (2022-2023)



Each error bar is constructed using 1 standard error from the mean.

F.A. Bartlett Tree Experts Company  
13768 Hamilton Rd.  
Charlotte, NC 28278

January 12, 2024

Maine Department of Agriculture, Conservation & Forestry  
Mary Tomlinson, Pesticide Registrar, Maine Board of Pesticides Control  
28 State House Station Augusta, ME 04333

### **Proposed FIFRA 24c Recommendation for Arbotect 20-S**

Dear Ms. Tomlinson:

The F.A. Bartlett Tree Experts Company wishes to submit this application for consideration to pursue a special local needs label in Maine under FIFRA section 24(c) for the fungicide Arbotect 20-S for the use of managing beech leaf disease on beech trees. Enclosed please find attached the current label of Arbotect 20-S, and a summary of research findings supporting the use of Arbotect 20-S for the suppression of beech leaf disease and the North American beech leaf nematode.

#### **Proposed FIFRA 24(c) Recommendation**

Allow Arbotect 20-S Fungicide, EPA #100-892, to be used to treat beech trees for suppression of beech leaf disease and the North American beech leaf nematode in Maine

#### **Researchers and Titles**

Andrew L. Loyd, PhD

Plant Pathologist

Bartlett Tree Research Laboratories

Matthew A. Borden, DPM

Plant Pathologist

Bartlett Tree Research Laboratories

#### **Pesticide Name and EPA Registration Number**

Arbotect 20-S

EPA Registration Number 100-892

#### **Target Crop**

Presently, Arbotect 20-S is labeled with the explicit use sites of elm and sycamore trees and pests Dutch elm disease and anthracnose for each, respectively. The F.A. Bartlett Tree Experts Company requests that the state of Maine expands the use of Arbotect 20-S to allow the use site of beech (*Fagus* species) for managing beech leaf disease caused by the foliar feeding nematode *Litylenchus crenatae mccannii*.

#### **Target Pest and Use Site**

Beech leaf disease, *Litylenchus crenatae mccannii*

Beech trees, *Fagus* species

#### **Proposed Application Rate**

The F.A. Bartlett Tree Expert Company proposes that the root flare injection application rates for management of beech leaf disease on beech be considered to range as low as the one year

spreading rapidly. If management is not attempted, we will be guilty of having failed to protect this important group of tree species.

While managing entire forests with pesticides may not be feasible or desirable, management in public plant collections and in home landscapes should be attempted. The American chestnut near-extinction was also caused by a disease resulting from an introduced pathogen, and as environmental stewards we should try everything in our power to reduce the risk of this happening to the American beech and planted European beech even if saving these trees is limited to plants in public gardens and arboreta or in residential/commercial gardens due to cost and feasibility.

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There is an urgent need for the included special local needs label under FIFRA 24(c) for Arbotect 20-S for use in Maine. Summaries of the efficacy data of research trials using foliar Arbotect 20-S to manage BLD are outlined in the attached addendum of this request letter. As this disease continues to spread, it will cost the government, landowners, and nurserymen significant amounts of money, and the environment is likely to change for the worse as beech trees continue to decline and die. The Arbotect 20-S data is the most compelling data to date for showing efficacy of the North American beech leaf nematode on large beech trees. The product has low mammalian toxicity, with caution signal word, and approval from the EPA. Please grant this emergency use for the trees and people of Maine and consider this request with a sense of urgency. Do not hesitate to reach out with any questions or comments from us or our supporters.

Thank you for your time and consideration.

Sincerely,



Andrew L. Loyd, PhD  
Plant Pathologist  
[aloyd@bartlett.com](mailto:aloyd@bartlett.com)  
980-279-7677



Matthew A. Borden, DPM  
Plant Pathologist  
[mborden@bartlett.com](mailto:mborden@bartlett.com)  
540-908-8722



# INTRA

## Section 24(c) Special Local Need Label

THIABENDAZOLE GROUP 1 FUNGICIDE

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE

**Arbotect® 20-S**

**Tree Injection Treatment to Beech Trees (*Fagus spp.*) for Management of Beech Leaf Disease Caused by the Foliar Feeding Nematode, *Litylenchus crenatae***

EPA Reg. No. 100-892  
EPA SLN No. ME-xxxxx

**This label expires and must not be distributed or used in accordance with this SLN registration after December 31, 2028**

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

### DIRECTIONS FOR USE

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- This SLN label and main EPA-registered label for Arbotect 20-S must be in the possession of the user at the time of pesticide application.
- Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on this SLN label and the main EPA-registered label for Arbotect 20-S.

For each 5 inches of trunk diameter, inject 2-8 fl oz of Arbotect 20-S. (One-part Arbotect 20-S should be diluted with between 16 and 32 parts water). For large trees, inject up to 12 fl oz of Arbotect 20-S per 5 inches of trunk diameter.

For best results, injections should be made after the tree is fully leafed (post infection) through late summer or early fall. Treatments will aid in the control of Beech Leaf Disease. Place injection sites at 3 to 10 inch intervals around the root flares. Trees treated into trunk wood will not be as effectively protected. Use a maximum hole diameter of 1/4 inch using a minimum of 3 or 4 equally spaced injection points per tree. A typical tree will require 1.3 injection sites per diameter inch. It is important that injection sites be placed in root flares at or below ground level.

- Trees that are 5 inches or less in diameter at chest height should not be treated.
- If pressure injection is to be used, do not exceed 30 psi.

- Do not dilute Arbotect 20-S with highly alkaline water as a precipitate may form. Pre-test your water source by mixing a small amount of Arbotect 20-S with water. If the solution turns white, use different water.
  - Do not treat more than once every two years.
- 

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24(c) Registrant:  
Syngenta Crop Protection, LLC  
P. O. Box 18300  
Greensboro, NC 27419-8300

Label Code: ME0892023AA0224

GROUP 1 FUNGICIDE

PULL HERE TO OPEN ►



# Arbotect® 20-S

syngenta®

## Fungicide

For Dutch Elm Disease and Sycamore Anthracnose

*Active Ingredient:*

Thiabendazole Hypophosphite (CAS No.28558-32-9) . . . . . 26.6%  
(equivalent to 20% Thiabendazole)

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*Other Ingredients:* . . . . . 73.4%

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*Total:* . . . . . 100.0%

Arbotect 20-S contains 1.8 pounds active ingredient per gallon.

Arbotect 20-S is formulated as a soluble liquid concentrate.

**KEEP OUT OF REACH OF  
CHILDREN.**

**CAUTION**

See additional precautionary statements and directions for use  
inside booklet.

EPA Reg. No. 100-892 EPA Est. 39578-TX-1

Product of India

Formulated in the USA

SCP 892A-L1P 1014  
4053005

**1 gallon**  
Net Contents

TM

<b>FIRST AID</b>	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>If Inhaled</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<p><b>HOT LINE NUMBER</b>            For 24-Hour Medical Emergency Assistance (Human or Animal) or            Chemical Emergency Assistance (Spill, Leak, Fire, or Accident),            Call  <b>1-800-888-8372</b></p>	



## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

#### CAUTION

Harmful if swallowed. Harmful if inhaled. Avoid breathing spray mist. May irritate skin. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

### Personal Protective Equipment (PPE)

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

### User Safety Requirements

Follow the manufacturer's instructions for cleaning/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:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticides get 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.

## CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. 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 manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.**

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential, or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

## **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

**FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN PLANT INJURY OR POOR DISEASE CONTROL.**

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 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. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

**The restricted entry interval (REI) is 0 hours.**

#### **NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

**The restricted entry interval (REI) is 0 hours.**

### **PRODUCT INFORMATION**

Arbotect 20-S is a systemic fungicide for use as a flare root injection for prevention of Dutch elm disease (*Ophiostoma ulmi* and *O. novo-ulmi*) on elms (*Ulmus* spp.) and treatment of sycamore anthracnose (*Apiognomonia platani*) on sycamores and London plane trees (*Platanus* spp.). It is recommended that Arbotect 20-S be administered by trained arborists or others trained in injection techniques and in the identification of diseases.

#### **RESISTANCE MANAGEMENT RECOMMENDATIONS**

##### **GROUP 1 FUNGICIDE**

Thiabendazole is a systemic fungicide belonging in FRAC (Fungicide Resistance Action Committee) Group 1. The mode of action of fungicides in the MBC (methyl benzimidazole carbamates) class of chemistry inhibits mitosis by preventing polymerization of beta-tubulins; thereby, terminating cell division. Fungal pathogens

can develop resistance to products with the same mode of action when used repeatedly. Because resistance development cannot be predicted, use of this product should conform to resistance management strategies established for the tree species and geographic use area. Use sanitation and other cultural practices to minimize pathogen populations in order to control disease and prevent or delay resistance development. Consult your local or State agricultural authorities for resistance management strategies that are complementary to those uses listed in this label.

### **Correct Location for Injector Placement**

The flare root area is the transitional zone between the trunk and the root system. Uptake and distribution of Arbotect 20-S is more effective when injections are made into the flare roots. In addition, wounds created in the flare root area close more rapidly in comparison to wounds above the flare root area.

### **Tree Preparation**

1. Heavy, thick, or loose outer bark may be carefully shaved to form a smoother injection point and to ensure the operator that the drill hole penetrates through the bark to the xylem.
2. If the flare roots are not clearly exposed, carefully remove enough soil from the base of the tree to uncover the top of the flare roots. Brush away loose soil.
3. Drill holes through the bark, into the sapwood using a clean, sharp, drill bit (high-helix or brad-point bits are recommended). For best results, change drill bits every 5-10 trees. Drill hole diameter should be adequate to allow insertion of injection tees and formation of an airtight contact between active xylem and the delivery point of the injection tees. Generally, the drill hole should not exceed 1/2 inch in diameter.

Drill hole depth should be adequate to deliver the product into active xylem tissue. Generally, one inch depth is appropriate. Drill perpendicular to the surface of the root flare.

Place injectors 3-6 inches apart around the base of the tree. Do not drill in the valleys between the flare roots or into cankered areas. Drill above these areas into the trunk, then continue into sound sapwood on the flares.

4. Insert into the drilled holes the injection ports ("tees"), which are connected to the plastic tubing. Insert the tees by hand and lightly tap with a small hammer to set in the hole. Do not push the tees past the current year's xylem.
5. Do not dilute Arbotect 20-S with highly alkaline water as a precipitate may form. For hard water or water with high pH, use a deionizer tank or pH stabilizer (for example, muriatic acid) to keep Arbotect 20-S in solution.

## Tree Measurement

Measure the diameter of the tree using a tree diameter-tape (D-tape) at 4 1/2 feet above the ground. This is the diameter at breast height (DBH). If only a regular tape is available, measure the tree circumference and divide that number by 3.14 to obtain the diameter.

## Injection

For best results, use a pressurized system that holds constant pressure at 15-20 psi. Pull out two tees, on opposite sides of the tree, and bleed the air out of the harness. When all air bubbles have been removed, insert the two tees, adjust the pressure to 15-20 psi, and check for leaks. Do not add the Arbotect 20-S until the system is running.

After the injection is complete, remove injection tees and leave drill holes unplugged. A water flush to cleanse the hole may assist with wound closure. Soil should be replaced around the root flares. It is not necessary to treat the drill holes with wound paint or other sealing compounds.

The injection system described is meant as an example; please refer to manufacturer's instructions when using other types of tree injection systems.

## APPLICATION PROCEDURES

### Elm Trees – 1-Year Growing Season Treatment – Aids in the Control of Dutch Elm Disease

**Preventive Treatment** – For each 5 inches of trunk diameter, inject 1 fl oz of Arbotect 20-S in 40 fl oz (1 1/4 qt) of water to 2 fl oz of Arbotect 20-S in 80 fl oz (2 1/2 qt) of water. Use the higher levels of Arbotect 20-S under high disease pressure situations.

Preventive applications should be made when leaves approach full size, usually in late May or June.

**Therapeutic Treatment** – For each 5 inches of trunk diameter, inject 2 fl oz of Arbotect 20-S in 80 fl oz (2 1/2 qt) of water to 4 fl oz of Arbotect 20-S in 160 fl oz of water. Use the higher levels of Arbotect 20-S under high disease pressure situations.

Therapeutic applications should be made as soon as the current year infections are seen, usually in late June through August.

For optimum disease control, preventive treatment is recommended. When a tree shows more than 5% crown symptoms, treatment may not be effective. Treatment should be used in conjunction with an insect control and sanitation program (pruning of diseased limbs) in order to obtain best results. Trees that are 5 inches or less in diameter at chest height should not be treated.

Place injection sites as near to ground level as possible at 3-10 inch intervals around the trunk with a maximum hole diameter of  $\frac{1}{2}$  inch using a minimum of 3 or 4 equally spaced injection points per tree.

### **Elm Trees – 3-Year Growing Season Treatment – For Preventive Treatment of Dutch Elm Disease**

Inject 12 fl oz of Arbotect 20-S for each 5 inches of trunk diameter. Dilute each 2.0 fl oz of Arbotect 20-S with 1 gallon of water. Inject into any exposed root flares, below ground, once every three years. Place injection sites into root flares at 3-10 inch intervals around the tree with a maximum hole diameter of  $\frac{1}{4}$  inch. Where needed, the root flares will need to be exposed through soil excavation. Trees treated into trunk wood will not be as effectively protected. A typical tree will require 1.3 injection sites per diameter inch. For best results, injections should be made after the tree is fully leafed and the seeds have dropped, through late summer or early fall.

- Do not use this treatment if trees are less than 10 inches in diameter.
- If pressure injection is to be used, do not exceed 30 psi.
- Do not dilute Arbotect 20-S with highly alkaline water as a precipitate may form. Pre-test your water source by mixing a small amount of Arbotect 20-S with water. If the solution turns white, use different water.

### **Retreatment**

Arbotect 20-S will provide three growing seasons of protection in most situations. However, protection in the third year after treatment will be slightly less than the first two years. In high disease pressure situations and for trees over 30 inches in diameter, retreatment may need to be considered during the third growing season after the tree was initially treated.

### **Therapeutic Treatment of Elms**

Before treating a diseased elm with Arbotect 20-S, it is important to first isolate the disease from the tree using tracing techniques or limb removal. Injecting an elm tree that has the Dutch elm disease fungus actively growing will result in the failure of the treatment.

### **Sycamore Trees and London Plane Trees – 3-Year Growing Season Treatment – Aids in the Control of Sycamore Anthracnose**

For each 5 inches of trunk diameter, inject 8 fl oz of Arbotect 20-S. (One part Arbotect 20-S should be diluted with between 20 and 40 parts of water). For large trees over 30 inches in diameter, inject up to 12 fl oz of Arbotect 20-S per 5 inches of trunk diameter.

For best results, injections should be made after the tree is fully leafed (post infection) through late summer or early fall. Treatments will aid in the control of sycamore anthracnose for up to three growing seasons. Trees over 50 inches diameter may need two consecutive treatments one year apart to obtain the desired level of protection.

Place injection sites at 3-10 inch intervals around the root flares. Trees treated into trunk wood will not be as effectively protected. Use a maximum hole diameter of  $\frac{1}{4}$  inch using a minimum of 3 or 4 equally spaced injection points per tree. A typical tree will require 1.3 injection sites per diameter inch. It is important that injection sites be placed in root flares at or below ground level.

- Trees that are 5 inches or less in diameter at chest height should not be treated.
- If pressure injection is to be used, do not exceed 30 psi.
- Do not dilute Arbotect 20-S with highly alkaline water as a precipitate may form. Pre-test your water source by mixing a small amount of Arbotect 20-S with water. If the solution turns white, use different water.

## **STORAGE AND DISPOSAL**

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

### **Pesticide Storage**

Store in original containers only. Keep container closed when not in use. Do not store near food or feed.

### **Pesticide Disposal**

Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state, or local procedures under the Resource Conservation and Recovery Act.

### **Container Handling [less than or equal to 5 gallons]**

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container  $\frac{1}{4}$  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, or by other procedures approved by state and local authorities.

### **Container Handling [greater than 5 gallons - bulk]**

Refillable container. Refill this container with pesticide 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 person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

*continued...*





## **STORAGE AND DISPOSAL (*continued*)**

### **Container Handling [greater than 5 gallons – mini-bulk]**

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) 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. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

**CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER.**

Arbotect®, the ALLIANCE FRAME   
the SYNGENTA Logo and the PURPOSE ICON   
are Trademarks of a Syngenta Group Company

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For non-emergency (e.g., current product information), call  
Syngenta Crop Protection at 1-800-334-9481.

Manufactured for:  
Syngenta Crop Protection, LLC  
P. O. Box 18300  
Greensboro, North Carolina 27419-8300

**SCP 892A-L1P 1014  
4053005**

GROUP 1 FUNGICIDE



# Fungicide

For Dutch Elm Disease and Sycamore Anthracnose

Active Ingredient:  
Thiabendazole Hypophosphite  
(CAS No. 28558-32-9) . . . . . 26.6%  
(equivalent to 20% Thiabendazole)

Other Ingredients: 73.4%

Total: 100.0%

Arbotect 20-S contains 1.8 pounds active ingredient per gallon.

Arbotect 20-S is formulated as a soluble liquid concentrate.

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-892  
EPA Est. 39578-TX-1

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Manufactured for:  
Syngenta Crop Protection, LLC  
P. O. Box 18300  
Greensboro, North Carolina 27419-8300

SCP 892A-L1P 1014  
4053005

# 1 gallon

Net Contents

## KEEP OUT OF REACH OF CHILDREN. CAUTION

### PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

#### CAUTION

Harmful if swallowed. Harmful if inhaled. Avoid breathing spray mist. May irritate skin. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

#### FIRST AID

**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 the 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.

**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 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 center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

**HOT LINE NUMBER:** For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372.

### 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.

## STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in original containers only. Keep container closed when not in use. Do not store near food or feed.

**Pesticide Disposal:** Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state, or local procedures under the Resource Conservation and Recovery Act.

**Container Handling:** Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. 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, or by other procedures approved by state and local authorities.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

**CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER.**



## ARBOTECT® 20-S Fungicide

Date: 6/30/2015  
 Replaces: 7/21/2014

### 1. PRODUCT IDENTIFICATION

Product identifier on label: **ARBOTECT® 20-S Fungicide**

Product No.: A10345A

Use: Fungicide

Manufacturer: Syngenta Crop Protection, LLC  
 Post Office Box 18300  
 Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

**Emergency Phone: 1-800-888-8372**

### 2. HAZARDS IDENTIFICATION

Classifications: Not Applicable

Signal Word (OSHA): Not Applicable

Hazard Statements: Not Applicable

Hazard Symbols:

Precautionary Statements: Not Applicable

Other Hazard Statements: None

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Other ingredients	Other ingredients	Trade Secret	73.4%
1H-Benzimidazole, 2-(4-thiazolyl)-	Thiabendazole	148-79-8	26.6%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

### 4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), 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 after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

## ARBOTECT® 20-S Fungicide

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- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** 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 Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Not Applicable

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

### 5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

### 7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Not Applicable

# ARBOTECT® 20-S Fungicide

Date: 6/30/2015  
Replaces: 7/21/2014

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.**

**FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.**

### Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Thiabendazole	Not Established	Not Established	5 mg/m <sup>3</sup> TWA	Syngenta

### Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

### Individual protection measures:

#### Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

#### Eye Contact:

Eye protection is not required for normal handling. Where eye contact is likely, wear tight-fitting chemical goggles.

#### Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

#### Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH certified respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow orange liquid

Odor: Weak, like hydrogen sulfide

Odor Threshold: Not Available

pH: 2.7 (1% suspension in water)

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: 212 °F

Flash Point (Test Method): Not Applicable

Flammable Limits (% in Air): Not Available

Flammability: Not Available

Vapor Pressure: Thiabendazole 4.0 x 10<sup>-9</sup> mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.1 @ 77°F (25°C)

Solubility (ies): Thiabendazole 30 mg/l (pH 7, pH 10) @ 68°F in water

Partition coefficient: n-octanol/water: Not Available

## ARBOTECT® 20-S Fungicide

Date: 6/30/2015  
 Replaces: 7/21/2014

Autoignition Temperature: Not Available  
 Decomposition Temperature: Not Available  
 Viscosity: Not Available  
 Other: None

### 10. STABILITY AND REACTIVITY

Reactivity: Not reactive.  
 Chemical stability: Stable under normal use and storage conditions.  
 Possibility of hazardous reactions: Will not occur.  
 Conditions to Avoid: None known.  
 Incompatible materials: None known.  
 Hazardous Decomposition Products: None known.

### 11. TOXICOLOGICAL INFORMATION

#### Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Not Applicable

#### Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rabbit) :	> 5000 mg/kg body weight
Dermal:	Dermal (LD50 Rabbit) :	> 5050 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	Not Available
Eye Contact:	Non-Irritating (Rabbit)	
Skin Contact:	Practically Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

#### Reproductive/Developmental Effects

Thiabendazole: Did not show reproductive toxicity effects in animal experiments.

#### Chronic/Subchronic Toxicity Studies

Thiabendazole: Increased incidence of anemia and changes in the gall bladder, kidney, liver, spleen and thyroid gland in rat and dog tests.

No adverse health effects are expected in humans at airborne levels below the occupational exposure limit.

**ARBOTECT® 20-S Fungicide**

Date: 6/30/2015  
Replaces: 7/21/2014

Carcinogenicity

Thiabendazole: Following dietary administration to Sprague-Dawley rats for 2 years, a high dose (90 mg/kg/day) of thiabendazole resulted in a minimally increased incidence of thyroid follicular cell adenomas in male rats only. The mode of action (MOA) is not relevant to humans, supporting the conclusion that thiabendazole does not pose a carcinogenic hazard to humans.

Chemical Name NTP/IARC/OSHA Carcinogen

Other ingredients No

1H-Benzimidazole, 2-(4-thiazolyl)- No

Other Toxicity Information

None

Toxicity of Other Components

Other ingredients

Not Applicable

Target OrgansActive Ingredients

Thiabendazole: Thyroid, liver, spleen, kidney, gall bladder, blood

Inert Ingredients

Other ingredients: Not Applicable

**12. ECOLOGICAL INFORMATION**Eco-Acute Toxicity

Thiabendazole:

Bird (Bobwhite Quail) LD50 Oral > 2250 mg/kg

Fish (Trout) 96-hour LC50 0.56 ppm

Invertebrate (Water Flea) 48-hour EC50 0.81 mg/l

Environmental Fate

Thiabendazole:

The information presented here is for the active ingredient, thiabendazole.  
Low bioaccumulation potential. Stable in soil and water. Sinks in water (after 24 h).

**13. DISPOSAL CONSIDERATIONS**Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Corrosive D002

Listed Waste: Not Applicable

## ARBOTECT® 20-S Fungicide

Date: 6/30/2015

Replaces: 7/21/2014

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### 14. TRANSPORT INFORMATION

#### DOT Classification

Ground Transport - NAFTA  
Not regulated

#### Comments

Water Transport - International  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Thiabendazole), Marine Pollutant  
Hazard Class: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

Air Transport - International  
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Thiabendazole)  
Hazard Class: Class 9  
Identification Number: UN 3082  
Packing Group: PG III

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### 15. REGULATORY INFORMATION

#### Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Harmful if swallowed. Harmful if inhaled. Avoid breathing spray mist. May irritate skin. Avoid contact with skin or eyes.

#### EPA Registration Number(s):

100-892

#### EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Thiabendazole 26.6% (CAS No. 148-79-8)

#### California Proposition 65:

This product does not contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

#### CERCLA/SARA 304 Reportable Quantity (RQ):

None

#### RCRA Hazardous Waste Classification (40 CFR 261):

Corrosive D002

#### TSCA Status:

Exempt from TSCA, subject to FIFRA



**ARBOTECT® 20-S Fungicide**

Date: 6/30/2015  
 Replaces: 7/21/2014

**16. OTHER INFORMATION**

NFPA Hazard Ratings

Health: 1  
 Flammability: 1  
 Instability: 0

HMIS Hazard Ratings

Health: 1  
 Flammability: 1  
 Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: A

For non-emergency questions about this product call:

1-800-334-9481



Original Issued Date: 6/5/1989

Revision Date: 6/30/2015

Replaces: 7/21/2014

Section(s) Revised: 13

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

	United States Environmental Protection Agency Office of Pesticide Programs, Registration Division (7505C) Washington, DC 20460		For State Use Only
	Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need <i>(Pursuant to section 24(c) of the Federal Insecticide,                  Fungicide, and Rodenticide Act as Amended)</i>		Registration No. Assigned
			Date Registration Issued
1. Name and Address of Applicant for Registration Syngenta Crop Protection, LLC PO Box 18300 Greensboro, NC 27419		2. Product is (Check one)	
		<input checked="" type="checkbox"/> EPA-Registered	EPA Registration Number 100-892
		<input type="checkbox"/> New (not EPA-registered) <input type="checkbox"/> Attach EPA Form 8570-4, Confidential Statement of Formula for new products.	EPA Company Number 100
4. Product Name Arbotect® 20-S		3. Active Ingredient(s) in Product Thiabendazole Hypophosite	
		5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180. 186, and/or 186. N/A – non-food, non-feed use	
		6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form): <input type="checkbox"/> a. To permit use of a new product. <input checked="" type="checkbox"/> b. To amend EPA registration for one or more of the following purposes: <input type="checkbox"/> (1) To permit use on additional crops or animals. <input type="checkbox"/> (2) To permit use at additional rates. <input checked="" type="checkbox"/> (3) To permit use against additional pests. <input type="checkbox"/> (4) To permit use of additional application techniques or equipment. <input checked="" type="checkbox"/> (5) To permit use at different application sites. <input type="checkbox"/> (6) Other (specify below) See paragraph 13	
10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known):  <input checked="" type="checkbox"/> Sought <input checked="" type="checkbox"/> Issued <input type="checkbox"/> Denied <input type="checkbox"/> Revoked  If any of the above are checked, list States in Item 13 below.  <input type="checkbox"/> No FIFRA section 24(c) Action		7. Nature of Special Local Need (check one) <input type="checkbox"/> There is no pesticide product registered by EPA for such use. <input checked="" type="checkbox"/> There is no EPA-registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration. <input type="checkbox"/> As appropriate EPA-registered pesticide product is not available.	
		8. If this registration is an amendment to an EPA-registered product, is it for a "new use" as defined in 40 CFR 152.3? <input type="checkbox"/> Yes (discuss in Item 13 below) <input checked="" type="checkbox"/> No	
		9. Has an EPA Registration or Experimental Use Permit for this chemical even been (check applicable box(es), if known): <input checked="" type="checkbox"/> Sought <input checked="" type="checkbox"/> Issued <input type="checkbox"/> Denied <input type="checkbox"/> Cancelled <input type="checkbox"/> Suspended <input checked="" type="checkbox"/> Registration <input type="checkbox"/> Experimental Use Permit <input type="checkbox"/> No Previous Permit Action	
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form.)  Identify the counties where this pesticide will be used. If Statewide, indicate "all." <b>ALL</b> Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use. <b>Attached</b>	
		12. Indicate use status of Special Local Need, i.e.. planned dates of use:  From: <b>March 2024</b> To: <b>December 31, 2028</b>	
		13. Comments (attach additional sheet, if needed)  Similar SLN's exist in CT, MA, NJ, NY, OH	
Signature of Applicant or Authorized Representative  		Title    Pat Dinnen, Regulatory Manager	
Telephone Number    336-632-2494                      Date    February 28, 2024			
Determination by State Agency This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments			
Name, Title, and Address of State Agency Official		Comments (by State Agency Only)	
Title		Received by EPA	
Telephone Number                      Date			



# ECOS Environmental Conservation Online System

*Conserving the Nature of America*

[ECOS](#) / [Species Reports](#)

/ Listed species with spatial current range believed to or known to occur in ME

## Listed species with spatial current range believed to or known to occur in Maine

Notes:

- This report includes species only if they have a **Spatial Current Range** in ECOS.
- **As of 02/13/2015 the data in this report has been updated to use a different set of information.** Results are based on where the species is believed to or known to occur. The FWS feels utilizing this data set is a better representation of species occurrence. Note: there may be other federally listed species that are not currently known or expected to occur in this state but are covered by the ESA wherever they are found; Thus if new surveys detected them in this state they are still covered by the ESA. The FWS is using the best information available on this date to generate this list.
- This report shows listed species or populations believed to or known to occur in ME
- This list does not include experimental populations and similarity of appearance listings.
- Click on the highlighted scientific names below to view a Species Profile.

### Listed Species

Sort by group:

Show  entries

Search:

12 Species Listings

Scientific Name	Common Name	Where Listed	Region ⓘ	ESA Listing Status ⓘ
Birds				

Scientific Name	Common Name	Where Listed	Region ⓘ	ESA Listing Status ⓘ
<u>Charadrius melodus</u>	Piping Plover	[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.	5	Threatened
<u>Sterna dougallii dougallii</u>	Roseate tern	Northeast U.S. nesting population	5	Endangered
<u>Calidris canutus rufa</u>	rufa red knot	Wherever found	5	Threatened
Fishes				
<u>Salmo salar</u>	Atlantic salmon	Gulf of Maine DPS	5	Endangered
Flowering Plants				
<u>Platanthera leucophaea</u>	Eastern prairie fringed orchid	Wherever found	3	Threatened
<u>Pedicularis furbishiae</u>	Furbish lousewort		5	Threatened
<u>Isotria medeoloides</u>	Small whorled pogonia		5	Threatened
Insects				
<u>Bombus affinis</u>	Rusty patched bumble bee	Wherever found	3	Endangered
Mammals				
<u>Lynx canadensis</u>	Canada Lynx	Wherever Found in Contiguous U.S.	6	Threatened

Scientific Name	Common Name	Where Listed	Region ⓘ	ESA Listing Status ⓘ
<u>Myotis septentrionalis</u>	Northern Long-Eared Bat	Wherever found	3	Endangered
Reptiles				
<u>Eretmochelys imbricata</u>	Hawksbill sea turtle	Wherever found	4	Endangered
<u>Dermochelys coriacea</u>	Leatherback sea turtle	Wherever found	4	Endangered

Showing 1 to 12 of 12 entries

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