

# BASF

# Apogee<sup>®</sup>

plant growth regulator

## For use on apple trees

**Active Ingredient:**

Prohexadione calcium [calcium 3-oxido-5-oxo-4-propionylcyclohex-3-enecarboxylate] .....	27.5%
<b>Other Ingredients:</b> .....	<u>72.5%</u>
<b>Total</b> .....	100.0%

EPA Registration Number 63588-11-7969

EPA Establishment Number 51036-GA-001

**KEEP OUT OF REACH OF CHILDREN.  
CAUTION**

See inside booklet for complete **Precautionary Statements, Statement of Practical Treatment, Directions For Use, and Conditions of Sale and Warranty.**

**Net contents: \_\_\_pounds (\_\_\_kilograms)**

Distributed By:  
BASF Corporation, P. O. Box 13528  
Research Triangle Park, North Carolina 27709-3528

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**Caution.** Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing.

### First Aid

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

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment 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 1-800-832-HELP for emergency medical treatment information.

### Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on the EPA chemical-resistance category selection chart.

### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride
- Shoes plus socks

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

### Engineering Controls Statement

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

## User Safety Recommendations

### Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### Environmental Hazards

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 wash waters or rinsate.

### Endangered Species Concerns

The use of any pesticide in a manner that may kill or otherwise harm an endangered species or adversely modify their habitat is a violation of federal law.

## 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 agency responsible for pesticide regulation.

All applicable directions, restrictions, precautions and **Conditions of Sale and Warranty** are to be followed. This labeling must be in the user's possession during application.

### 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.

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

### Storage and Disposal

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

**Pesticide Storage:** Store in a cool, dry place. Do not remove the product from the container except for immediate use.

**Pesticide Disposal:** Wastes resulting from this product may be disposed of at an approved waste disposal facility. Excess pesticide, spray mixture or rinsate must be handled and disposed of in accordance with federal, state or local procedures. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### Container Disposal:

**Plastic Containers:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## In Case of Emergency

In case of large-scale spillage regarding this product, call:

CHEMTREC 800-424-9300

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment.
- Your local poison control center (hospital).

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## I. General Information

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**Apogee® plant growth regulator** is a unique production management tool for apple orchards that reduces vegetative growth allowing a balance between canopy development and fruit production.

**Apogee** provides many beneficial effects including:

- Vegetative growth control
- Reduced need for summer and dormant pruning
- Improved light penetration into the tree canopy
- Improved color of red varieties because of better light penetration into the canopy
- Reduced incidence and severity of fire blight of shoots (shoot blight)

### Mode of Action

**Apogee** acts within apple trees to inhibit the biosynthesis of gibberellin, which is the natural plant hormone that regulates cell elongation. Inhibition of gibberellin therefore reduces shoot growth. Vegetative growth suppression with **Apogee** typically lasts for 2-5 weeks per application during the current growing season. **Apogee** does not affect vegetative growth the following year.

**Fire blight of shoots (shoot blight):** Controlling vegetative growth with **Apogee** as recommended in **Table 3** will reduce the incidence and severity of fire blight infection (*Erwinia amylovora*) of shoots and leaves. **Apogee** does not have direct antibiotic activity against the fire blight bacteria (*Erwinia amylovora*), but **Apogee** can decrease host susceptibility. **Apogee** applications are not effective for suppression of blossom blight. For maximum reduction in fire blight susceptibility, **Apogee** should be applied at least 10 days before the occurrence of weather conditions favorable for shoot and leaf infections. **Apogee** reduces the susceptibility of apple shoot tips to fire blight and should be used as one component of a comprehensive IPM strategy for control of fire blight. This decrease in susceptibility will not start to become effective until about 10 days after application.

**Tree-Row Volume (TRV):** Using **Apogee** as part of a management program significantly reduces the tree row volume. Spray guides typically recommend using the tree row volume to determine the correct pesticide application rates. Growers are advised to contact their local cooperative extension service for additional information regarding tree row volume.

**June Drop:** Applying **Apogee** early in the season may allow the tree to retain more fruit than untreated trees (see recommendation to decrease June drop in **Table 2**).

**GA:** Where gibberellic acid (GA) sprays are applied to reduce fruit russet or fruit cracking and **Apogee** has been applied to reduce shoot growth, some loss in efficacy may be experienced in the **Apogee** and or gibberellin spray.

### Coverage

Because **Apogee** is absorbed by the leaves, thorough spray coverage of the tree foliage is necessary for good uptake. The spray should be directed to the portion of the tree where growth

control is desired. To achieve good coverage, use sufficient water, proper spray pressure, nozzles, nozzle spacing, spray volume per acre, and tractor speed. Consult the spray nozzle and accessory guide for information pertaining to proper equipment calibration.

## Cleaning Spray Equipment

Clean spray equipment thoroughly using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions before and after applying this product.

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## II. Application Instructions

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Apply **Apogee** to actively growing trees with ground equipment at rates and stages listed in section **VII**.

**Crop-Specific Information** (see **Tables 1-4**).

**Timing:** For vegetative growth control, make the first application of **Apogee** in the spring when trees have 1-3" of new shoot growth. **Correct timing of application is critical to success.** An early first application (i.e., 2" of shoot growth) is more effective than a late application (i.e., 6-8" of shoot growth). If required, make a sequential application 10-17 days after the first application.

**Number of applications:** For most apple orchards, two applications 10-17 days apart beginning at 1-3" of new shoot growth will provide good growth control. For apple orchards in locations with long growing seasons or higher vigor trees or trees with light fruit load, 3-5 applications per season may be more effective. The treatment schedule with **Apogee** is flexible and can be applied in a number of different schedules depending on the objectives of the individual grower (see **Tables 1-4**). Consult with an extension specialist for your specific area.

**Tree Vigor:** Adjust the **Apogee** rate according to the vegetative vigor of the trees (see **Tables 1-4**).

Vegetative vigor can be influenced by many factors, including fruit load, pruning, variety, rootstock, and location. A grower's experience is the best guide in predicting tree vigor. Some trees exhibit excessive shoot growth (high vigor) every year due to a combination of variety, rootstock, and location. However, trees that normally exhibit typical shoot growth can exhibit excessive growth in some years due to crop loss or severe winter pruning.

**Tree Size:** Calculate the **Apogee** rate per acre based on tree size. The application rate should be based on the volume of water needed to spray the trees to drip (i.e., dilute spray or Tree Row Volume).

**Application Rate:** The **Apogee** application rate will be based on the vegetative vigor and the size of the tree.

- 1) Assess if trees have low, medium, or high vigor to determine the rate of **Apogee** (see section **VII. Crop-Specific Information**).
- 2) Determine the size of the tree in terms of the amount of water needed for a dilute spray (spray to drip or according to Tree Row Volume).
- 3) Multiply the **Apogee** rate per 100 gallons of dilute spray by the size of the tree in gallons per acre. The result is the number of ounces needed per acre for those trees. Once this application rate is determined in ounces per acre, it can be concentrated into the actual spray volume.

$$\frac{\text{ounces of Apogee}}{100 \text{ gallons of water}} \times \frac{\text{TRV in gallons}}{\text{acre}} = \frac{\text{ounces}}{\text{acre}}$$

**Example calculation:** For a block of apple trees that typically produces 25-32" of shoot growth per year (vigorous growth), the suitable rate would be 2 applications of 6 ounces of **Apogee® plant growth regulator** per 100 gallons of dilute spray according to **Table 1**. The trees are large and require 300 gallons of water per acre to spray dilute (i.e., spray to drip or to

$$\frac{6 \text{ ounces of Apogee}}{100 \text{ gallons of water}} \times \frac{300 \text{ gallons (TRV)}}{\text{acre}} = \frac{18 \text{ ounces}}{\text{acre}}$$

Tree Row Volume).

The rate of **Apogee** may be applied in dilute or concentrated sprays as long as good spray coverage is achieved.

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### III. Additives

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#### Adjuvant

Use a standard spray adjuvant such as **Regulaid®**, a non-ionic surfactant, to improve leaf coverage and performance consistency. Follow the manufacturer's rate recommendations.

#### Nitrogen Source (if needed)

One pound of ammonium sulfate (AMS) may be added for each pound of **Apogee** if the water source for spray applications contains high levels of calcium carbonate (hard water). Use high-quality ammonium sulfate (spray grade) to avoid plugging nozzles.

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### IV. Mixing Order

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- 1) **Water:** Begin by agitating a thoroughly clean spray tank half full of clean water.
- 2) **Products in 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.
- 3) **Water-dispersible products:** (dry flowables such as **Apogee**, wettable powders, and suspension concentrates)
- 4) **Adjuvants**
- 5) **Water-soluble products**
- 6) **Emulsifiable concentrates**
- 7) **Water-soluble additives:** (AMS when applicable)
- 8) **Remaining quantity water**

Maintain constant agitation during application. For more information, refer to section **V. General Tank Mixing Information**.

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### V. General Tank Mixing Information

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Previous experience has shown that **Apogee** use by itself does not result in phytotoxicity and that **Apogee** is compatible with many fungicides and insecticides used in apple orchards.

However, all varieties and cultivars have not been tested with possible tank mix combinations. Local conditions can also influence crop tolerance and may not match those under which BASF has conducted testing. Therefore, before using any tank mix, 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 applications.

Do not tank mix **Apogee** with calcium sprays because research has shown that added calcium will reduce the effectiveness of **Apogee**.

Read and follow the applicable **Restrictions and Limitations** and **Directions For Use** on all products involved in tank mixing. The most restrictive labeling applies to tank mixes.

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## VI. General Restrictions and Limitations - All Crops

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- **Maximum seasonal use rate:** Do not apply more than a **total of 99 ounces** (6.2 pounds) of **Apogee® plant growth regulator** per acre, per season.
- Do not apply more than a **total of 48 ounces** (3 pounds) of **Apogee** within any 21-day interval.
- **Preharvest Interval (PHI):** Do not apply within **45 days** before harvest.
- **Restricted Entry Interval (REI): 12 hours.**
- **Rainfast period:** **Apogee** is rainfast **8 hours** after application.
- Do not apply to crops that show **injury** (leaf phytotoxicity) produced by any other prior pesticide applications, because this injury may be enhanced or prolonged.
- Do not apply with calcium sprays.
- Do not apply this product through any type of irrigation system.

## VII. Crop-Specific Information

### Apples

Make the first application of **Apogee® plant growth regulator** when shoots have 1-3" of new shoot growth. Repeat applications as needed. Refer to **Tables 1-3** for application rates and timings. Dilute spray volumes are based on the amount of solution required to thoroughly wet the tree foliage to the point of runoff. Consult your local extension agent for a recommendation to calculate the dilute coverage based on the tree row volume.

**Table 1. Recommended Application Rates for Vegetative Growth Control in Apples<sup>1</sup>**

Application Timing	Apogee rate per 100 gallons of dilute spray <sup>1</sup>	Apogee rate per acre <sup>2</sup>
<b>Medium to High Vigor Trees (split applications)</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> <li>Make a second application at 10-17 day intervals.</li> </ul>	6 ounces	24 ounces
<b>Medium to High Vigor Trees (single application)</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> </ul>	10-12 ounces <sup>3</sup>	40-48 ounces <sup>3</sup>
<b>Low Vigor Trees with Normal Fruit Load (split applications)</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> <li>Make a second application at 10-17 day intervals.</li> </ul>	3-5 ounces	12-20 ounces
<b>Low Vigor Trees (single application)</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> </ul>	5-8 ounces	20-32 ounces
<b>Long Growing Season or Trees with Light Fruit Load (multiple applications)</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> <li>Make second and third applications at 7-14 day intervals.</li> <li>Make subsequent applications as needed at 10-14 day intervals.</li> </ul>	3-4 ounces	12-16 ounces
<sup>1</sup> Refer to section <b>II. Application Instructions</b> for rate calculations.		
<sup>2</sup> Based on 400 gallons of dilute spray per acre.		
<sup>3</sup> A high rate (more than 9 ounces per 100 gallons of dilute spray or 36 ounces per acre) applied early provides effective growth control but may decrease June drop resulting in increased fruit load in some locations. Therefore, thinning programs may need to be more aggressive.		

**Table 2. Recommended Application Rates for Special Cases in Apples**

Application Timing	Apogee rate per 100 gallons of dilute spray <sup>1</sup>	Apogee rate per acre <sup>2</sup>
<b>To decrease June drop on trees with light bloom:</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> </ul>	10-12 ounces	40-48 ounces
<b>To shape the canopy:</b> <ul style="list-style-type: none"> <li>Direct the spray to the portion of the tree where growth control is desired.</li> <li>Apply at 1-3" of new shoot growth.</li> </ul>	6-12 ounces	n/a
<sup>1</sup> Refer to section <b>II. Application Instructions</b> for rate calculations.		
<sup>2</sup> Based on 400 gallons of dilute spray per acre.		

**Table 3. Recommended Application Rates for Fire Blight Infections of Shoots (Shoot Blight) for Susceptible Apple Varieties\***

Application Timing	Apogee rate per 100 gallons of dilute spray <sup>1</sup>	Apogee rate per acre <sup>2</sup>
<b>To reduce fire blight infections of shoot by decreasing vegetative growth</b> <ul style="list-style-type: none"> <li>Apply at 1-3" of new shoot growth.</li> <li>Make a second application if new shoot growth occurs. Do not apply more than a <b>total of 48 ounces</b> (3 pounds) of <b>Apogee</b> within any 21-day interval.</li> </ul>	6-12 ounces <sup>3</sup>	24-48 ounces <sup>3</sup>
<sup>1</sup> Refer to section <b>II. Application Instructions</b> for rate calculations.		
<sup>2</sup> Based on 400 gallons of dilute spray per acre.		
<sup>3</sup> A high rate (more than 9 ounces per 100 gallons of dilute spray or 36 ounces per acre) applied early provides effective growth control but may decrease June drop resulting in increased fruit load in some locations. Therefore, thinning programs may need to be more aggressive.		

\* Not approved for use in California.

**Crops:**

This product can be used on the following crops:

**Apples**

Look inside for complete **Restrictions and Limitations** and **Application Instructions**.

**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 should be followed carefully. However, it is impossible to eliminate all risks inherently associated with 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 or the Seller. 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. BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL BASF OR THE SELLER BE LIABLE FOR CONSEQUENTIAL, 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.

*Apogee is a registered trademark of BASF Corporation.  
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Prohexadione calcium is patented by Kumiai Chemical Industry.*

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