

2021-01-18  
2020-5961

**MAINTAIN 3.5L**  
**SOLUTION**  
**COMMERCIAL**

Plant growth regulator for thinning and control of pre-harvest drop of  
apples, and for thinning of ornamental crabapples

ACTIVE INGREDIENT: 1-Naphthaleneacetic acid, present as sodium salt..... 3.1%  
Contains 1,2-Benzisothiazolin-3-one at 0.0058%, as a preservative.

REGISTRATION NO.: 33945 PEST CONTROL PRODUCTS ACT

READ THE LABEL BEFORE USING  
KEEP OUT OF REACH OF CHILDREN

Fine Agrochemicals Limited  
Hill End House  
Whittington, Worcester  
UK WR5 2RQ

Tel: 011 44 1905 361800

Distributed by:  
N.M. Bartlett Inc.  
4509 Bartlett Rd.  
Beamsville, Ontario  
L0R 1B1  
1-800-263-1287

Net Contents: XX L

Maintain is a registered trademark of Fine Agrochemicals, Ltd.

## PRECAUTIONS

- KEEP OUT OF REACH OF CHILDREN
- Harmful if swallowed.
- Avoid spray drift to other crops.
- Do not use spray equipment for other purposes unless thoroughly cleaned.
- Do not contaminate water used for irrigation or domestic purposes.
- Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, clean-up and repair.
- **DO NOT** enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

## FIRST AID

**If swallowed:** Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

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

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

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

## TOXICOLOGICAL INFORMATION

Treat symptomatically.

## ENVIRONMENTAL PRECAUTIONS

TOXIC to non-target terrestrial plants. Observe buffer zones specified under DIRECTIONS FOR USE. Overspray or drift to sensitive habitats should be avoided. Do not spray when wind is blowing towards the terrestrial sensitive areas including forested areas, shelter belts, woodlots, hedgerows, shrublands, and vegetated ditch banks, and the sensitive aquatic habitats including sloughs, ponds, prairie potholes, lakes, rivers, streams, reservoirs and wetlands. Do not contaminate these systems through direct application, disposal of wastes, or cleaning equipment.

## STORAGE:

Keep in original container during storage. Store product in a cool, dry, well-ventilated place away from seed, feed, fertilizer, or other pesticides.

#### **DISPOSAL:**

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instructions for any required additional cleaning of the container prior to its disposal.
3. Make the empty container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.
5. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

#### **NOTICE TO USER**

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

#### **DIRECTIONS FOR USE**

Maintain 3.5L is a plant growth regulator for use in fruit production. Uses in fruit production include thinning of fruit to help improve fruit size and quality, controlling pre-harvest fruit drop to reduce fruit losses and promoting adequate return bloom the following season. The response of fruit trees to an application may vary depending on factors such as variety, climatic factors, location, tree vigour, etc. Users need to consider these factors before choosing the desired rate and timing for an application. Always apply Maintain 3.5L using sufficient water to ensure complete and uniform spray coverage. The appropriate spray volume is determined by the type of equipment used, tree size and density of foliage. Consider all variables in rate and application timing for each variety and orchard location when establishing a spray program.

**CHEMICAL THINNING of APPLES:** Chemical thinning of apples is important to reduce the number of fruits in a cluster, ensure good tree architecture and optimum fruit size at harvest. Tree response to thinning with Maintain 3.5L applications also varies greatly based on the apple variety, climatic factors before and after application, tree vigour and spacing, pollination, fruit set and fruitlet size at time of application. **Table 1** below provides a list of apple varieties and recommended use rates for Maintain 3.5L. The level of thinning can vary greatly from year to year. Knowledge of the orchard's history and prior year's performance can help a grower determine the best spray program which is unique for that orchard. A typical rate for a moderate-to-thin apple variety in an orchard which requires 935 litres of water per hectare to achieve drip, is 5 ppm (146 mL of Maintain 3.5L per hectare). **Table 2** provides specific use rates based on ppm of NAA and tree row volume. Higher rates may be needed for more difficult-to-thin varieties or for large, vigorous trees with high fruit set potential which need aggressive

thinning, or when applications are made towards the end of the fruit thinning window. Lower rates may be best for weaker trees with poor pollination and lower fruit set potential.

Typical application timings range from full bloom to 30 days after full bloom. Maintain 3.5L is most effective for fruit thinning when applied once the king fruitlets are 5 to 10 mm in diameter. The preferred application temperature is between 21°C and 24 °C under slow drying conditions. Applications are not recommended below 15.6 °C or above 26.7 °C. Over-thinning may occur when daytime temperature exceeds 29.4 °C. Satisfactory thinning can be obtained under such conditions with lower rates. Spray applications should be directed to the top two-thirds of the tree canopy for optimal performance. Under normal conditions, one application for thinning should be adequate. However, if a second application is desired, it should not be made earlier than 7 days after the first application. Maintain 3.5L can also be used in combination with carbaryl for fruit thinning. Do not mix Maintain 3.5L with any product containing a label restriction against such mixing. Always apply in accordance with the limitations and precautions of the most restrictive label to be included in the tank mix. Consult your local Provincial spray guides for information on this tank mix combination as well as the specific timing windows for fruit thinning in your area. Also, consult your local extension specialist or pomologist for specific recommendations for apple varieties in your area.

Certain varieties can be sensitive to Maintain 3.5L and therefore growers should exercise caution prior to large scale use. Application of Maintain 3.5L to trees younger than 5 years of age should be made with caution as damage to the trees may occur. Pygmy or misshapen fruit formation or phytotoxicity may occur on some varieties under the following conditions: 1) higher rates, 2) when temperatures exceed 29.4 °C and/or 3) when applications are made to fruit >15 mm in size. Delicious and Fuji apple varieties are particularly susceptible and care should be exercised when using Maintain 3.5L on such varieties.

**TABLE 1**

Apple Varieties	Thinning rates <sup>1</sup> (mL Maintain 3.5L per 378.5 litres of tree row volume <sup>2</sup> )	Typical Application Timing
<b>Easy-to-thin:</b> Granny Smith, Braeburn, Pink Lady, Cortland, Delicious Baldwin, Idared, Jonathan, Northern Spy, MacIntosh, Red Delicious, Rome Beauty, Stayman, Rhode Island Greening, and others.	14.8 to 88.7 (1.2 -7.5 ppm)	Petal fall (3-7 mm fruit size) and/or early fruit set (8-10 mm fruit size).  Note: Thinning becomes increasingly difficult as fruit size increases. Adjust the rate of Maintain 3.5L to obtain desired results. Application to fruit >15 mm may result in misshapen or pygmy fruit in sensitive varieties.
<b>Moderately difficult-to-thin:</b> Gala, Golden Supreme, Honeycrisp, Cameo, Gingergold, Jersey mac, Rome, Jonagold, Empire, Olenberg (Duchess) Red Astrachan, Spartan, Mutsu, Yellow Transparent, Williams Early and others.	29.6 to 118.3 (2.5-10.0 ppm)	

<b>Difficult-to-thin:</b> Fuji, Golden Delicious, Jonamac, Lodi, Macoun, York, York Imperial, Yellow Newton, PaulaRed, Early Macintosh, and others.	44.4 to 118.3 (3.7-10.0 ppm)	
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------	--

- 1 Note: The rate ranges supplied are intended only as a general guide. Your intended results may require rates above or below those in the table. When Maintain 3.5L is used in combination with a non-ionic surfactant or in a tank mix with another apple thinning product, the application rate of Maintain 3.5L should be appropriately reduced.
- 2 Volume of water required per hectare required to achieve drip at the time of application.

**TABLE 2**

<b>Spray Preparation Chart for High Volume Application (in parts per million)</b>				
<b>Target Rate (ppm NAA acid basis)</b>	<b>Tree Row Volume Expressed as Litres per Hectare*</b>			
	<b>935</b>	<b>1871</b>	<b>2806</b>	<b>3742</b>
	<b>mL of Maintain 3.5L</b>	<b>mL of Maintain 3.5L</b>	<b>mL of Maintain 3.5L</b>	<b>mL of Maintain 3.5L</b>
1	29	59	88	117
5	146	293	439	586
10	293	586	879	1172
15	439	879	1318	1758
20	586	1172	1758	2344

\* Use the appropriate Maintain 3.5L rates from this chart to prepare the desired final Tree Row Volume spray per hectare

**PRE-HARVEST DROP:** Maintain 3.5L is effective in delaying pre-harvest drop of apples and provides a tool to manage apple harvest operations. Best results generally occur when Maintain 3.5L is applied at 10 to 20 ppm two (2) weeks prior to anticipated harvest, followed by another application of Maintain 3.5L at 10 ppm made one (1) week prior to anticipated harvest. For mid-summer and early fall varieties, during periods of warm weather, Maintain 3.5L usually becomes effective in one to two days. For later varieties during cool weather, a slightly longer period is necessary. Treat only healthy apple trees. When possible, apply sprays when temperature is 21°C or higher. Thoroughly wet foliage as well as fruit with the spray. Consult local extension specialists on the volume to be used when using speed sprayers.

For summer varieties, apply Maintain 3.5L when the first healthy, uninjured fruit begin to drop. For such varieties, under ideal conditions, 5 ppm NAA may be fully effective. With mid-season varieties, such as McIntosh, Spartan and Honeycrisp, apply 10 ppm Maintain 3.5L when the first healthy, uninjured fruit begin to drop. If the area treated is not harvested within 7 to 10 days after the first treatment, a second application should be made to the remaining unpicked fruit 5 to 6 days after the first application to hold the fruit longer. For late-summer maturing varieties such as Red Delicious, one application of Maintain 3.5L at 10 ppm should be made at the time

when the first healthy, uninjured fruit begin to drop. For apples grown in the province of British Columbia, use up to 20 ppm of Maintain 3.5L. Contact your local apple specialist for specific product recommendations.

**Important:** MAINTAIN 3.5L inhibits fruit drop but does not affect normal ripening. The fruit must be harvested at the proper stage of maturity even though the product is still effectively delaying fruit drop. For pre-harvest drop control, do not make more than 2 applications per season and do not apply the last Maintain 3.5L application less than 5 days before anticipated harvest.

#### **TO PROMOTE RETURN BLOOM ON APPLE TREES THE FOLLOWING SEASON:**

When Maintain 3.5L is used at the thinning stage, it can also effectively promote return bloom during in an off-year among trees which are likely to produce only a limited number of blossoms in the following year. Contact your local pomologist regarding the varieties which tend to have biennial bearing.

**FRUIT SET THINNING OF ORNAMENTAL CRABAPPLES:** For use only as a component of an integrated pest management program to control codling moth in British Columbia. A Maintain 3.5L treatment at 20 ppm spray solution should be made within five (5) days after full bloom to completely remove all flowers and young fruit. Application should be made by municipal employees or licensed applicators only. Do not apply this product in a manner which will increase drift to non-target plants or expose workers or other personnel. The treated area must be vacated prior to application. Make only one application per season.

#### **APPLICATION OF MAINTAIN 3.5L:**

##### **Airblast application:**

**DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** direct spray above plants to be treated. Turn off outward pointing nozzles at row ends and outer rows. **DO NOT** apply when wind speed is greater than 16 km/h at the application site as measured outside of the treatment area on the upwind side. Direct 80% of the spray to the upper 2/3 of the tree structure. Use a properly calibrated sprayer to ensure uniform and complete coverage of all foliage and developing fruit without runoff. Spray volume should be adjusted for tree size and density.

Maintain 3.5L works best if climatic conditions allow an extended drying period. Apply in the morning or evening when temperatures are lower and humidity tends to be higher than during the day.

**DO NOT** apply using aerial application equipment.

##### **Buffer Zones:**

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands.

<b>Method of Application</b>	<b>Crop</b>	<b>Buffer Zones (metres) Required for the Protection of Terrestrial Habitat:</b>
Airblast	Apples	4
Airblast	Ornamental crabapples	2

For tank mixes, consult the labels of the tank-mix partners and observe the largest (most restrictive) buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASAE) category indicated on the labels for those tank mix partners.

The buffer zones for this product can be modified based on weather conditions and spray equipment configuration by accessing the Buffer Zone Calculator on the pesticides portion of the Canada.ca website.

Apply only to agricultural crops when the potential for drift to areas of human habitation and human activity such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

If this pest control product is to be used on a commodity that may be exported to the U.S. and you require information on acceptable residue levels in the U.S., visit CropLife Canada's web site at [www.croplife.ca](http://www.croplife.ca).