

TECHNICAL INFORMATION BULLETIN

OVERVIEW

Accede® Plant Growth Regulator Liquid Concentrate contains the active ingredient 1-Aminocyclopropane-1-carboxylic acid (ACC). ACC is a naturally occurring non-protein amino acid and is the precursor to ethylene in all plants. Ethylene affects many plant development processes including fruit drop, fruit coloring and fruit ripening. Accede is intended to be used in apples and peaches/nectarines for crop load management.

MODES OF ACTION

Accede is a liquid formulation of 10% (wt/wt) ACC that is quickly converted to ethylene using the plant's natural biochemical pathways. The ethylene generated after an application of Accede stimulates and accelerates flower and fruit drop in apples and peaches/nectarines, reducing the expense of labor needed for hand thinning.

ACC oxidase (ACO) in the plant cell converts ACC to ethylene in a temperature dependent biochemical reaction. The rate of ethylene release following an Accede application reaches a maximum after two to three days, and ethylene declines to background levels around 10 days after application. Accede does not leave ACC residues at harvest. And, Accede does not cause gummosis in peaches/nectarines, in contrast to other ethylene releasing compounds such as ethephon.

BENEFITS OF ACCEDE

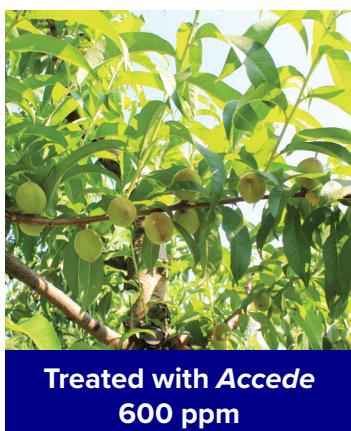
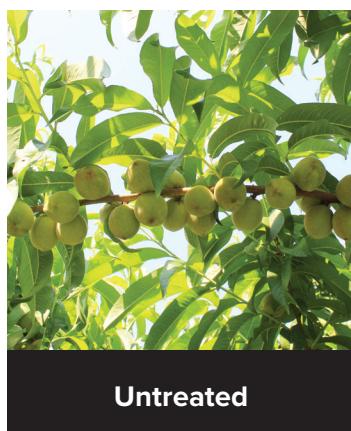
Accede is intended to be a new crop load management tool for apples and peaches/nectarines.

- ▶ Delivers Effective Crop Load Management
- ▶ Allows for Less Labor for Hand Thinning
- ▶ Increases Fruit Size

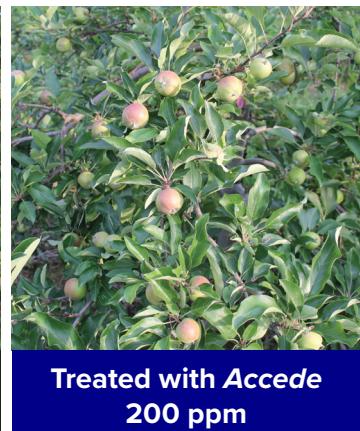
ACCEDE PERFORMANCE

Accede effectively reduced fruit set in apples and peaches/nectarines, decreasing the need for hand thinning.

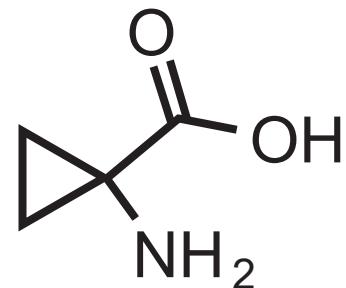
Crop Load On Flamin' Fury® Peach Trees



Crop Load On Gala Apple Trees



Photos: Ohio State University



APPLES CROP LOAD MANAGEMENT

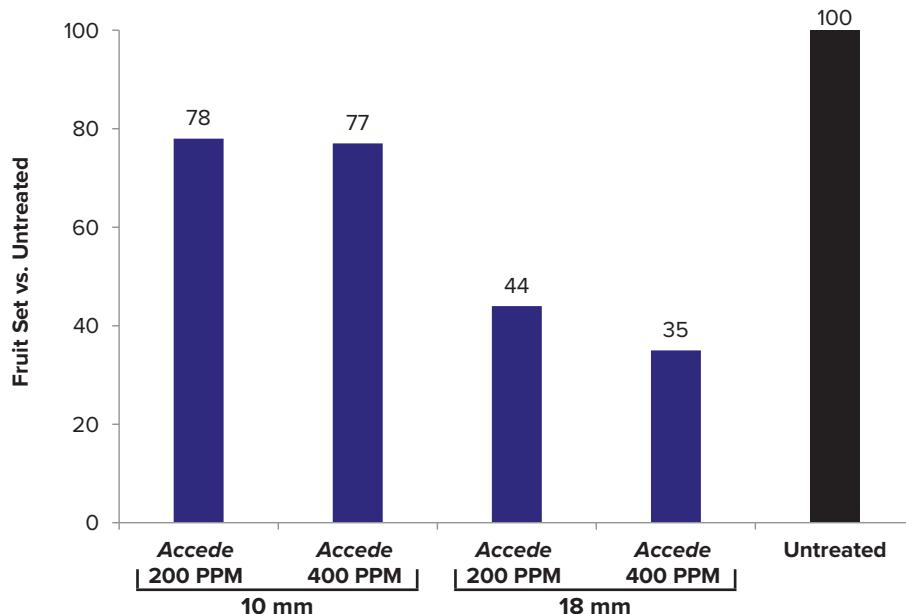
Trials have demonstrated that Accede has thinning activity if it is applied when king fruit range from 8 to 25 mm in diameter with strongest thinning activity when fruit diameter is 15 to 20 mm. Because of this unique feature, Accede is anticipated to be an important new crop load management tool for apple growers.

ACCEDE THINNING EFFICACY FOR APPLES

Fruit Set (Gala)

Accede effectively thinned fruit at both 10 mm and 18 mm. A higher level of thinning occurred at 18 mm.

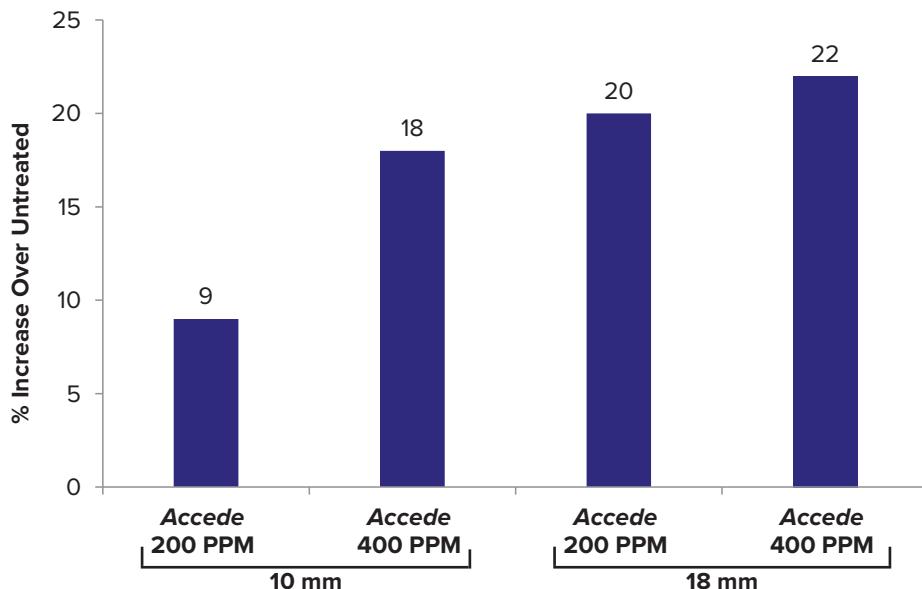
Source: Cornell University (NYSAES)



Average Fruit Weight (Gala)

Increased thinning improved fruit size even when thinned at the later 18 mm timing.

Source: Cornell University (NYSAES)



ACCEDE IN AN APPLE THINNING PROGRAM

Accede is an effective tool for late thinning. When additional thinning is required, use Accede in a program with PoMaxa® Plant Growth Regulator and/or MaxCel® Plant Growth Regulator.



Bloom

5

10

15

20

25

Fruit Diameter (mm)

Hand Thinning

PEACHES/NECTARINES CROP LOAD MANAGEMENT

Accede is the first of its kind chemical thinner registered for use on peaches/nectarines. Trials have demonstrated that an application of Accede to peaches/nectarines during the period from bloom to petal fall will reduce fruit set. A single application of Accede can reduce fruit set of peaches/nectarines by 15 to 30%. If additional thinning is required, a second application of Accede can be made to peaches/nectarines no fewer than seven days after the initial application.

The anticipated objective of Accede use in peaches/nectarines is to reduce, but not eliminate, the need for hand thinning. Studies in California have shown that a single application of Accede to peaches/nectarines during bloom can reduce the labor requirement for hand thinning by 30% or more depending on the dose applied. A second application of Accede can further reduce fruit set to provide additional reductions in hand thinning labor.

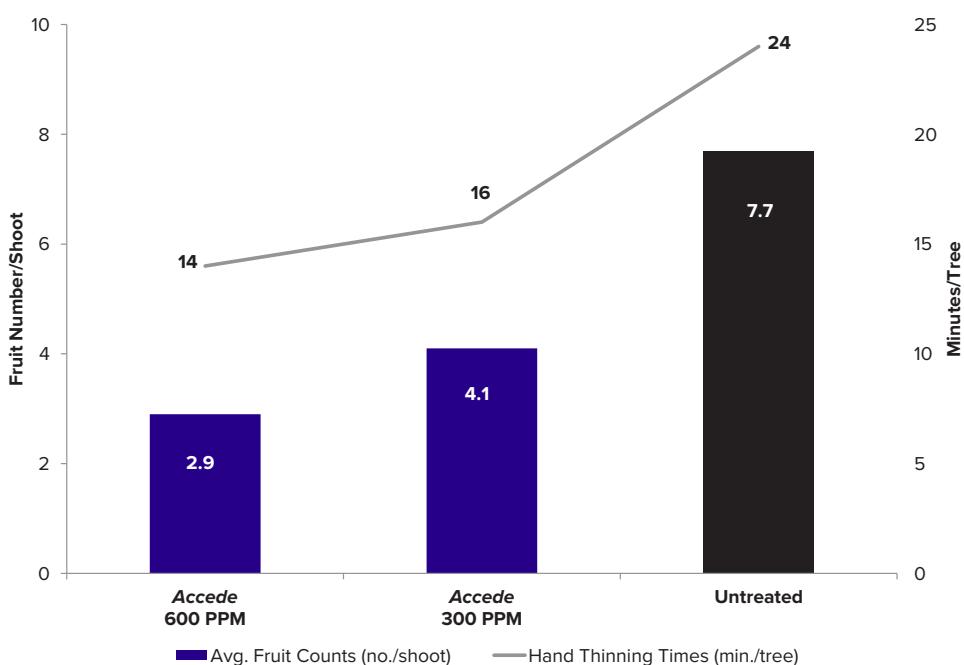
ACCEDE THINNING EFFICACY IN PEACHES/NECTARINES

Number of Fruit Per Shoot and Hand Thinning Time

Application of Accede during bloom can reduce the number of fruit per shoot by 40% or more. Accede can also reduce the hand thinning time per tree by 30% or more.

Data are average values from multiple studies on peaches and nectarines in California.

Source: Valent U.S.A. LLC

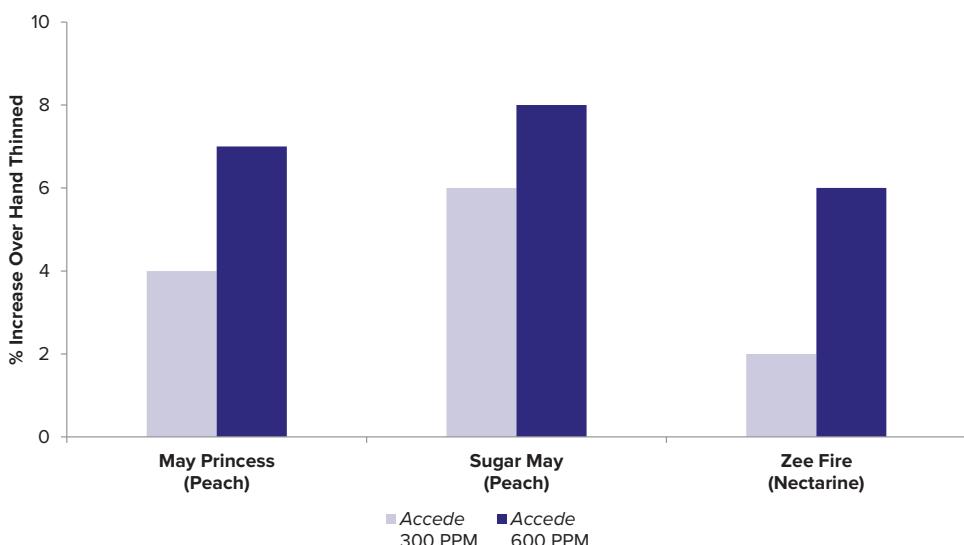


Average Fruit Weight

Application of Accede during bloom reduced the number of fruit per shoot during Stage I of growth, much earlier in the season compared to hand thinning only.

Earlier reduction of fruit number with Accede can result in increased fruit weight at harvest compared to hand thinning only.

Source: Valent U.S.A. LLC



HOW TO USE ACCEDE

Formulation	Accede is a 10% (wt/wt) soluble liquid formulation containing 15 ounces AI per 1 gallon
Rate	Apples: 200 to 400 ppm <ul style="list-style-type: none">• Equivalent to 23–46 fluid ounces of product in 100 gallons of water per acre Peaches/Nectarines: 300 to 600 ppm <ul style="list-style-type: none">• Equivalent to 34–69 fluid ounces of product in 100 gallons of water per acre
Adjuvant	For optimal response, use Accede with a non-ionic surfactant at a rate of 0.05% to 0.125% (v/v) in the spray tank
Crops	Apples, Peaches, Nectarines
Timing	Apples: <ul style="list-style-type: none">• Accede can be applied in the period from 8 to 25 mm king fruit diameter• Accede is most effective when king fruitlet diameter is 15 to 20 mm Peaches/Nectarines: <ul style="list-style-type: none">• Accede can be applied from the bloom stage to petal fall• Make the first application of Accede from early to full bloom. If necessary, a second application may be made 7 to 10 days later (up to petal fall).• Currently not approved for post bloom applications

ACCEDE APPLICATION / PRODUCT STORAGE NOTES

- Store unopened product between 45° and 80°F. Once opened, the product should not be stored below 55°F.
- The rate of Accede will depend on the amount of fruit thinning required
- Product performance can be impacted by factors such as cultivar, prevailing and anticipated climatic conditions, tree vigor, fruit set potential and orchard history
- Apply Accede in enough water to ensure that flowers, fruits and foliage receive thorough spray coverage using calibrated spray equipment. Adjust water volumes based on plant size and spacing. However, excessive spray application volumes resulting in spray runoff will reduce product efficacy.
- Do not apply Accede when frost is expected as overthinning may occur
- If frost occurs during bloom, wait until damage to flowers and buds can be assessed to determine if application of Accede is needed
- Avoid applications during the heat of the day. For best results, apply Accede under slow drying conditions (e.g., early in the morning or at night, in order to maximize absorption).
- Maintain solution pH between 5 and 7
- Do not apply Accede to injured or stressed plants or fruits (e.g., drought stress, freeze injury, girdled trees, etc.)
- Do not use overhead cooling or irrigation equipment for at least 8 hours following Accede application
- Do not apply Accede if rain is expected within 8 hours of application



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