

what would have happened without the Promalin spray.

- **Do not apply Promalin and NAA to Delicious in the same year, as small, seedless fruits may develop**

### REDUCTION IN RUSSETING OF GOLDEN DELICIOUS

Rain, high humidity, and fluctuations in temperature during early fruit development may cause Golden Delicious fruit to russet. If severe, this russeting may lower fruit grade. Gibberellins A4+7 application, sold as Provide, will reduce skin russeting that is caused by environmental factors early in the season.

Concentration and timing: Apply 2–4 applications of 15–20 ppm Provide (10–13 ozs./100 gals.) starting at petal fall and continuing at 7 to 10 day intervals. The early applications are most important.

Special considerations:

- Do not apply over 100 gallons of spray per acre.
  - Do not use a surfactant or a spreader-sticker because they may increase russeting.
  - Do not apply more than a total of 40 ozs./acre because return bloom may be reduced.
- **The restricted entry interval is 12 hours.**

### USE OF ETHEPHON TO CONTROL VEGETATIVE GROWTH

Ethephon application to **young non-bearing trees** when shoots are 4–6 inches long (10–14 days after full bloom) has reduced shoot growth and increased flower bud development.

#### **Non-Spur Strains.**

ethephon 1.5–2 pints/100 gals. dilute.

#### **Spur-Type Strains.**

ethephon 1 pint/100 gals. dilute

**The restricted entry interval for Ethrel (ethephon) is 48 hours.**

### Use of Apogee® to Control Vegetative Growth

Apogee has several benefits when applied to apple trees. It reduces terminal growth, thus reducing the time required to dormant prune and summer prune. It increases red color development by increasing light penetration into the tree canopy thereby potentially eliminating the need to summer prune to improve fruit color. It improves spray coverage and therefore, may increase the likelihood of effective pest control, primarily attributed to reduced growth and the resultant reduction in canopy volume and density. It reduces the incidence and severity of fire blight on shoots (shoot blight).

Apogee, prohexidione calcium, reduces terminal growth by inhibiting the synthesis of gibberellins, a group of endogenous hormones that are primarily responsible for the regulation of terminal growth. Once applied, it requires 10 to 14 days to slow growth. It degrades within the tree in a few weeks, so at least one repeat application (and probably more) will be necessary to maintain growth control throughout the growing season, particularly with vigorous cultivars or under environmental conditions favorable for tree growth.

**Time of Application.** Terminal shoot growth in the northeastern United States occurs very rapidly during the early part of the season. Since it requires up to 2 weeks for Apogee to slow growth, it is essential to make the first application when terminal shoots are no longer than 1 to 1.5 inches and when adequate leaf area has emerged to absorb it. This typically occurs during bloom or early petal fall. Apogee has no adverse effects on bees, so the first application can be made while bees are still in the orchard.

Additional applications will be required. Generally a second application is made at a reduced rate 2 to 3 weeks after the first. The need for additional applications will depend upon concentration used and the vigor potential of the trees, which is a combination of factors including cultivar, rootstock, soil, water available, and crop load.

**Amount to Apply.** The label allows application of between 3 and 12 ounces per 100 gallon of dilute spray (62.5 to 250 ppm). We