

# Control of Premature Ripening of Bartlett Pears

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Premature ripening of Bartlett pears sometimes is a major source of fruit loss and poor quality, especially in districts with relatively cool climates. In certain years, losses have varied from approximately 10 to 100 percent, depending on orchard and site.

The disorder has several progressive stages of development. The first symptom is a pink coloration in the calyx lobes, commonly referred to as "pink end," that becomes apparent early in the growing season. Pink end does not necessarily lead to premature ripening, but it may, depending on later weather conditions. Unless additional symptoms appear, subsequent fruit development does not seem to be affected.

A second symptom is a change in skin color around the calyx from green to yellow. Further development involves softening of the tissue in this area and ripening throughout the fruit. In an advanced stage of the disorder, a greatly accelerated rate of maturation and ripening causes the fruit to drop before normal harvest.

## Cool temperatures and premature ripening

Evidence from research using controlled temperature cages has shown conclusively that premature ripening of Bartlett pears is a result of cool temperatures within 30 days prior to harvest. During this period, two consecutive cold nights at a temperature around 45°F (7.2°C) with daytime highs about 70°F (21.1°C) are sufficient to initiate premature ripening. Nine days of 50°F nights and 70°F days are sufficient to induce premature ripening. If these cool nights occur during the last 30 days before harvest, warm daytime temperatures will not overcome premature ripening, but will reduce the severity.

Premature ripening occurs most frequently in districts with normally cold climates, but can occur anywhere when temperature conditions are conducive. Orchards where the entire soil surface is shaded by the trees may absorb less heat during the day and be colder at night than orchards where the sun warms the soil during the day. Within individual orchards, premature ripening may occur primarily in cold pockets. North-facing slopes generally are colder than south-facing ones.

## Controlling premature ripening

Premature ripening is not associated with any orchard practices such as pruning, fertilizing, or irrigation. However, there are several steps you can take to minimize the impact of premature ripening.

**Protect from chemical overdoses.** Be cautious when applying stop-drop spray or 2,4-D herbicide. An overdose of stop-drop spray (NAA) can produce premature ripening. Accidental treatment with a synthetic auxin-type herbicide, i.e., 2,4-D, also can cause premature ripening. If exposure to a 2,4-D herbicide or stop-drop spray occurs during or just before a hot spell, an unusually high dose may not be required to induce premature ripening.

The sensitivity of pears to synthetic auxins increases as the fruit matures. A dose of NAA as low as 37 ppm within 6 days before harvest could significantly increase premature ripening.

The natural levels of abscisic acid are higher in Bartletts that have been exposed to cool temperatures. This shift in the internal balance of natural growth-regulating substances makes the fruit more prone to drop from the tree. Such fruits might be expected to react differently than normal fruit to

applications of synthetic growth regulators such as NAA. A late spray of NAA might increase the severity of a mild case of cold-induced premature ripening, particularly if applied during or just before hot (80°F or more) weather. However, the interaction of cold temperatures and NAA applied as a stop-drop is not certain.

**Accelerate harvest in cool seasons.** Normally Bartletts in the Mid-Columbia district of Oregon drop about 1 pound in firmness (as measured by a pressure tester) in 4 or 5 days. This means that Bartletts picked at a pressure of 19 to 17 pounds should be harvested in an 8- to 10-day period for optimum quality.

In seasons when prevailing temperatures are below normal before harvest, you will have a much shorter optimum harvest period. However, since the fruit is more advanced physiologically, you can harvest it at a slightly higher pressure test without a loss of quality.

**Store fruit quickly and carefully.** Take special care when storing Bartletts that are susceptible to premature ripening, e.g., those that have experienced nighttime temperatures at the threshold during the 30-day preharvest period. Rapidly cool these pears as soon after harvest as possible. Any delay in cooling could lead to substantial losses in storage.

Keep susceptible pears segregated from normal fruit in storage and watch them closely. These suspicious lots may continue to change color and soften even though recommended temperatures are maintained throughout storage.

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