

SPLIT PIT

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VISIBLE SPLIT PITS

Split pits are openings or splits of the pit at the stem end of the fruit. This split becomes evident during final swell, the third stage of fruit growth. The actual weakening of pits, which leads to openings at the stem end, probably occurs in the latter stages of pit hardening. Immature fruit that have abnormal shapes or sutures often manifest split pit symptoms during final swell (Figure 1). Split pits are a long-recognized problem in peach production.

Fruit with visible split pits are highly undesirable. Split pit fruit are often misshapen and detract from the overall quality of the pack. Grade standards may exclude visible split pit. They are quite prone to rot problems, and rots can spread rapidly from split pit fruit to sound fruit in the packinghouse.

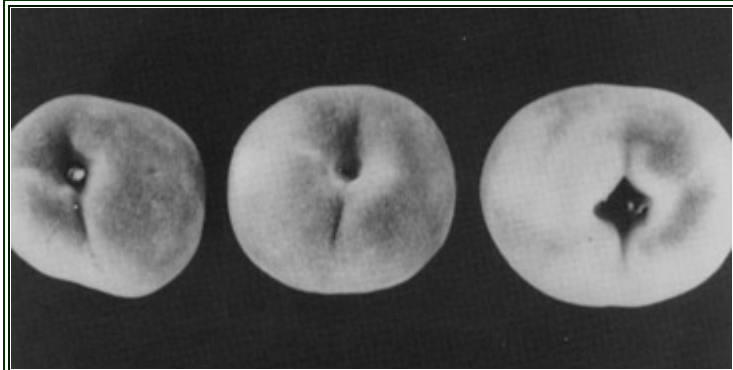


Figure 1. Typical visible split pit peach (right) compared to a normal peach (center) and fruit with drop shoulder (left).

Breeding programs focus on developing new varieties with fewer split pit problems. Some level of split pit must be accepted, especially in early selections. Fruit having visible split pits are eliminated as culls during grading. Varieties such as Candor, Camden, or Springgold may have in excess of 20 percent split pits, especially if overthinned.

SHATTERED PIT-GUMMING PROBLEM

Pits can also shatter with no attendant opening. Internal gumming is often associated with shattered pits. Gumming, shattered pits are deemed an internal defect. Fruit with pits broken into more than three pieces plus gum deposits near the flesh are out of grade.

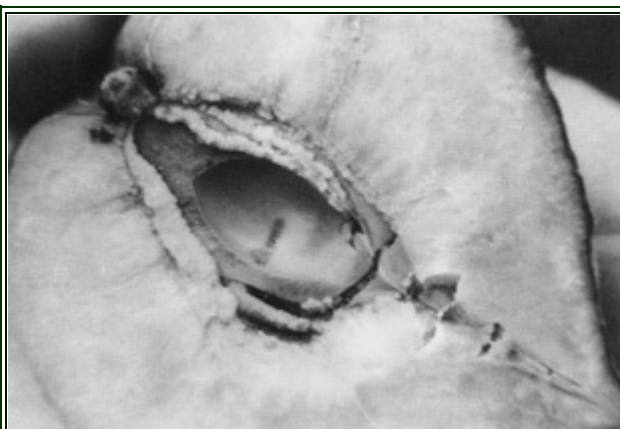


Figure 2. Peach showing the shattered pit problem.

The shattered pit-gumming condition is internal and can be present in an otherwise normal-appearing fruit (Figure 2). Fortunately, pit fracturing and internal gumming are more common in malformed fruits that are fairly easily removed from the packing line. However, even the trained eye cannot detect internal pit breakage that occurs in fruit that appear normal.

Shattered pits occur primarily at the blossom end (bottom) of the fruit. Visible split pits develop at the stem end. Internally shattered pits cause the greatest problems as they are, of course, more difficult to grade out. Internal gumming increases as the pit fractures into more pieces. Gumming is generally confined to the pit cavity, but some contact with the flesh may develop. Fruit inspectors are particularly concerned when pit pieces detach from the main pit

structure and when gum deposits contact the edible flesh.

CAUSAL FACTORS

The causes of pit breakage are poorly understood. Cold or freeze damage during flowering and early fruit development seems to promote split pits. Shattered pit-gumming problems are much less common in fruits with viable seeds. It is not known if the pit shatters because of seed death or if a breakage of the pit actually causes the seed death. Internal pit fracturing and gumming is a consistent problem for varieties that ripen 45 or more days ahead of Elberta. Many of these varieties struggle to produce a high percentage of fruit with mature, functioning seeds.

Early peach varieties frequently enter their final swell of growth before complete hardening of the pit has occurred. Rapid fruit enlargement causes, or exacerbates, much of the pit fracturing that occurs. Most early varieties are clings, so the strong attachment of flesh to pit probably contributes to the problem. In mid- and late season varieties, pits have more structural integrity because they have properly lignified and hardened before pressure is exerted by the flesh during the final growth stage.

In general, cultural practices that enhance fruit size (thinning, good nutrition programs, irrigation), increase the level of split pit and shattered pit damage. However, recent studies suggest that girdling (and possibly scoring) may enhance fruit size and yield without appreciably aggravating the well-known split pit/shattered pit problem of varieties such as Camden and Springold.

When freezes excessively reduce fruit loads, pit shattering generally increases. This occurs with some varieties in some peach-producing regions of the country nearly every year. Excessive rainfall in the latter stages of fruit growth is another uncontrollable variable that aggravates pit breakage problems.

CONTROL MEASURES

Cultural options to minimize pit breakage problems are limited. Development of varieties less prone to the problem is the best approach. However, superior varieties are not available to replace early, split pit prone varieties.

With Junegold and Camden, growers have reduced pit breakage problems by leaving heavier crop loads. In so doing, they settle for smaller fruit. Markets reward large fruit, so growers must balance between larger, more profitable fruit and losses associated with increased split pit-shattered pit problems.

The following is a brief summary of steps growers should consider to minimize shattered pit-gumming problems.

- (1) Leave heavier crops on problem varieties.
- (2) Avoid excessive nitrogen applications, especially close to harvest time.
- (3) Use stricter packinghouse grading for problem varieties to remove questionable or misshapen fruit. These fruit are most at-risk for split pits.
- (4) Plant superior selections of the same ripening season as they become available, while eliminating plantings of the more troublesome varieties.