

Humidity

Maintaining 90 to 95% relative humidity in the conditioning room will help minimize water loss and shrivel. This can be accomplished with the aid of commercial humidifiers which can be installed in the room. Another way is to soak the floor of the room when the fruit is placed inside. Be sure that boxes are not stacked on the floor if the latter procedure is used. It is important that the corrugated boxes are strong enough to withstand the 90 to 95% relative humidity without loss of integrity.

Conditioning Room

Ethylene gas should be introduced into an airtight room, as the concentration of ethylene ppm (parts per million) needs to remain high enough to trigger the conditioning process. Some packing houses have built ripening rooms with latex painted plywood walls. A "CA" room may also work if equipped with heating and cooling capabilities. At a supermarket distribution center, a banana ripening room is ideal. Most important is the fact that the room should not leak and have a good air distribution system. If the room leaks, it will be harder to reach and maintain the proper level of ethylene concentration.

The ethylene concentration required for conditioning pears is 100 parts per million (ppm). To determine the volume (cubic feet) of a room, multiply height x width x depth. Once you determine the volume of the room you will be using, follow the directions of the company from which you buy the ethylene in order to determine the quantity of gas to use. Note: Ethylene gas is explosive in concentrations between 2.8% (28,000 ppm) and 28.6%.

However, the amount of ethylene needed for ripening pears is only 100 ppm. You would need 280 times this amount for any chance of explosion. Consult the manufacturer of the system you intend to use for instruction on proper safety procedures.

Once the fruit pulp temperature has reached the room air temperature range of 68 to 70°F (20 to 21°C), introduce the ethylene. Check fruit core temperature and firmness daily. It is best to check the temperature in various parts of the room to ensure there are no "hot spots" in the room. Air circulation is important, an even flow throughout the room will help the fruit ripen evenly.

When loading a room, stack and load the fruit to ensure maximum air flow in and around the boxes. The stacking pattern should facilitate air flow around and through the boxes to be most effective in removing heat and carbon dioxide produced by the ripening pears and to ensure uniform distribution of ethylene. Air flow all around each box is necessary to cool the fruit in the middle of the box, stack and pallet. It is also best to leave 1 1/2 feet between the walls and pallets and at least 6 inches between pallets.

If a forced air-conditioning system is used and the boxes have proper venting for introducing air through the box, pallets can be handled through the ripening room without special stacking patterns.

It is also important to keep access open to the back of the room in order to take daily firmness and temperature readings. If there are no fans installed in the room to move the air, portable fans can be used.

Verification of the ethylene concentration is important, especially during the first few introductions. Research stations in the growing districts can help packing houses with this verification.

Vent the ripening room every 12 hours by opening the door. This venting will occur when you are checking the pulp temperature in the room. Venting will rid the room of carbon dioxide which retards ripening. Otherwise avoid entering ripening rooms when ethylene is being introduced. Opening the door will prematurely lower the ppm of the ethylene concentration. It may be helpful to hang a sign on the room to alert people to the fact that ethylene is being used inside.

For early season fruit, 72 hours of ethylene introduction may be necessary to achieve the desired firmness. For later season fruit, and fruit that has been stored for 2 or more months, 48 hours or even 24 hours may be sufficient. It is important to check firmness daily. Firmness may drop 1 lb. psi force per day on the average. Keep in mind transit time until fruit is on the shelves when determining optimum firmness. Generally, for the packing house, pears should be removed from the conditioning room when fruit firmness drops to 11 to 12 lb. psi force of firmness and cooled back down to 32°F (0°C). Lower firmness can make handling and shipping more difficult.

A supermarket may want a lower firmness if fruit has less travel time and will be on the shelf sooner. Pears in the 3 to 5 lb. psi force firmness range are often considered best for eating out of hand. However this can vary according to individual tastes and circumstances.

Conditioned

Once fruit has reached the desired firmness, remove the fruit from the conditioning room and rapidly bring pulp temperatures down to 32°F (0°C) to slow ripening. Be aware that conditioned fruit will ripen faster and need gentle handling especially as the firmness decreases. Always handle pears gently.

Ripe Now

For fruit that is destined to be sold or consumed quickly, keeping pears at a core temperature of 68 to 70°F (20-21°C) will quickly bring them to optimum eating quality, i.e. 3 to 5 lb. psi force. Pears held at 68°F (20°C) after ethylene treatment can ripen in 3 to 5 days. Pears will continue to ripen once triggered. It is important to lower pulp temperatures and keep fruit refrigerated to slow the ripening process.

PEAR CONDITIONING GUIDELINES



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