



Pear Handling Manual

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This manual was developed by the Pear Bureau Northwest to support organizations involved in ripening or displaying ripe initiated pears from Oregon and Washington.

Pears, like any other produce item, are shaped by each season's characteristics. The guidelines set forth in this manual should always be implemented in conjunction with the dynamics of the pears. Some of these dynamics being the variety, the age of the product from harvest, quality, condition and other physiological factors.

The ultimate goal is to consistently produce pears at a desired stage of ripeness that will motivate consistent volume movement.

The Pear Bureau has the most comprehensive support for pear ripening, merchandising and promotion in the industry. If you would like to learn more about our program, visit us at www.usapears.com/trade or feel free to contact your Pear Bureau regional manager.

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Contents:

| | |
|------------------------|----|
| Growing Regions | 3 |
| History | 4 |
| Varieties | 5 |
| Availability | 8 |
| Harvest | 10 |
| Packing | 13 |
| Sizing & Grading | 14 |

Warehouse Procedures

| | |
|--|----|
| Receiving & Handling | 19 |
| Room Loading & Ripening Procedures | 21 |
| Pear Ripening Considerations | 22 |
| Pear Pressures - By Variety | 23 |
| Ripening Overview | 24 |
| Equipment Needed | 25 |
| Pear Ripening Procedures | 26 |

Retail Procedures

| | |
|----------------------------------|----|
| Retail Holding and Display | 30 |
| Nutrition Facts | 34 |



WASHINGTON

• Seattle



Wenatchee



Yakima

Portland •



Mid-Columbia

OREGON



Medford



Northwest Pear Growing Regions

Within the vast and diverse geography of the United States, the Pacific Northwestern states of Oregon and Washington, produce the majority of North America's fresh pears. Only four areas in these states have the ideal mix of climate, fertile volcanic soil and abundant water, producing some of the world's finest pears.

Today, the vast majority of Northwest pears can easily be identified under the label of ***USA Pears*** coming from one of these growing areas:

Wenatchee - The city of Wenatchee, located in the North Central Washington growing region, is named for Chief Wenatchee, once head of the powerful Yakima tribe. The name "Wenatchee" is a Native American word believed to mean "boiling waters," a fitting description of the turbulent rapids of the Wenatchee River that tumbles through the surrounding canyons.

Yakima - According to Indian legend, the word Yakima means "Black Bear." Each year the plentiful water and rich, light, fertile soil of the beautiful Yakima Valley brings thousands of acres of Northwest Pear trees into bloom.

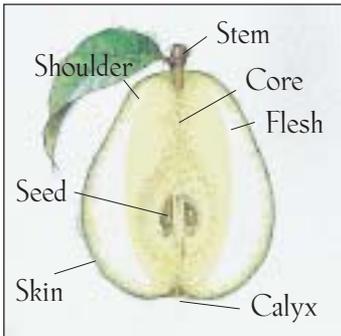
Mid-Columbia - The Columbia River flows through the Columbia Gorge as it passes through the heart of the Mid-Columbia region. This rich pear-growing region begins just North of White Salmon, Washington and stretches South through Hood River, Oregon to the slopes of Mt. Hood.

Medford - Southern Oregon's Rogue Valley is as rich in lush, Northwest Pear orchards as the surrounding area is rich in history. The area around Medford and the neighboring town of Jacksonville, a designated National Historic Landmark, serves as a time capsule dating from Oregon's early pioneering days.

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EARLY HISTORY

The first mention of pears was as a medical ingredient found on a clay tablet in Sumer in ancient Mesopotamia, around 2,750 B.C. The history of domesticated pears is probably even older. In 10 B.C., Homer referred to pears as the “gift of the gods,” and one of the fruits present in the Garden of Alcinous. For centuries, historical records have made note of pears gracing the tables of monarchies throughout Persia, China and Rome. As civilization spread, thousands of varieties came to be cultivated throughout Europe.



These are industry standard names for the parts of a pear.

MODERN VARIETIES

The common pear (*Pyrus communis*), native to regions in southeastern Europe and western Asia, is an ancestor of today’s popular varieties. Anjou, Bosc, and Comice were first cultivated in France and Belgium for their delicate flavor and texture, and their long storage life. It was this cultivation that developed the prized “melt in your mouth” texture that earned them the nickname “butter fruit.”

Bartlett Pears (known outside North America as the “Williams” pear) was originally discovered in 1765 in England.

IN NORTH AMERICA

Pears arrived in the new world with the British and other Europeans during the colonial period. Modern pears grow throughout the world, but no other area matches the ideal growing conditions of the United States' Pacific Northwest. Here a perfect combination of soil, climate, and abundant water produce plump, full-flavored, juicy pears enjoyed the world over.



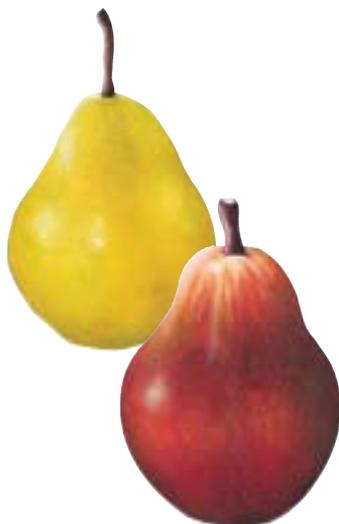
NORTHWEST VARIETIES

Of the many varieties of pears in the world today, the Northwest produces eight major varieties and a range of small production varieties. The major varieties are divided into two availability periods; the summer/fall varieties (Green and Red Bartlett), which are available beginning in early August. Winter varieties (all other major varieties) are available in late August or early September.

GREEN AND RED BARTLETT

Bartlett (known as Williams in South America and Europe) are grown in many temperate regions throughout the world. Their sweet flavor is ideal for fresh eating, desserts and salads. They are also a popular canning variety. This classic bell shaped variety changes from green to yellow as they ripen. Green Bartlett are commonly available from August through January.

Red Bartlett are commonly available August through December.





GREEN AND RED ANJOU

Green Anjou are nearly egg-shaped in appearance and range from light green to yellow-green. Their skin shows little or no change in color during ripening. Anjou are very juicy and have a sweet, mellow flavor. They are a favorite for eating out of hand and for salads. Green Anjou are available from September through June.

Red Anjou have the same characteristics as Green Anjou and hold their maroon or dark red color and are also available from September through June.



BOSC

Their symmetrical body with long tapering neck and cinnamon brown russet color easily identifies Bosc. When ripe, the flesh is crunchy, yet tender and sweet. The Bosc's firmer flesh make it ideal for baking, broiling, poaching and eating fresh. Bosc are available from September through April.



COMICE

Comice have a full, rounded shape with a short neck and stem. This juicy and sweet pear tends to be greenish-yellow in color, sometimes with a reddish blush. Comice are usually at their best during the winter holiday season, often being found in gift boxes and fruit baskets. They are available from September through March.

FORELLE

The Forelle is a medium to small, bell shaped variety. As ripening occurs, it gains a golden yellow skin with brilliant red blush and pronounced freckles, or “lenticles”. The flesh is sweet and juicy. The Forelle is available from October through March.



SECKEL

The Seckel is the smallest of the Northwest Pear varieties. The shape is elliptical with either a coloring of dark maroon, or olive green with maroon blush. The sweet aromatic and spicy flavor rate them among the best dessert pears. Seckels are available from September through March.



RED VARIETIES

Several varieties of red pears are available, each with a slightly different shade and flavor. All are attractive and eye-catching. Red winter pears are available from August through May.



AVAILABILITY

Today, USA Pears are commonly available 11 months out of the year (August to June). Below is an average availability period for the major Northwest pear varieties:

| <i>Calendar of Availability</i> | <i>Aug.</i> | <i>Sept.</i> | <i>Oct.</i> | <i>Nov.</i> | <i>Dec.</i> |
|---------------------------------|---|---|---|---|---|
| <i>Green Bartlett</i> |  |  |  |  |  |
| <i>Red Bartlett</i> |  |  |  |  |  |
| <i>Anjou</i> | |  |  |  |  |
| <i>Red Anjou</i> | |  |  |  |  |
| <i>Bosc</i> | |  |  |  |  |
| <i>Comice</i> | |  |  |  |  |
| <i>Forelle</i> | | |  |  |  |
| <i>Seckel</i> | |  |  |  |  |
| <i>Red Varieties</i> |  |  |  |  |  |

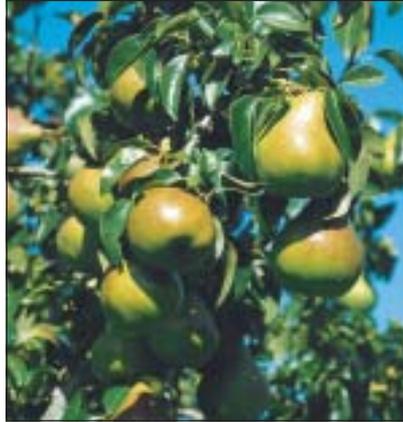
| <i>Jan.</i> | <i>Feb.</i> | <i>Mar.</i> | <i>Apr.</i> | <i>May</i> | <i>June</i> | <i>July</i> |
|---|---|---|---|---|---|-------------|
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HARVEST

Since pears are one of the few fruits that do not ripen successfully on the tree, they are harvested when they reach full maturity but before they are ripe. A series of tests are performed to determine the harvest maturity of pears. These tests examine the firmness of the flesh, the color and the sugar content present in the fruit.

For example, firmness is determined by a pressure gauge which measures the pounds of pressure it takes for a rounded plunger to penetrate a peeled section of the pear. Standard color plates are compared with ripening fruit to determine proper color. A sample of juice is tested to check the sugars present. These tests help ensure that the pears will have maximum storage life and fine eating quality.



When the pears have been judged to be mature, the harvest begins. Pears are picked by hand and placed into orchard bins designed to avoid bruising.

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To grow the best pears, constant attention needs to be maintained throughout the growing cycle.



When Northwest Pears reach maturity, they are carefully picked by hand. Then they are placed in specially designed bins to avoid bruising.

Pears are tested for maturity. Growers test firmness of flesh, color and sugar content of fruit to determine the best time to harvest.





Freshly harvested pears are stored in bins for 3 to 5 weeks to cool and slow the ripening process so pears arrive at their destination fresh and ready to ripen.

After cooling, the pears travel through a gentle watercourse to an inspection location where the fruit will be segregated by sized and grade. Each pear is examined and judged on standard criteria established by the United States Department of Agriculture.



PACKING

When bins of harvested pears are brought from the fields to the packinghouses, they are immediately placed into cold storage to slow the ripening process. Winter pears need to be precooled to ensure proper ripening. This process can take 3 to 5 weeks.

Once they reach a core temperature of 30-31°F (-1°C), the fruit is brought to size and grading lines by water transport to avoid bruising. Here pears are examined for defects and sorted into various grades.

Grading is based on standard criteria including fruit shape and size of any flaws. Although the United States Department of Agriculture has set grading guidelines, most packinghouses use more stringent standards to remain competitive.

USDA/State and packinghouse personnel are on-site to grade the fruit before it leaves the packing facilities.



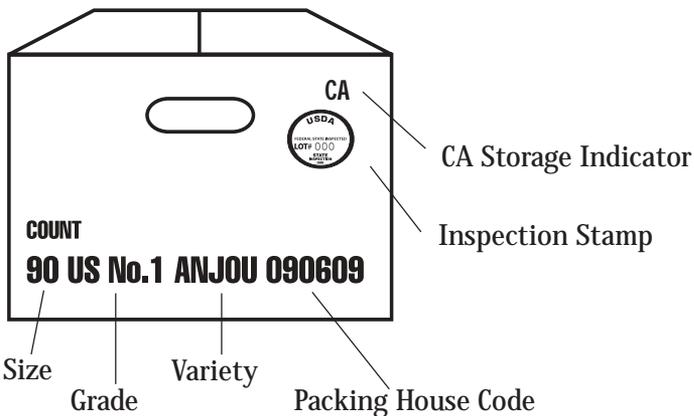
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USDA WINTER PEAR GRADES

U.S. NO. 1

1. Puncture: none
2. Scab: none
3. Smooth net-like russetting: 1/3 surface
4. Frost russet: 3/4 inch
5. Rough russet showing frogging: 1/2 inch
6. Limbrub, cracked, soft more than slightly depressed: none
7. Black limbrubs: 3/8 inch
8. Dark brown limbrubs: 1/2 inch
9. Slightly rough light limbrub: 3/4 inch
10. Smooth light colored limbrub: 1 inch
11. Hail or similar depressions or scars: 3/8 inch
12. Cork Spot: one 3/8 inch, or flesh materially affected
13. Blister mite: superficial: 3/8 inch
14. Healed stings: 2
15. Psylla: thin 1/4 of surface, moderate 3/4 inch, heavy 1/2 inch

A stamped label appears on all boxes of Northwest Pears.



U.S. NO. 2 (Fancy)

1. Scab: 1/2 inch
2. Hail: 3/4 inch
3. Smooth net-like russeting: 2/3 of surface
4. Frost type russeting: 15% of surface
5. Excessively rough russeting, frogging: 3/4 inch
6. Light limbrub: 1/10 of surface
7. Slightly cracked limbrub: 3/4 inch
8. Blister mite: 3/4 inch
9. Healed stings: 3
10. Cork Spot: Aggregate 3/4 inch or flesh seriously affected
11. Psylla: thin 1/2 of surface, moderate 1-1/4 inch, heavy 3/4 inch
12. Sunburn: brown color or flattened.

SIZING

Pear size is based on the number of pears that fit in a standardized box designed to hold 4/5 bushel of pears, or approximately 44 lbs. (20 kgs). Sizes generally run from the large 70 count to the small 150 count. That means that 70 large pears or 150 small pears will fit into a standard 4/5 bushel box.

Before being placed in a box, pears are individually wrapped by hand or placed on fitted trays, then carefully packed into plastic lined cartons and placed in cold storage to maximize freshness. The boxes are stamped with size, variety, grade and other packing information. Some packinghouses go through a process called “pre-sizing.” During this process, pears are graded and sized, replaced in their bins in cold storage, then packed as a particular size is needed.

For longer storage life, some fruit is moved to controlled atmosphere (CA) chambers.

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Controlled atmosphere chambers enable shippers to store fruit at optimum temperature, humidity and air composition to maintain high quality for extended periods of time.

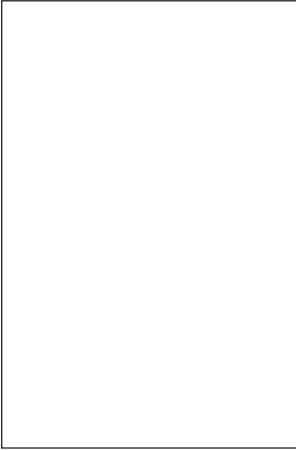
Highly sophisticated facilities and instrumentation ensure exact temperature, humidity and air mix.



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WAREHOUSE PROCEDURES

The following section outlines the set of considerations and practices to consistently produce the desired stage of pear ripeness.



Pear boxes should be removed immediately from the loading dock. Store in a cold area to inhibit ripening or a warmer/ambient area in preparation for pre-ripening.

Stack pear boxes no more than 5 or 6 layers high to keep from crushing the bottom boxes damaging the fruit. Never drop or toss boxes. Damage may not be immediately apparent, but will show up as the fruit ripens.



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RECEIVING & HANDLING

Northwest Pears must be handled carefully as they are relatively fragile and temperature sensitive. Boxes should be removed from trailer and placed under the desired holding condition. This can be in cold storage to slow potential “breaking” or advancements of the ripening process. Or, in a warm area to increase the pear’s respiration and in preparation to initiate ripening.

The recommended holding storage temperature is 34-36°F (1-2°C) with a 90-95% relative humidity. Regardless of where pears are stored, keep the boxes off wet floors to avoid box breakdown. If restacking boxes occurs, stack pear boxes no more than 5 or 6 high to avoid crushing the fruit in the bottom boxes.

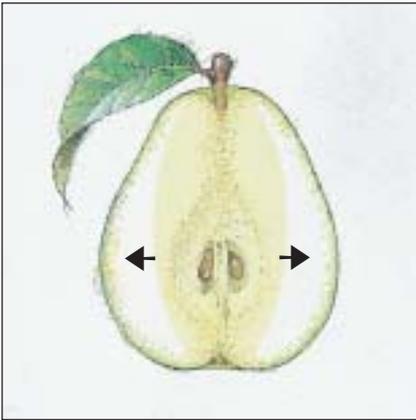
Generally speaking:

- Pears kept at a constant 34-36°F (1-2°C) will have months of shelf life.
- Firm fruit held at a constant 50-59°F (10-15°C) should last 4 to 8 weeks.
- Pears held at 68°F (20°C) or higher will generally ripen in 3 to 5 days. To avoid damaging pears keep pulp temperatures below 75°F (20°C).

Another important part of holding pears after harvest and until they are placed on the retail display is placing them under recommended humidity conditions. For pears, the recommended humidity is 90-95% RH (relative humidity). By providing this humidity, the process by which pears naturally give off their moisture will be greatly reduced. In turn, this minimizes the stress on the fruit, allowing it to more effectively protect itself against the evolution of bruising and other damage or breakdown.

The key to having pears at the desired condition for retail display is based on holding temperatures over the life of the pears once they are harvested; the relative humidity the pears are exposed to throughout their post-harvest life; and their exposure to ethylene.

Ethylene is a naturally occurring hormone generated by many fruits including pears, apples, bananas and tomatoes. Since ethylene triggers a fruit's ripening process, make sure to avoid long-term storage next to high ethylene producing fruits if pear ripening is not desired.



Pears ripen from the inside out and from the top to bottom. Check the neck to determine ripeness

After ripening has been initiated, inspect pears daily to determine their ripening progression. Check the neck for ripeness: pear ripening can be recognized when they yield (show softening) to gentle pressure at the stem end. To slow the ripening process keep pears under cooler temperatures. Conversely, keep pears at warmer temperatures to maintain or speedup ripening.

Pears ripen from the inside out, so it is important to test for ripeness near the stem end (the neck). By the time a pear is soft in the middle, it may be overripe so make sure to check the neck for ripeness.

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ROOM LOADING AND RIPENING PROCEDURES

Once the fruit pulp temperature has reached the room air temperature range of 60-70°F (16-21°C), introduce ethylene. Like Bananas, check pear 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 conventional room, stack and load the fruit to ensure maximum air flow in and around the boxes. The stacking pattern should facilitate airflow 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. Airflow 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.

Vent the ripening room every 24 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 slows ripening. Otherwise avoid entering ripening rooms when ethylene is being introduced. Opening the door will prematurely lower the parts per million (ppm) of 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.

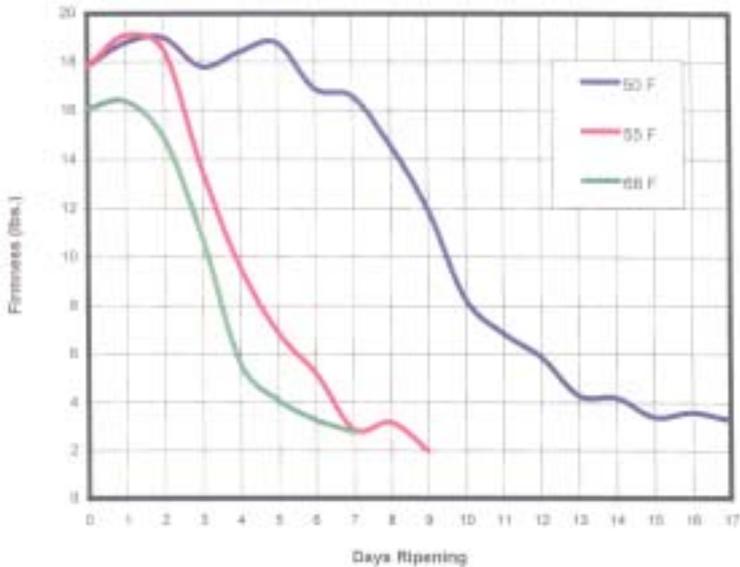
PEAR RIPENING CONSIDERATIONS

For early season fruit, 48 hours of ethylene introduction may be necessary to achieve the desired firmness. For later season fruit and fruit that has been stored for two or more months, 24 hours will normally be sufficient. It is important to check firmness daily. Firmness may drop 1 lb. force per day on average. Keep in mind transit time until fruit is on the shelves when determining optimum firmness.

Pears in the 3 to 5 lb. force firmness range are often considered best for eating out of hand. However this can vary according to individual tastes and circumstances.

Bartlett

Ripening Time and Temperature Relationship Graph



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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.

For fruit that is destined to be sold or consumed quickly, keeping pears at a core temperature of 60-70°F (16-21°C) will quickly bring them to optimum eating quality, i.e. 3 to 5 lb. 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 PRESSURES – BY VARIETY

If you choose to ripen different pear varieties the following pounds pressure guideline can be utilized as a general reference:

INITIATE RIPENING IF OVER:

Bartlett Anjou Bosc Comice Seckel Forelle

13lbs. 12lbs. 12lbs. 12lbs. 12lbs. 12lbs.

DO NOT NEED TO RIPEN UNDER:

Bartlett Anjou Bosc Comice Seckel Forelle

12lbs. 10lbs. 10lbs. 10lbs. 10lbs. 10lbs.

RIPENING OVERVIEW

Pears ripen from the inside out. During the ripening process, pears grow sweeter and juicier as starch reserves convert to sugar and pectins are solubilized. To determine how the pears have progressed there are two tests for ripeness: When a winter pear yields to thumb pressure at the stem end, the inside is ripe. Pears that are soft around the middle are overripe. A fruit penetrometer indicates when most varieties are considered to be fully ripe, yielding to 3 to 4 pounds-force. Depending on fruit temperature, a reading of 8 to 9 pounds-force generally indicates that pears will be ripe in approximately 3 to 5 days.

Ripening can be initiated at any place along the distribution chain before being placed on retail displays. Pears need moderately warm, moist areas to ripen properly. As a general rule, pears should have pulp temperatures of 60-70°F (16-21°C) with a 90-95% relative humidity. Banana or tomato ripening rooms are ideal to use in ripening pears. However, make sure that pear pulp temperatures stay below 75°F (24°C) to maintain proper ripening speed and prevent “cooking” or damaging the fruit through excessive heat.

All fruit ripening is time/temperature related. Therefore, the higher the pulp temperature (around 70°F [21°C]) once ripening has been initiated the quicker pears will tend to ripen. On the other hand, the lower the pulp temperature (around 60°F [16°C]) the slower the fruit will tend to ripen.

Note: Pears, like any living item, change over time. The speed at which pears will ripen is also dependent on maturity at harvest, the time between harvest and ethylene treatment, and other physiological conditions. Each load of pears that are ripened should be inspected at least once daily to determine their ripening progression.

When pears reach their desired stage of ripeness, the ripening process can be slowed by holding pears at around 32-45°F (0-7°C). The lower the temperature the slower the pears will tend to ripen. Inspect pears daily.

It is important to note that most pears will not show any visible sign of ripening. However, Bartlett do change color from green to yellow as they ripen, while winter pears generally don't change color.

EQUIPMENT NEEDED

- Ripening Room
 - Air tight
 - Heating and cooling capabilities
 - Good airflow
 - Capacity to maintain 90-95% relative humidity
- Fruit firmness tester (penetrometer) with 5/16 inch (8mm) tip
- Knife
- Pulp thermometer
- Ethylene
- Ethylene introduction device (flowmeter)
- Ripening Log

** Fruit penetrometers are available commercially. Follow the manufacturer's guidelines for proper equipment calibration and usage.*

Fruit firmness checker



PEAR RIPENING PROCEDURES

Ripening fruit is a combination of an art and science. This section will discuss pear ripening procedures step by step. However, as discussed earlier, pears are alive. Depending on a range of factors they may react to temperature and ethylene treatment differently. It is therefore vital that each load of pears be ripened by a base set of factors such as its flesh firmness at the initiation of ripening and the storage time and temperature since harvest.

Inspect each load of pears in preparation for gassing. Then make sure to follow through with achieving the level of ripening desired by inspecting ethylene-treated pears at least on a daily basis.

A tomato or banana ripening room is ideal for ripening pears.



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Maturity, fruit firmness, fruit and room temperatures and ethylene concentration are all important when ripening pears. The less time in cold storage after harvest and the higher the firmness require a longer duration of time for ripening fruit. Likewise, late season fruit will need a shorter period of time for conditioning. Below is a quick list of ripening steps:

- Warm pears approximately 12 hours before initiating the gassing cycle so that by gassing they have a pulp temperature between 60-70°F (16-21°C).
- Take pressure samples using the penetrometer before loading pears into the conditioning room and record the information on the room's ripening logs.
- For each room, keep track of the fruit firmness, room temperature and pulp temperature after each visit to the room. A ripening log is located at the back of the book that can be enlarged and reproduced on a copy-machine.
- Make sure to use the correct pressure tip (see equipment needed above) and record as accurate a reading as possible since you will be using these measurements to compare against the pears pressure after gassing.
- Gas with ethylene for at least 24 uninterrupted hours at a minimum concentration 100 ppm (part per million).
- Vent rooms for 20 to 30 minutes after each 24-hour gassing period to remove carbon dioxide and allow a fresh supply of oxygen into the room. Pears are alive and are taking in oxygen and giving off carbon dioxide. A fresh supply of oxygen allows pears to carry on metabolic processes while carbon dioxide inhibit metabolic processes or retard the ripening process.
- At the end of the gassing period check the pear's pressure again to see if the pounds of resistance has changed (is less than before gassing). If no change is noticed pears can be regassed again for another 24 hours. Note: Ethylene triggers the ripening process, so you cannot over gas fruit.

- If regassing occurs, follow the same venting at the end of the gassing period and resample the pear for their pressure level.
- Once pears have accepted the gas, they can be cooled again as needed. For maximum holding, pears can be cooled to 32°F (0°C). To have pears more quickly ripen pulp temperatures can be maintained at 45-60°F (7-16°C). The higher the temperature the more rapidly the pears will ripen. Just as important, is that the faster a pear ripens the shorter its shelf life will be.
- For long-distance shipping pears should be cooled to 32°F (0°C) before loading into the trailer for transit.
- In order to determine the speed of the ripening, firmness and pulp temperatures should be checked twice daily approximately 12 hours apart. Firmness may drop 1 lb. force per day on average. Do not allow pulp temperatures to exceed 75°F (24°C) as this can cause breakdown of the fruit.

RETAILER DESIRE

It is important to consider time in transit and on the supermarket shelf in order to determine the best firmness for each situation.

Example: A supermarket may want a lower firmness if fruit has less travel time and will be on the shelf sooner after conditioning. Pears in the 3 to 5 lb. force firmness range are often considered best for eating out of hand. However, this can vary according to individual tastes. Lower firmness can make handling and shipping more difficult. Like all fruit and vegetables, pears are living, and breathing. Consequently, pears will continue to ripen even when refrigerated. However, the closer the fruit is kept to 0°C (32°F) the slower it will ripen. It is important to bring the temperature of the fruit rapidly back down after conditioning.

RELATIVE 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 corrugated boxes are strong enough to withstand 90 to 95% relative humidity without loss of structural integrity.

ETHYLENE APPLICATION

Ethylene gas should be introduced into an airtight room, as the concentration of ethylene ppm needs to remain high enough to trigger the conditioning process. At a distribution center, a banana or tomato 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 difficult to reach and maintain the proper level of ethylene concentration.

The ethylene concentration required for conditioning pears is 100 ppm. To determine the cubic feet of a room, multiply Height \times Width \times 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% (286,000 ppm). 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.

RETAIL HANDLING AND DISPLAY

Retail handling and display of pears is the final step in displaying premium quality fruit that drive impulse sales. Follow the steps below to guarantee a winning display.

Customers can ripen pears at home by placing them in a paper bag. The bag acts like a mini-ripening room, providing ideal humidity and temperature, bringing them to perfect eating ripeness in no time!



Handling And Storage

- Northwest Pears must be handled carefully, as they are relatively fragile and temperature sensitive.
- Always inspect fruit upon arrival.
- Ideal cold storage temperature 34°-36° F (1°-2° C) with relative humidity of 90-95%.
- When storing pears, keep boxes off the wet floors to avoid box breakdown and mold.
- Stack pear boxes no more than 5 or 6 layers high to avoid crushing bottom boxes.
- Rotate on a first in, first out basis.
- Inspect pears daily to judge their degree of ripeness. Keep pears cooler to slow ripening, warmer to speed ripening.



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Check The Neck For Ripeness



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Display And Merchandising

- Create a pear display to increase pear sales and profits for your produce department.
- Do not remove pears from boxes until ready to display.
- Handle pears gently, as they bruise easily no matter what the stage of ripeness.
- Rotate displays frequently, placing the new fruit on the bottom of your display and older fruit on the top.
- Use as many pear varieties as are available. Attractive color variations and selections will appeal to shoppers. Two or more sizes offer customers choice and can increase volume purchases.
- Cross-merchandise with cheese, nuts, wine or salad dressings to prompt customer use with innovative ideas.
- Incorporate seasonal themes, for Halloween, Thanksgiving, Christmas, Easter, Valentine's Day or other holidays, on your displays.
- Offer information leaflets and nutritional data for your customers, at the display.
- Increase sales with samplings. Customers buy different varieties if they can sample them.
- Mass displays suggest a festive occasion and will increase impulse sales.
- Display pears on non refrigerated displays in order to facilitate their premium eating quality.
- Pears are one of the highest impulse fruits in the produce department, so display them prominently and provide a generous amount of space allocation.

Nutrition Information

USA

| | |
|---------------------------|------|
| Calories | 100 |
| Total Dietary Fiber | 4 g |
| Vitamin C | 7 mg |
| Potassium | 208 |
| mg | |
| Sodium | 0 |
| Cholesterol | 0 |
| Fat | 0 |

(166 gr medium sized pear)

Canada

| | |
|---------------------------|--------|
| Calories | 100 |
| Total Dietary Fiber | 4 g |
| Vitamin C | 7 mg |
| Potassium | 208 mg |
| Sodium | 0 |
| Cholesterol | 0 |
| Fat | 0 |

(166 gr medium sized pear)



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