

Guidance note

Storing fresh produce at controlled temperatures

This guide is for farmers and traders looking to store both locally produced and imported fresh produce at controlled temperatures.

Broadly, fruits and vegetables fall into two types in terms of their ripening characteristics:

1. Fruits that produce ethylene gas (which promotes ripening) after picking and so ripen post-harvest. These include apples, plums, avocados, bananas and mangoes, among others. Tomatoes, although technically vegetables, also belong to this group.
2. Fruits that don't change much after picking so have to be picked ripe. They are sensitive to ethylene as they are already ripe at harvest, and so it causes rapid decay. These include citrus, grapes and cherries, among others. Vegetables belong in this group and begin to decline as soon as they are harvested.

If you store ethylene sensitive produce with ethylene producers their storage life will be greatly reduced: produce will turn yellow and start to decay. These two groups should therefore be kept separate, if possible.

Three groups of produce can be distinguished based on their preferred storage temperature and relative humidity, these are shown in the table for the common types of locally produced and imported produce, distinguishing ethylene producers and ethylene sensitive produce.

Ideally, three storage rooms are used, one for each Group of produce in the table. If only two storage rooms are available one should be set at 0° to 2°C and used for Group 1, and the other set at a compromise temperature of 10° to 14°C for Groups 2 and 3. If only one room is available it should be kept at a compromise temperature of 5°C and used for Groups 1 and 2, while Group 3 is kept in an air conditioned room (20° - 25°C).

Produce from Groups 1 and 2 should be displayed for sale in refrigerated display cases, set at the appropriate temperature or compromise temperature. Display cases don't have refrigeration capacity so it is important that produce is near the recommended temperature when it goes in.

General points:

- Stores should be well ventilated.
- Keep fresh produce as near the storage temperature as possible. If it warms up condensation will form on the skin which will encourage rot.

- Avoid storing dairy produce with citrus as the fats in dairy produce can pick up flavours from citrus oils.

Group 1 Store at 0° to 2°C, 90% to 98% relative humidity	Group 2 Store at 7° to 10°C, 85% to 95% relative humidity	Group 3 Store at 13° to 18°C, 85% to 95% relative humidity
Produce which is neither particularly sensitive to nor a producer of ethylene ripening gas		
• Beans • Cherry • Coconut • Garlic • Grapes • Lychee • Nectarine • Parsnip • Peach • Pear • Mushroom • Radish • Strawberry • Sweet corn	• Beans • Chilli pepper • Mandarin, Clementine, satsuma, nova and other soft citrus • Orange • Pineapple • Sweet pepper	• Dry onion • Ginger • Pumpkin • Ware potato • Watermelon
Produce which are notable producers of ethylene ripening gas		
• Apples • Apricot • Avocado (ripe) • Cantaloupe melon • Kiwifruit • Plum • Prune	• Avocado (unripe) • Granadilla • Guava • Mango (ripe)	• Banana • Cherimoya • Honeydew melon • Jackfruit • Tomato • Pawpaw
Produce which is particularly sensitive to ethylene ripening gas		
• Broccoli • Cabbage • Carrot • Cauliflower • Celery • Cut flowers • Leek • Lettuce • Onion (green), shallots • Parsley • Mint • Rhubarb • Spinach	• Basil • Cucumber • Eggplant • Grapefruit • Lemon • Lime	• Squash (hard rind: Gem Squash and Butternut) • Sweet potato

For further information please contact ANRD on 24724.