HOW TO KEEP FRUITS AND VEGETABLES FRESH.

by: Timmy Chou, President, Bluapple Company

People sometimes do it once a week or once a month. Sometimes they only do it when confronted by the smell of liquid lettuce or the ugly appearance of wrinkled apples wilting in your crisper drawers. But if your household is like most, you will soon be **throwing away** spoiled fruits and vegetables that you paid your own hard earned money to buy!

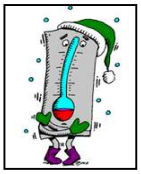
Research conducted by the Australian Institute of Health and Welfare has shown that the average Australian household will throw away more than $616 worth of spoiled produce every year. In fact, AIHW's report "Australia's Food and Nutrition 2012" reveals that Australia as a whole throws away $1.1 billion dollars worth of fruit and vegetables annually!

If you purchase more expensive fruits and vegetables that are organically grown, or if you use more locally-grown fruits and vegetables that are harvested in a more advanced state of ripeness, you may have an even larger loss each year!

Wasted produce is bad for your diet, bad for your wallet, bad for the environment, and bad for our society. So what exactly should I know to be able to maximize the useful storage life of fresh fruits and vegetables? How do I keep more produce out of the waste bin and in my family's diet?

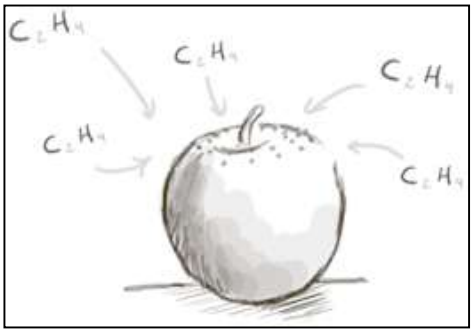
The Three Pillars of Freshness

These days we are buying avocados grown in California, broccoli grown in Uruguay, and bananas from Malaysia, all harvested and shipped across thousands of miles in ocean-going freighters, trains and trucks, arriving beautiful and fresh on the shelves at your local neighborhood store. How is this amazing feat possible? It is because growers and shippers have learned the art of keeping fruits and vegetables fresh, and it is a simple matter to learn and use these same principles at home too! There are really only three: **temperature, humidity and ethylene gas**.



The first and most important pillar of freshness is **managing temperature**. Remember that fresh produce is still living tissue, and cooling produce slows down the rate of respiration, or the "breathing" process. Industrial shippers are careful to never break the cold-chain and work to keep the temperature to a cool five to ten degrees C from the farm all the way to the neighborhood grocery. While retarding respiration is vital, it is also vital not to stop it completely either, therefore keeping fresh produce in airtight plastic containers or bags will suffocate them and speed up decay.

While it is important to protect the temperature it is also vital to ensure that fresh fruits and vegetables are **properly hydrated and humidified** as well. Of course, berries or spinach leaves will need a more robust humidity environment than potatoes or squash, but in either case too much humidity results in slimy, sludgy or moldy produce while not enough can produce the wilted and wrinkled look of produce blasted with too much dry refrigerated air.



The third, little known, pillar of produce freshness is the **management of ethylene gas**. Many years ago lemon growers accidentally discovered the effects of ethylene gas on the ripening process of fruits and vegetables when they changed their warehouse heating systems from kerosene to electricity. Eventually scientists determined that all plants release ethylene gas when they reach maturity as a ripening signal and therefore growers, shippers and warehousemen have been using ethylene control technologies for over 30 years to control when fruits and vegetables ripen. In fact, many fruits are shipped green from their countries of origin and then are placed in special ethylene gas filled ripening rooms to bring them to a proper state of ripeness to be placed on store shelves. When fruits and vegetables are concentrated together in a closed environment like a refrigerator crisper drawer, the concentration of ethylene gas will prematurely hasten ripening. Some produce items will react to ethylene levels as low as a few parts-per-billion!

Managing Freshness at Home

Managing freshness starts at the point of purchase. When at the store try to choose your fresh produce purchases LAST before you exit the store, and then try to get your fresh produce home and back into cold storage as quickly as you can. While you are at the store, pick up an ethylene gas absorber to keep in your refrigerator, such as the Bluapple (www.theBluapple.com). The Bluapple contains a 3-month supply of ethylene gas

absorbent material that will reduce levels of ethylene gas in your refrigerator to below damaging levels. Some fruits and vegetables should always be kept cold, while others will do better at room temperature. Some fruits and vegetables emit large amounts of ethylene gas, while others do not emit much gas but are very sensitive to, and damaged by, its presence.

THESE HEAVY GAS EMITTERS NEED REFRIGERATION:

Apples, Pears, Apricots, Strawberries, Cantaloupe, Figs, Honeydew Melon

THESE LIGHT GAS EMITTERS DO NOT NEED REFRIGERATION:

Avocados, Bananas (unripe), Nectarines, Peaches, Plums, Tomatoes

USE THE BLUAPPLE TO PROTECT THESE FROM ALL GAS EMITTERS:

Bananas (ripe), Broccoli, Brussels sprouts, Cabbage, Carrots, Cauliflower, Cucumbers, Eggplant, Lettuce and leafy greens, Parsley, Peas, Peppers, Squash, Sweet potatoes, Watermelon

Humidity can be balanced through the use of micropore "breathable" plastic bags. If the bags are not available it is possible to poke a few dozen holes in a standard plastic bag, and then also place a semi-damp folded paper towel in the bag, along with the produce. The paper towel will act like a wick, absorbing excess moisture, but also releasing moisture if conditions become too dry.

Remember, even under the best circumstances, bananas will never last as long as thick-skinned oranges or broccoli and it makes sense to try your best to eat more perishable items first. As a follow-up you can always resort to making a fruit pie or a stew or soup, and then freeze it. It's just money!

Long and short shelf lives: What to Eat First

Marita Cantwell, PhD, postharvest specialist at the University of California, Davis recommends in Vegetarian Times Magazine a list of produce ranked by shelf life. The key is eating the more perishable produce early on.

EAT FIRST: Days 1-3

Artichokes, Asparagus, Avocados, Bananas, Basil, Broccoli, Cherries, Corn, Dill, Green beans, Mushrooms, Mustard greens, Strawberries, Watercress

EAT NEXT: Days 3-5

Arugula, Cucumbers, Eggplant, Grapes, Lettuce, Lime, Pineapple, Zucchini

EAT LAST: Days 6-7

Apricots, Bell Peppers, Blueberries, Brussels Sprouts, Cauliflower, Grapefruit, Leeks, Lemons, Mint, Oranges, Parsley, Oregano, Peaches, Pears, Plums, Spinach, Tomatoes, Watermelon.

BEYOND Day 7:

Apples, Beets, Cabbage, Carrots, Celery, Garlic

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