

# VALUE ADDED TO PROCESSED FRUITS AND VEGETABLES (Regulations)

Presented by:  
Kwame Dua  
Supervising Inspector

NYS Dept. Agriculture &  
Markets

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# What is it?

The primary reason for processing fruits and vegetables is to extend the shelf life beyond the season when there is abundance into the lean or out of season period.

For instance, when a particular produce comes in season, there may be an abundance of it, and if the excess is not preserved, it will rot and go to waste.

- Usually when there is excess, supply outweighs demand and product fetches less money.

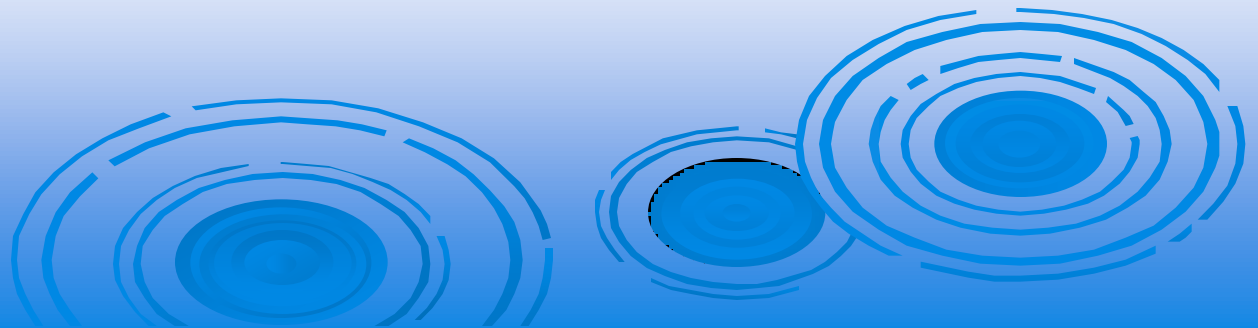
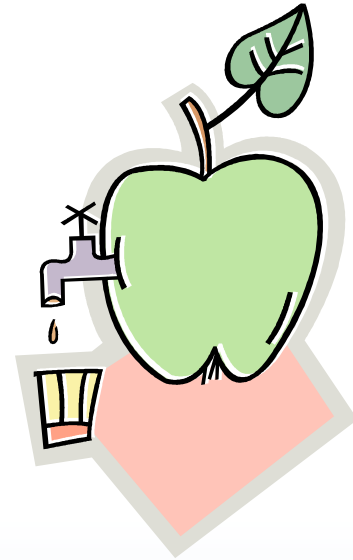


- Value is added to the particular produce item:
  - when the product is still available when the season is out and the demand for the product outweighs the supply available.



# What is it? Continued...

- Produce is changed from its original form to a more desirable form
- Examples: apple pie, jams, jellies, wine, hard liquor, pickles, etc.



- Produce is packaged to make it easier to prepare and serve, for example:
- Chopping and packaging green beans and peas
- Freezing/cooling fruits and vegetables as in salads
- Steam/cook in bag vegetables



- Produce is processed in such a way that it becomes easier to incorporate into other foods, like sauces.
- It is processed in such a way that the predominant component(s) desired by the consumer is captured, as in fruit and vegetable juices.

# But why is produce highly perishable?

There are 2 factors:

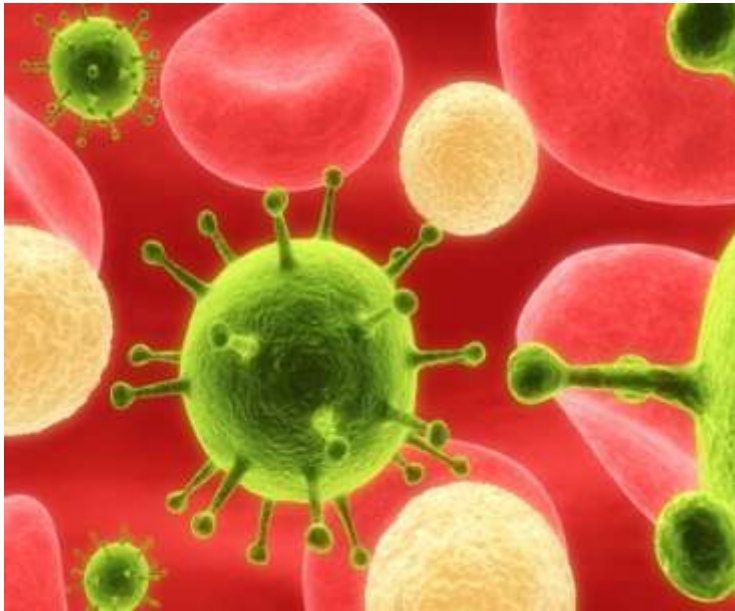
**Intrinsic**: enzymes and other chemicals in the produce which causes ripening and breakdown of cell structure.

**Extrinsic**: spoilage bacteria, mold and yeast from soil and/or water used to wash or irrigate, environmental or handling.

# Potential Biological Hazards In Fruits & Vegetables

- E. Coli (apple juice, lettuce)
- Salmonella ( bean sprouts, watermelon, tomato)
- Clostridium botulinum ( can foods)
- Cyclospora parasite (raspberries)
- Hepatitis A Virus ( strawberries)
- Cryptosporidium parasite (most fruits and vegetables)

By controlling these factors, shelf life of the produce may be extended.



# METHODS OF EXTENDING SHELF LIFE

- **CANNING**
- Heat to kill micro organisms and enzymes
- Exclude air to eliminate micro organisms e.g. vacuum packaging.
- Packaging to prevent exposure to micro organisms.



# Other methods

## ➤ FREEZING

- Extreme cold conditions to slow down the growth of micro organisms and enzymes.
- Packaged in such a way to prevent exposure to micro organisms.

## ➤ DEHYDRATION

- Removal of water to slow down or eliminate micro organisms.

- **PICKLING**
- The addition of salt or acid
- To reduce the pH (increase acidity) to slow down or eliminate micro organisms and enzymes
- Examples: pickles and kim chee



# Last method of extending shelf life...

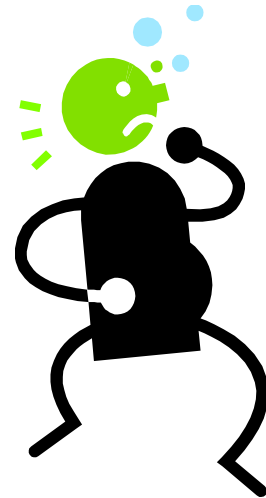
- SUGAR
- Adding excessive amount of sugar to reduce water activity
- Examples: jams and jellies



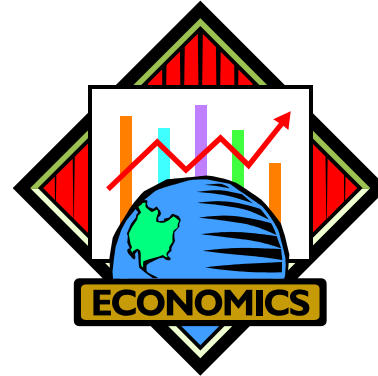
# WHY REGULATE?

- All of the processes carry some hazards
- Examples:
  - Bacteria – botulism in canning
  - Chemical – patulin in apple cider or added preservatives
  - Physical – extraneous materials, animal/insect parts, stones, metal etc.

- All of the aforementioned hazards, if present in food, can cause illness, injury and/or death to a consumer of an affected food product.
- Hence, the need for a regulatory agency to oversee proper handling of food.



# What is Regulated?



- 2 aspects:
- Food Safety
- Economic/Labeling/Consumer Advisory

# FOOD SAFETY

## → Proper Handling

Includes employees, equipment and the physical plant

## → Proper Testing

## → Proper Records

## → Proper Training

Examples: canning school, HACCP training

# FOOD SAFETY cont'd

## → Proper Authorization

Includes HACCP plans, variances, scheduled processes, licenses (20-c Food Processing), permits (for vacuum packing),

Home processing.

# ECONOMIC ASPECTS

- Proper labeling, includes ingredients statements, Nutritional panel, Net weight of product etc.
- Adequate consumer advisories, especially for allergens and as done for apple cider.



# Who Regulates?

- FDA
- NYS Department of Agriculture and Markets
- USDA
- DEC



# NYSDAM Regulation

- What is regulated?
- Example I:
  - Acidified foods
    - Schedule Process- processes and controls
    - Deviation from schedule process ( how firm handle this)
    - 20-C License
    - Records: pH, product coding, brining strength and Temperature etc.
    - Label: ingredients, net weight, Nutritional panel
  - Sanitation
    - Physical plant
    - Equipment
    - Personnel

# Apple Cider

## ➤ HACCP Plan

- Is a science base system designed to prevent, reduce, or eliminate hazards in food products through appropriate controls during production and processing.
  - “5-log” (100,000-fold) in the microbe- e. coli and cryptosporidium)
    - Achieve using heat pasteurization or UV
  - Record for UV
  - Label- Was product treated?
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- HOME PROCESSING – License Exempted
  - Limited to very simple processes e.g. Traditional fruit jams and jellies and double crusted fruit pies.
  - Inspection of home kitchen required.
  - No commercial equipment to be used.
  - No internet sales.
  - Wholesaling Only, may also sell at Farmers Markets and fairs.
  - NYS AGMKT Labeling Laws apply.
  - If on Private Well Water, need to submit water test results.

Thank you...

QUESTIONS?

