

Grain Foods



Cereals

- Starchy grains
- Suitable to use as food
- Used in breakfast foods, flours, meals, breads, pasta products and starches



Most Common Cereals in USA

Corn



Wheat



Rice



Oats



Barley



Rye



Grain Structure

- **Kernel-** whole seed
- **Bran-** outer protective covering
- **Endosperm-** largest part
- **Germ-** reproductive portion



Kernel

Types of Grains

- **Whole Grain-**

Contains all three parts of kernel

Example-

Whole Wheat Bread



- **Refined-**

Bran and germ removed during processing

Example-

White Long Grain Rice



Breakfast Foods

- Most popular are corn, rice, wheat and **oats**
- Made from whole grains, enriched-refined grains or a combination of both
- Presweetened or unsweetened
- Added ingredients- raisins or nuts



Types of Cereals

- **Ready to Eat-**

Pour from box
into bowl and eat



Examples: puffed, shredded, flaked, granulated, rolled or formed into shape

Types of Cereals

- **Quick-cooking or Instant-**

Partially cooked and little time to prepare

Require liquid and heat



May be: cracked, crushed, granular, or flaked

Types of Cereals

- Raw or Old-fashioned Cereals

Longer cooking time

Examples:

Oatmeal and oat bran



Types of Flour

- **All-Purpose**

Milled and sifted from many varieties of wheat

Consists mainly of endosperm

Can buy bleached (whiter) or unbleached



- **Cake Flour**

Made from soft wheat

Used for cakes and other baked products with a delicate texture



Types of Flour

- **Instant or Quick Mixing**

All-purpose flour treated to blend easily with liquids like gravies or sauces



- **Self-Rising**

All-purpose flour with added leavening agents & salt

When using must adjust recipes



- **Whole Wheat**

Made by milling the entire wheat kernel

Has a nutlike flavor and coarse texture



Types of Flour

- **Potato**

Made from cooked potatoes that are dried and ground

Used by people on wheat free diets



- **Buckwheat**

Made by sifting buckwheat meal

Is finely ground and used in pancakes



- **Rye**

Made by sifting rye meal

Finely ground whole grain flour

Popular in bread making



Types of Flour

- **Soy**

Made from ground soy beans

Strong flavor

Must be combined with
wheat flour when baking



- **Rice**

Made from milling white rice

White and starchy flour

Popular in Asia and Far East



Rice

Classified according to grain length

- **Long Grain**

Dry & fluffy when cooked
Use as a side dish



- **Short Grain**

Small & sticky when cooked
Used in pudding, Asian foods
croquettes, and rice rings



Types of Rice

- **White Rice**

- is white starchy endosperm of the rice kernel



- **Brown rice**

- hull removed but contains bran, endosperm and germ



Types of Rice

- **Parboiled or Converted Rice**

- Steeped in warm water, drained, steamed, and dried
- Improves nutritive value and keeping quality of rice



- **Precooked or Instant Rice**

- Cooked, rinsed, and dried by a special process before packaging
- Takes minutes to prepare at home



Wild Rice

- NOT a rice



- Seed of a grass that grows in Minnesota and Canada



- Nutlike flavor and very expensive



Pasta



- Nutritious shaped dough
- May or may not be dried
- Made from semolina that comes from durum wheat
 - Durum specially grown for making pasta
 - Give pasta nutty flavor and firm shape
- Noodles made by adding egg to pasta dough



Other Grain Products

Cornmeal



Hominy



Cornstarch



Pearl Barley



Other Grain Products

Bulgur Wheat



Farina



Wheat Germ



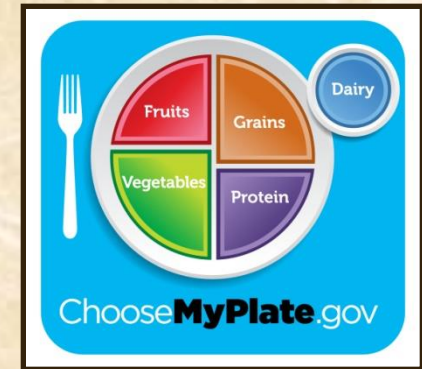
Couscous



Nutritional Value of Cereal Products

- Excellent source of complex carbohydrates
- Important source of incomplete protein
 - Add cheese to pasta and milk to cereal and up protein quality

- Important source of B vitamins, iron, magnesium, and zinc



Key Consumer Message

Make at least half of your grains whole grains.

- Low in fat and sodium and sugar

Cereal Products

- **Refined cereals**

- Contribute to calories and incomplete protein unless enriched



- **Enriched Cereals**

- Added nutrients to replace ones lost in processing
- Contain thiamin, niacin, riboflavin, folic acid and iron in specified amounts
- Federal law requires flour, white rice, pasta, cereal and bakery products be enriched, if they cross state lines



Storage of Cereal Products

- Tightly covered containers in a cool, dry place



Starches

- Common sources of starch granules in cereal grains that are used in cooking are:

Wheat flour- opaque mixture used as a thickening agent in gravies and unsweetened sauces



Cornstarch and Tapioca- clear mixture used to thicken puddings and sweet sauces



Cooking Starch Thickened Mixtures

- **Gelatinization**

- Starch granules are mixed with water and heated
- Starch granules swell & mixture thickens
- Continue to heat and becomes thicker until reaches maximum thickness

- Example -Pudding



Cooking Starch Thickened Mixtures

- Syneresis-

- During cooling starch mixtures form a gel
- Spaces in gel network contain water
- Cut gel or if it stands too long water leaks out

- Example- lemon pie filling



Factors Effecting Cooking of Starch-thickened Mixtures

- **Temperature**- cook on low temp.
- **Time**- enough time for gelatinization to occur
- **Agitation**- constant gentle stirring
- **Mixing Method**- to prevent lumps
 - Coat with fat- roux
 - Combine with sugar
 - Mix with a cold liquid to form a paste



Cooking Cereal Products

- Use same principles of cooking starches
- Starch granules swell & soften to improve palatability and digestibility
- Amount of water varies depending on type of cereal



Cooking Rice

- Cooked rice should be tender and fluffy & not sticky and gummy
 - Need 2x amount of water to volume of rice
 - Bring water to boil in pan
 - Add rice and cover
 - Reduce heat and simmer on low
 - Should absorb all water when cooking
 - Makes 3X the amount of uncooked rice
- Brown rice cooked same way but takes twice as long to cook



Cooking Pasta

- Bring water to a boil
- Use 2 quarts water to 8 ounces of pasta
- Add pasta to boiling water
- Add a drop of oil to prevent pasta from sticking
- Simmer pasta until tender
- Drain and do not rinse



Microwaving Cereal Products

- Cooking time not faster in microwave
- Cleanup easier- foods do not stick
- Use containers to prevent boil-over
- May be reheated without stirring or adding water



Grain Structure

