

Emergency Preparedness Workshop

**Dry Pack Canning
Bread Making
Other Uses for Wheat**

Gilbert Arizona Higley Stake
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Wheat for “Smarties”



What is Wheat

- Types of wheat
- Parts of Wheat
- Storing your wheat
- Grinding your wheat
- Vocabulary
- Wheat Allergies
- Uses & Recipes

Types of Wheat

- **Duram** – very hard, translucent, light colored grain used to make semolina flour for pasta
- **Hard Red Spring** – Hard, brownish, high protein wheat used for bread, has a bolder flavor. (about 15.4 g of protein, 1.9g fat, 12.2 g fiber, and 3.6 mg iron)
- **Hard Red Winter** – hard, brownish, mellow high protein wheat used for bread and hard baked goods(about 12.6 g protein, 1.5 fat, 12.2 fiber, and 3.2mg iron)
- **Soft Red Winter** – soft, low protein used for cakes, pie crusts, biscuits, and muffins
- **Hard White** – hard light colored, opaque, chalky medium protein used for bread, more easily digested
- **Kamut** – a large grain variety of wheat that is ideal for use in slow cookers. It may be OK for people with wheat allergies but not for people with Celiac disease
- **Soft White** – soft, light colored, very low protein used for pie crusts and pastry
- **Spelt** – a variety of wheat that is highest in protein content and lowest in gluten content so people with wheat allergies may tolerate it but it will be intolerable to those with Celiac disease

Parts & Forms of Wheat

PARTS OF WHEAT

- **Bran:** outer covering, high in vitamins, minerals and protein
- **Germ:** high Band E; also protein, fat and minerals/ high in oil content and should be stored in glass
- **Endosperm:** inner part where cellulose, starch and gluten are found, little vitamin and mineral content (primary component of white flour)

FORMS OF WHEAT

- **Bran** – outer layer primarily fiber
- **Endosperm** – the body of the wheat kernel containing the starch and gluten
- **Germ** – the area where the kernel sprouts
- A **kernel** of wheat is separated from the spikes and chaff during the threshing process and is also know as a **seed** or a **wheat berrie**. It can be:
 - powdered into **flour**
 - crushed into **cracked wheat**
 - germinated & dried creating **malt**
 - steamed, dried, crushed and de-branned into **bulgar**
 - processed into **semolina**, the primary ingredient in pastas

Wheat Bran



- The outer-most layer of the grain
- One of nature's richest sources of natural food fiber

Wheat Germ

- Is the reproductive part of the wheat kernel which germinates and forms the wheat grass.
- Is only about 2 1/2 % of the wheat kernel.
- Contains 23 nutrients, and has more nutrients per ounce than any other vegetable or grain.
- 28 % protein and has more protein than can be found in most meat products.
- Due to it's high oil content, it should be stored in glass jars and refrigerated after opening.

Ways to Store Your Wheat

CONTAINERS

- Buckets
- Mylar Bags
- #10 cans
- PETE Containers

WAYS TO DISCOURAGE BUGS!

- Oxygen packs – use in cans or Mylar bags
- Dry ice – use in buckets
- Diatomaceous earth – use in buckets

May be used to make your wheat unattractive to bugs creating an unfriendly environment in your wheat so they won't infest it.

Oxygen Packs

1. They come with many packs per package and are effective because they remove the source of oxygen for the bugs.
2. They are light weight and easy to use but they may only be used once.
3. Best used in metal cans or Mylar bags.
4. While you are packaging your product close the bag they are stored in with a blue clip.
5. When you have finished packaging your product store remaining oxygen packets in a vacuum by removing the air from the container with a vacuum sealer or place in a tightly sealed jar.



6. If you question the effectiveness of oxygen packets remove one from the container and hold it in your hand. If it gets warm it is good. Continue to use oxypacs in that batch.

Dry Ice

1. Purchase dry ice from a grocery store or other supplier. DO NOT TOUCH WITH YOUR BARE HANDS – it will burn you!
2. Place product in a bucket, put 4 oz. dry ice in paper towels and rest the wrapped dry ice on top of your product.
3. Rest lid on top of **bucket** but DO NOT close the lid until the ice has melted because too much pressure will develop in the bucket.
4. If you unscrew the gamma seal but don't tip the bucket the fumes remaining from the dry ice will continue protecting the product from bugs.



Diatomaceous Earth

03/07/2009

Diatomaceous Earth (Finely ground sea plankton) has been used in some situations to control insects. However, according to the University of Utah Extension Office, “We do not recommend diatomaceous (Fuller’s) earth for controlling insect pests in stored foods. The problem is that it becomes a contaminant in the food product. It would not be suitable for use with flour or other related food items. It may be used with whole grain products if a person has a good method of cleaning the grain before it is used.”

- This product protects your wheat from bugs by interfering with their digestive systems.
- Place your product in your bucket, layering with 1 C of diatomaceous earth.
- It will continue to protect your product even if you open and reclose your container.
- Sift your product with a screen before using it.

Diatomaceous Earth

- When storing your grains (not flour or powdered products) use $\frac{3}{4}$ - 1 cup of Diatomaceous Earth per 6 gal bucket of food being stored.
- When using your food storage place your grain in a strainer and shake the powder off of the grain before cooking, sprouting or eating.
- Is created by grinding plankton, the shell remains of ancient plant life deposited thousands of years ago in ancient lake beds eventually turning into rock, into a fine powder.
- Insects, which are generally present in wheat, ingest the diatomaceous earth, causing them to die of digestive problems thus preventing them from spreading throughout the wheat.
- It has a high mineral content.
- It may also be added to gardens.

Buckets

BUCKETS

- They may be purchased in a variety of sizes 2 ½, 3, 4 and 5 gallon capacities.
- They can be use by themselves or lined with Mylar bags prior to putting in the product.
- They may be sealed with a plain lid which needs a bucket wrench to open, or with a gamma seal for ease of using and resealing the product.

BUCKET, GAMMA SEAL, & LID & WRENCH



Mylar Bags

- Light weight, inexpensive, and easy to seal with a **heavy duty sealer.**
- Some foods that are higher in moisture content or fat may be stored this way.
- Packages are pillow shaped in form and are difficult to stack.



#10 Cans

Products with less than 10% moisture content may be stored in metal cans

- Inexpensive to use
- Easy to seal if you have access to a sealer.
- Stack nicely in boxes for storage under beads etc.



PETE Bottles



- PETE refers to a type of clear plastic bottle commonly used for many foods sold in grocery stores.
- The bottles are identified on the bottom, next to the recycle emblem, with the letters PETE.
- This type of container has good oxygen barrier qualities and can be used with oxygen absorbers to store bulk dry foods.
- These containers are well suited for products that are rotated on a regular basis, while still providing several years of storage capability.

Buy new or clean and recycle



Types of Grinders

● **Stone**

1. Oldest type and the only kind available until only a few years ago
2. Functions by crushing wheat between two circular grinding stones, one stationary, the other moving

● **Burr**

1. Similar to stone except the grinding wheels are made out of hardened steel, sometimes referred to as teeth

● **Impact**

1. Use blades placed in circular rows on metal wheels
2. The wheels rotate at several thousand RPM
3. The wheat is pulverized into a fine powder

Electric Grinders

Advantages

1. Grinds wheat in a short time
2. Can be set to numerous fine or coarse settings depending upon the desired product
3. Medium price range

Disadvantages

1. If the power goes out, you are out of luck unless you have a generator.



Hand Grinders

- Many brands are available.
- Some are capable of being attached to Kitchen-Aid or Bosh mixers
- Look for ones with the greatest variety of grinding sizes
- Some also have the capability of becoming rollers for making flaked items.



Vocabulary

- Wheat berrie – a seed or kernel of wheat
- Grinding- crushing or powdering the wheat berrie for use in cooking
- Gluten – a protein in wheat that, when combined with yeast, causes the bread to rise and have a good texture
- Starch – most of the carbohydrate fraction of wheat
- Buckwheat - is not actually a wheat but it may used like wheat

Wheat Allergies

- The major grains that contain gluten are wheat, rye, oats, and barley. These grains and their by-products must be strictly avoided by people with Celiac Disease.
- Wheat-allergic people have an allergic response related to wheat protein. These individuals must only avoid wheat. Most wheat-allergic children outgrow the allergy.
- **Baking Tips for Managing a Wheat Allergy**
- When baking with wheat-free flours, a combination of flours usually works best. Experiment with different blends to find one that will give you the texture you are trying to achieve.
- Try substituting 1 cup wheat flour with one of the following:
 - 7/8 cup rice flour
 - 5/8 cup potato starch flour
 - 1 cup soy flour plus 1/4 cup potato starch flour
 - 1 cup corn flour

Celiac Disease

- Effects one in every 100-200 people
- A condition which results from an immune system response to a protein found in wheat: **gluten**
- Causes the lining in the small intestine to become inflamed
- The only effective treatment is a totally gluten-free diet

Using Your Wheat

- ◉ Sprouts & Wheat Grass
- ◉ Cereal
- ◉ Breads & Wraps
- ◉ Pancakes & Waffles
- ◉ Main Dishes
- ◉ Side Dishes
- ◉ Desserts

Sprouting

- Sprouting is the process of germinating the seed by soaking rinsing and draining seeds at regular intervals.
- With all seeds, care should be taken that they are intended for sprouting or human consumption rather than sowing.
- Sprouts are a tremendous source of (plant) digestive enzymes. Enzymes are vital for the digestion of protein, carbohydrates & fats. The body's use of vitamins, minerals and trace elements is also dependent on enzyme activity.
- Live, rapidly developing, sprouts have been acclaimed as the "most enzyme-rich food on the planet". There may be up to 100 times more enzymes in sprouts than in fruit and vegetables.
- Wheat sprouts are ready to harvest and refrigerate in 3-4 days.
- *FDA cautions against use of raw sprouts especially by infants, elderly, and immune compromised individuals.
- A more detailed look at sprouting will be given in the Power Point presentation on sprouting. It will give you a better, safer insight into sprouting so that you can safely use this wonderful resource for your family.

Wheat Grass



- Wheat grass can be juiced in a special juicer designed for wheat grass.
- It is also available in powdered or tablet form.
- Supporters of wheat grass consumption feel that it can be useful in the areas listed to the side.

- ◉ promote general well-being
- ◉ improve the digestive system
- ◉ cure constipation
- ◉ detoxify heavy metals from the bloodstream
- ◉ help make menopause more manageable
- ◉ prevent diabetes and heart disease
- ◉ While none of these claims have been substantiated in the scientific literature, [\[1\]](#) there is limited evidence in support of some of these claims.

Cereal

WHEAT BERRIES

Cooled wheat berries may be stored in your refrigerator for three or four days for use in other recipes or to be added to salads etc. (the berries on the left have been boiled those on the right have not)



CRACKED WHEAT



- Grind wheat on a coarse setting.
- It may be stored in a covered container in your refrigerator for several days before cooking.
- It may be stored in a sealed container in your freezer for 3 months before cooking.

Boiled Wheat Berries

(rinse the wheat before using any of these methods)

- **Thermos:** place desired amount of wheat in thermos, add as much boiling water as wheat, place on lid and let set over night. Optional 1/2 tsp salt
- **Crockpot:** place desired amount of wheat in crockpot, add 3 times as much water as wheat, place on lid and cook on low over night. Optional 1/2 tsp salt
- **Stovetop:** place desired amount of wheat in saucepan add as much water as wheat, bring to boil, turn down heat, place on lid and let simmer about an hour stirring occasionally. Optional 1/2 tsp salt
- **Pressure Cooker:** place desire amount of wheat in pan. Cover grain with 2 “ of water (*never fill the pressure cooker more than half full*). Cook at 15 lbs of pressure for 35 min. Optional 1/2 tsp salt

Cracked Wheat

- Best to use a hand or electric grinder set on a coarse setting of your choice.
- Small amounts of wheat can be cracked in a blender. Place $\frac{3}{4}$ cup of wheat berries in the blender. Place cover on and run for two min. or until you like the texture.
- Cook like boiled wheat berries.

Rolled Wheat

- ◉ Boil wheat berries.
- ◉ Allow berries to cool and run them through a roller.
- ◉ They will form a crisp flake which will remain crisp in milk A real breakfast of champions! 😊
- ◉ Add fresh or dried fruit and nuts as desired.

Blender Wheat Bread



Easy Wheat Bread

- 6 C warm water 2 Tbsp yeast
- 1 Tbsp salt 2 ½ C wheat (whole grains)
- ½ C oil 8-10 C flour (white or wheat)
- ½ C sugar ½ C vital wheat
- Put 3 C water in to a blender, add the 2 ½ C wheat (whole) Blend on med. high for 8-10 min. (This will make a thin paste)
- In bread mixer or large bowl put wheat mixture, oil, salt and sugar
- Use 1 C warm water and a little sugar to dissolve yeast.
- Use 2 remaining cups of warm water to rinse out blender. Mix all together.
- Then add enough flour to make a soft but not sticky dough
- In bread mixer, mix on high 8-10 min. *
- If mixing by hand follow the directions on the next slide.

Mixing



1. Blend wheat and water into a paste in the blender as shown in the previous picture.
2. Pour the contents of the blender into a large bowl.
3. Add the flour one cup at a time until the dough gets too thick and climbs up the beater paddles as shown.
4. Thickly flour your counter top.
5. Continue adding flour to the bowl squeeze kneading it into the dough.
6. Turn dough out onto the floured counter continuing to knead until the sticky dough begins to pull from your hands. Quit when the dough is a *bit* sticky and put it in a bowl to raise. If the dough isn't a bit sticky your bread will be too dense and may bear a striking resemblance to a brick after it is baked 😊



clean up & raising

1. *Before washing your hands or rinsing bowls and utensil place a wire cover over your drain to catch the excess dough because it will clog your drains.
 2. Use paper towels for initial clean up then use dishrags because the dough will build up in the rag and get into other fabrics when you do your laundry.
- Lightly grease a large bowl, place dough inside turning it over once so that the top has a light film of oil on it.
 - Cover with dish towel and allow to raise in a warm spot for 20-30 min.
 - Spray 5 loaf pans with PAM.
 - Divide and shape into 5 loaves, cover & let rise until the loaves are 1 in. above the top of the pan, about 40-60 min.
 - Bake at 350 for 35 min.
 - Turn out on cooling rack and brush butter on the tops.
 - Allow to cool and wrap in plastic wrap or use gal. Ziploc bags if you plan to freeze it when it reaches room temperature.



White Bread

***White Bread**

1/3 cup honey

1/3 cup margarine, melted

1 ½ tbsp yeast

2 ½ cups WARM water

1 tbsp salt

7 cups flour

1. In a large bowl put warm water and yeast; stir
2. Add honey, margarine, salt and 4 cups of flour
3. Mix slowly, adding an additional 3 cups of flour, knead
4. Let rise in the bowl for 1 hour, punch down and divide into 2 greased loaf pans; rise 1 hour
5. Bake at 350 for 15 min. and turn to 325 for additional 10 min. or so until golden brown
6. Remove from oven and brush tops with butter

Multigrain Bread

Shar's Whole Wheat Bread/9 Grain Bread/14 Grain Bread

6 C warm water	2 tbsp. salt
2/3 C canola oil	2/3 C honey
*3/4 C vital wheat	3 tbsp instant yeast
6 to 8 C fresh ground wheat flour	*3 tbsp dough enhancer
* 1/2 cup 9 grain cracked cereal	* 1/2 c shelled sunflower seeds
*3 tbsp millet	*3 tbsp flax seed
*3 tbsp sesame seed	*3 tbsp amaranth
*available at locations like Sprouts, Whole Foods, Shar's, Trader Joe's, internet food stores, etc.	

Mix ingredients together and knead for 10 min.

If done by hand let rise until double and punch down. (if done in a bread mixer [not machine] skip this step)

Oil your hands and place dough onto a lightly oiled counter. And shape into loaves

Place in a well greased pans or spray with product like Pam, never use oil.

Cover with a dry towel and let rise until dough has risen double about 30-60 min.

Bake in preheated oven at 350 for 30-35 min. or until the inside temp is 200

Allow to cool on cooling racks before placing in bags – it can be frozen for a month

Use first 8 ingredients for whole wheat, first 9 ingredients for 9 grain, and all ingredients for 14 grain

Yields about 5 loaves

It takes a little less than 1/2 can of whole wheat to grind into flour to make this recipe



Tortillas

Whole Wheat Tortillas

1 C water
1 ½ C all purpose flour
1 ½ C whole wheat flour

1/3 C oil
1 C warm water
1 tsp salt additional flour

1. Rub flour, salt and oil together with your fingers until completely incorporated and fine crumbs form.
2. Pour water into dry ingredients and immediately work it in with a fork. Dough will be in large clumps.
3. Sprinkle with additional flour and knead until smooth
4. Divide into 2 inch balls.
5. Cover and let rest for at least 30 min.
6. Roll dough paper thin, rolling from the center to the outside. (It is helpful to roll the dough between two pieces of plastic wrap
7. Bake on very hot ungreased griddle until freckled, about 20 sec. on each side. Serve warm.

There should be enough whole wheat flour remaining from the can of wheat flour that you ground for the bread to make a batch of a dozen tortillas.

Pancakes, Waffles, & Muffins

Multi-grain Pancakes

1/3 cup rolled oats
purpose flour
2 tbsp. baking powder
1/3 c yellow cornmeal
2 tbsp sugar
1 tsp salt
buttermilk

1 cup all-
3/4 cup wheat flour
3 eggs
1/4 cup melted butter
1 3/4 cup

1. In a large bowl combine dry ingredients.
2. Use whisk and add remaining ingredients.
3. Lightly spray skillet with cooking spray and heat to medium high.
4. Pour 1/4 cup for each pancake.
5. Cook until bubbled on top, turn and cook until golden
6. Optional: add fresh berries to the batter right before cooking



Tijuana Delight

- 1 lb hamburger
- 1 cup chopped celery
- 2/3 cup cracked wheat
- 6 corn tortillas
- 4 tsp. chili powder
- 1 (15 oz.) can cream style corn
- 1 cup shredded cheese of choice

- 1 chopped onion
- 1 clove minced garlic
- 2 tbsp Worcestershire sauce

- 1 (15 oz) can tomato sauce

- 1 1/3 cup water
- 1 (15 oz) can kidney beans

Directions:

- Brown beef or empty one pint of bottled hamburger into a large skillet.
- Sauté onion, celery, garlic and cracked wheat and add to beef in skillet.
- Add rest of ingredients except cheese and tortillas. Cook together 5 min.
- In a 2 quart casserole alternate tortillas, mixture, and cheese. End with a cheese layer.
- Bake at 350 for 30 min or until cheese bubbles.



Vegetable Side Dishes

Stuffed Tomatoes

- 2 C cooked wheat berries
 - 2 tsp mustard
 - 3 hard boiled eggs
 - 1 small minced onion
 - $\frac{3}{4}$ C mayonaise
 - 6 large tomatoes
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- Hollow out tomatoes
 - Combine remaining ingredients.
 - Chill for 2-3 hours.
 - Stuff tomatoes and serve on lettuce

Fruit Side Dishes

Aunt Darlene's Fruit Salad

1 20 Oz can crushed pineapple, drained
1 cup or 1pkg instant vanilla pudding
Cool Whip

1 C boiled wheat berries
1 medium- sized bowl

1

- Pour 1 c wheat into a thermos; pour 2 c boiling water into thermos. Let set overnight.
- Rinse, drain, and cool wheat berries.
- Mix with pineapple then add Cool Whip and vanilla pudding
- Chill.
- For color, top with sliced maraschino cherries
- Options: add fresh, canned or dried fruit; switch flavors of pudding; add chopped nuts

Chocolate Oatmeal Wheat Cake

- **Mix together**

- 1 $\frac{3}{4}$ cup boiling water

1 cup dry oatmeal

- **Cream together**

- $\frac{1}{2}$ cup butter or shortening

1 cup packed brown sugar

- 1 cup white sugar

2 large eggs

- 1 Tbs vanilla

- **Sift together**

- 1 $\frac{3}{4}$ cup whole wheat flour

$\frac{3}{4}$ tsp salt

- 3 heaping Tbsp hot cocoa mix

1 tsp baking soda

Mix all ingredients together and add 1 cup chocolate chips. Pour into greased 9x13 pan and sprinkle chocolate chips (dusted with flour), chopped nuts and $\frac{1}{2}$ cup brown sugar on top. Bake at 350 for 40 minutes.



Cracked Wheat Chop Suey

- 1 lb hamburger
- 1/2 lb. sausage
- 1/2 bell pepper, chopped
- 1 chopped onion
- 4 cups chopped celery
- 2 cups cracked wheat
- 3 pkg Lipton Noodle Soup Mix
- 7 cups water
- Brown meats.
- Sauté vegetables in meat drippings and add to meat.
- Add cracked wheat, soup and water, mixing well.
- Bake 1 hour at 350

Whole Wheat Tortillas

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- 1 C water
 - 1 ½ C all purpose flour
 - 1 ½ C whole wheat flour
 - Rub flour, salt and oil together with your fingers until completely incorporated and fine crumbs form.
 - Pour water into dry ingredients and immediately work it in with a fork. Dough will be in large clumps.
 - Sprinkle with additional flour and knead until smooth
 - Divide into 2 inch balls.
 - Cover and let rest for at least 30 min.
 - Roll dough paper thin, rolling from the center to the outside. (It is helpful to roll the dough between two pieces of plastic wrap)
 - Bake on very hot ungreased griddle until freckled, about 20 sec. on each side. Serve warm.
 - There should be enough whole wheat flour remaining from the can of wheat flour that you ground for the bread to make a batch of a dozen tortillas.
- 1/3 C oil
 - 1 C warm water
 - 1 tsp salt additional flour



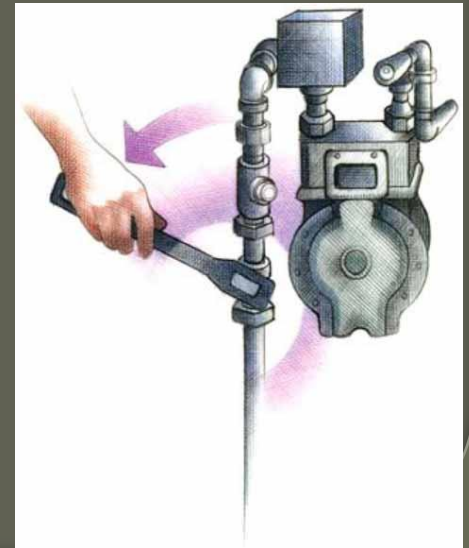
Next Month



EVACUATION



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