

Legumes: Dry Beans, Peas & Lentils

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All legumes are seeds that grow within pods. They are food bargains both budget wise and health wise. They provide more protein for your money than most other foods. They are found in two places on the U.S. Department of Agriculture's Food Guide Pyramid (1) with high-protein foods such as meat, eggs, poultry and fish, and (2) with vitamin-rich vegetables.

Beans are an extremely beneficial component in all diets because they are high in complex carbohydrates, protein and dietary fiber (soluble and insoluble), low in fat, calories and sodium, and completely cholesterol-free. They are also good sources of calcium, potassium, thiamine, iron, and folate (an important B vitamin).

Serving beans with grains or small amounts of meat, eggs or cheese makes the bean a "complete" source of protein.

The term "dry beans" refers to both beans that are dry-packed in sealed bags and those that are pre-cooked in cans.

Dry bean & pea varieties: navy, great northern, pinto, kidney (dark & light red), black, lima (baby & large), garbanzo (chick peas), small red, pink, black eyed peas, cranberry, split peas, lentils.

Nutrient Profile for Cooked Dry Beans

1 Cup-Cooked Beans	Baby Lima	Black	Blackeye	Cranberry	Garbanzo	Great Northern	Large Lima	Navy	Pink	Pinto	Red Kidney	Small Red
Calories	230	228	200	240	270	209	216	258	252	239	225	226
Carbohydrates	42g	40g	36g	44g	45g	37g	40g	48g	47g	42g	40g	40g
Protein	15g	15g	13g	17g	15g	15g	15g	16g	15g	16g	16g	16g
Dietary Fiber	14g	15g	11g	18g	13g	13g	13g	12g	9g	14g	13g	8g
Folate	274mcg	256mcg	358mcg	366mcg	282mcg	181mcg	156mcg	255mcg	284mcg	294mcg	230mcg	230mcg
Calcium	52mg	46mg	41mg	88mg	80mg	120mg	32mg	127mg	88mg	72mg	50mg	50mg
Iron	4mg	4mg	4mg	4mg	4mg	4mg	4mg	4mg	4mg	4mg	5mg	6mg
Fat	1g	1g	1g	1g	4g	1g	1g	1g	1g	1g	1g	1g
% Calories From Fat	6%	8%	10%	6%	28%	6%	6%	8%	6%	6%	2%	6%
Sodium	5mg	2mg	6mg	1mg	11mg	4mg	4mg	2mg	3mg	19mg	4mg	4mg

<http://americanbean.com/wwwold/HealthNutrition/Home.htm>

Storage

When packaged for long-term storage and stored in a cool dry place, dry beans, peas and lentils can be kept for 30+ years. However, once opened, the shelf life for dry beans, peas, and lentils is 1 year. The longer beans are stored, the longer they will take to cook, because they lose moisture. Really old beans may not ever rehydrate properly.

Cooked beans will store 3 to 5 days in the refrigerator and up to 6 months in the freezer. Bean flour has a shelf life of 6 months or can be stored in the refrigerator or freezer for up to 1 year.

Dry Bean Arithmetic

- 1 lb. package = 2 cups dry beans = 5-6 cups cooked beans, drained or 5 cups ground flour
- 1 cup dry beans = 2 1/2-3 cups cooked beans, drained
- 1 can (15 1/2 oz.) beans = 1 2/3 cups cooked beans
- 1 1/3 cups cooked whole beans = 1 cup mashed beans

Preparation

RINSE AND SORT BEANS

Remove damaged beans, small stones and any foreign materials, then rinse beans in cold water.

SOAK DRY-PACKAGED BEANS

Soaking beans in water will help them to soften, return moisture to the beans, and reduce cooking time. Most beans will rehydrate to triple their dry size. Always drain off and discard soaking water. Add fresh water to cook beans.

Preferred Hot Soak and Quick Soak Methods:

For each pound (2 cups) sorted, washed, dry beans, dissolve 2 tsp. salt in 10 cups hot water in a pot large enough for beans to expand. Add beans to salted water. Boil 2-3 minutes. Cover and soak for at least 1 hour (Quick Soak), or 4-12 hours (Hot Soak). Drain off the soak water.

Traditional Overnight Soak:

For each pound (2 cups) dry-packaged beans, add 10 cups cold water and let soak overnight, or at least 8 hours. They can be soaked for up to 24 hours.

Old Hard Beans:

For each cup of dry beans, add 2 ½ cups of hot tap water and 2 tsp. of baking soda and soak overnight. Drain and rinse two times, then add water to cover and cook until tender and soft, about two hours, adding more water as needed.

Cooking Methods

Stove Top

For each 1 pound of dried beans, dissolve 2 teaspoons salt in 6 cups hot water, bring to a boil. Add soaked, drained and rinsed beans in to the pot. Boil gently, uncovered, adding water if needed to keep beans covered, until tender (usually 1 to 2 hours, depending on variety). Beans are better firm if they are to be used in a salad. If you want to mash the beans, cook until soft.

Crock Pot

Place rinsed and sorted beans in boiling water (enough to cover) and simmer for 10 minutes. Drain off water. Then place beans in crockery cooker and add 6 cups of water per pound of beans and seasonings to taste. Cook on low 12 hours.

Pressure Cooker

After soaking beans and putting them into the cooker with water and seasonings, adjust the lid and heat to boiling. Let steam escape for one minute. Put on pressure control or indicator, and over low heat bring pressure up slowly 15 pounds. Start counting cooking time. Most beans require 3-5 minutes of cooking per cup. Navy beans and pinto beans may require up to 10 minutes. Peas, lentils and small lima beans usually are not pressure cooked. Remove cooker from heat to let pressure drop gradually.

Home Canning

After preparing beans using any of the soak methods, add hot water to cover beans and boil 30 minutes. Pack hot into hot jars, leaving 1-inch head space. Add ½ teaspoon salt to each pint or 1 teaspoon salt to each quart.

Cover with cooking water, leaving 1-inch head space. Remove air bubbles. Adjust caps. Process pints 1 hour and 15 minutes, quarts 1 hour and 30 minutes at 13 pounds pressure for an elevation of 4 to 6 thousand feet.

Freezing Beans

Slightly undercook beans you will freeze. Cool quickly, uncovered, seal and freeze. When thawing, beans will keep their shape better if thawed slowly. Cooked beans will keep for 4-6 months in a freezer, one year in a deep freeze (0 C), or up to one week in a refrigerator.

Flavoring Beans

Salt may be added at any time during cooking. Add about one teaspoon salt per cup of dry beans if no other salty food is being added. For "savory" beans add one tablespoon oil, two teaspoons onion salt, ¼ teaspoon garlic salt, one tablespoon chicken stock base and ¼ teaspoon white pepper for each pound (2 cups dry) beans.

Bean Tips

Lentils and split peas do not need to be soaked; however, if they are old, soaking them overnight will reduce the cooking time

Foods containing acid will slow the cooking and softening of beans. Examples are tomatoes, chili sauce, lemon juice, vinegar and ketchup. Add these items last so they will not prolong cooking time.

Bean flour combined with wheat flour (or other grains) accomplishes protein complementation. Bean flour can be used in any recipe calling for flour by replacing up to 25% of the wheat flour with any variety of bean flour. For example, if the recipe calls for 2 cups wheat flour, you could add up to ½ cup bean flour and 1½ cups wheat flour.

High altitudes or hard water areas increase both the soaking time and the cooking time.

A tablespoon of oil added to the beans while cooking will cut down on foam.

White beans replace fat in most baking. One method is to mash cooked beans in a blender until the consistency of shortening. Use 1 cup mashed beans for 1 cup margarine. Liquid may be added to adjust the consistency. A second method is to grind beans in your wheat grinder. Store in an air-tight container. Replace fat in the recipe cup for cup. You will need to add liquid since the ground beans will be part of the dry ingredients.

To combat the bloating feeling that sometimes comes with eating beans, gradually include them in your diet and then continue using them on a regular basis. Soaking beans before cooking and then discarding the soak water may be helpful. Longer soaking time allows more sugar to dissolve, making them easier to digest. Also chew your food well and slowly to aid digestion, and drink adequate fluid to handle the increased fiber intake that comes with beans. Finally, germination (sprouting) or fermentation of the beans before cooking (or eaten uncooked) reduces the amount of complex sugars and consequently the gas production.

Sources

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Spillin' the Beans: Bean Basics. Bean Education & Awareness Network (B.E.A.N.) <http://www.americanbean.com>

Emergency Essentials website: <http://www.beprepared.com>. Search for bean flour.

GoodHousekeeping website: <http://www.goodhousekeeping.com/food/cooking/cook-dried-beans>

Bean Butter

Using white beans, such as Navy, Great Northern, Lima, or Garbanzo
These beans may replace all or part of the fat in most baking

Method 1: Use cooked beans (either canned or from dry beans that you've soaked & cooked) and puree them in a blender, food processor, or mash with a fork. Liquid may be added to adjust the consistency. Mash until the cooked beans reach the consistency of shortening. Use 1 cup mashed beans for 1 cup shortening, margarine, butter, or oil.

You may store the mashed beans in the freezer. Measure out 1 cup portions and freeze them flat in ziplock bags. You may also freeze the beans whole, with approximately 2 Tbsp. of the cooking liquid. You will need 1¼ to 1 1/3 cups whole cooked beans to make 1 cup of mashed beans in recipes.

Method 2: Use bean flour. First, grind beans in your wheat grinder to make flour. Replace fat in the recipe as 1 cup dry flour for 1 cup butter. You will need to add liquid since the ground beans will be part of the dry ingredients. Store the bean flour in an air-tight container on the shelf for 6 months or in the refrigerator or freezer for up to 1 year.

Method 3: Reconstitute the dry bean flour. When you need "cooked beans" in a recipe, you may whisk the flour in water, then bring to a boil. Cook and stir for 1 minute, until mixture thickens. Reduce heat to medium-low, cover pan and cook for 6 minutes, stirring occasionally. Use it just as you would mashed beans.

Instant mashed beans (very thick, Jell-O-like consistency)

½ cup bean flour + 1 cup water = 1 cup mashed beans

Fluffy mashed beans (creamier texture, which is better for dips, burrito and sandwich fillings.)

¾ cup bean flour + 2 cups water = 2 ½ cups mashed beans

Tips for Baking with Bean Butter

The most economical way of getting cooked beans is to prepare dry beans; however, canned beans may also be used when you're in a hurry. Just rinse beans and puree them in a blender, adding a little bit of liquid to help them blend smoothly.

Using bean butter in cookies will make the batter more gooey and sticky (more like a soft dough or drop cookie batter). DO NOT ADD MORE FLOUR, or you will have hard, thick, bricks.

Using beans will make your cookies more cake-like. They will seem dry and light right out of the oven, and will be soft—don't over bake! Bake until the outside edges or bottom has lightly browned. The cookies will become more moist as they sit and will have more flavor the next day.

If you make a big batch, freeze most of them or they will get too moist in the cookie jar. They also taste great right out of the freezer. The beans help them so they don't get too hard.

If you like crisp cookies, don't use beans in a recipe because they will always be soft!!!

After placing the dough on the cookie sheets, you may need to flatten them (dampen your fingers in water or flour to keep the dough from sticking on you). Otherwise, the dough tends to keep its shape and will not flatten as it bakes.

Bean Flour

Bean flour is one great way to put your beans or other legumes to use. Bean flour can be added in small quantities to nearly everything you cook. Using beans in small quantities regularly is the easiest way to help your digestive system develop the enzymes necessary to digest beans efficiently. Super nutrition can be added to any commercial dry mix (cakes, cookies, muffins, breads) by adding a few tablespoons of bean flour to the dry ingredients, then adding extra liquid as necessary. Bean flours are used in baked goods made from your regular recipes in combination with other flours, or as cream soups, sauces, dips or in loaves, patties or casseroles. Bean flours provide the fastest and easiest way to prepare bean meals. Commercial flours that are available include Black, Pinto, Garbanzo and White Bean, Green Pea and Red Lentil.

GRINDING TIPS

To grind beans, first sort them and check for dirty beans or rock pieces. Try to buy beans that have been "triple cleaned" to minimize this problem. Check with your mill's grinding directions for beans. Large beans may need to be cracked in a blender before adding to the mill. Also, you may only be able to grind 2 cups of beans at a time, and then clean the grinding stones or electric mill parts by running 1 cup of hard wheat or other grains through the mill.

Store flours in re-sealable plastic bags or other food storage containers and refrigerate or freeze if possible. Flours last about six months at room temperature. After that time, a bitter aftertaste may start to develop. Old beans which have been stored too long (usually over 10 years) will taste bitter whether they have been cooked whole or ground to a flour and made into soup.

For the Nutrimill electric grain mill, turn the motor speed dial to low and set the other dial all the way over to coarse grind (the flour will still be fine).

BEAN FLOUR ADDED TO WHEAT FLOUR

Bean flour can be added to any recipe calling for wheat flour. Replace up to 1/4 of the total amount of wheat flour with bean flour. Combining bean and wheat flours also helps form a complete protein for those cutting out or down on meat.

BEAN FLOUR SOUPS

For every cup of liquid in your soups, use the following guide to add bean, pea or lentil flours:

	<u>White Bean Flour</u>	<u>Pea or Lentil Flour</u>
Thin Soups	2 T.	1 T.
Medium-thick soups	3 T.	2 T.
Thick soups, stews or gravies	4-5 T.	3 T.

CREAMY BLENDER SOUPS (without a grinder!)

Pea or Lentil Soup

Cook $\frac{3}{4}$ cup dry peas or lentils in 6 cups boiling water for 10 minutes. Blend 2 minutes on high. Return to pan, add 2 T. chicken soup base and cook an additional 3 minutes.

Creamy White Bean Soup

Cook 1 cup dry white beans in 3 cups boiling water for 20 minutes. Drain and rinse. Blend approximately 1 cup of beans at a time with 2 cups hot water on high speed (8 cups water total). Repeat until all the beans are blended, straining out any large pieces. Return to saucepan adding 2 T. chicken or vegetable soup base and salt and pepper to taste. Cook 5 minutes over medium heat. Use as cream soup or as creamy soup base, adding veggies in season.

Bean Sprouts

Why Sprout?

SPROUTS IMPROVE HEALTH

Sprouts contain live enzymes necessary for the digestive process. They contain as much as 95% water and are much more easily broken down and assimilated by the body. With hard beans, sprouting eliminates the gas-producing qualities.

Sprouts contain few, if any, calories and no cholesterol.

Sprouts are one of the highest sources of fiber.

Sprouts contain the highest and purest forms of vitamins, proteins, trace minerals and nutrients necessary for a long healthy life.

When seeds, beans and grains go through a sprouting process, the vitamin and mineral content can be up to 600% higher than in ones that are unsprouted.

For maximum nutritional benefit, sprouts are best eaten raw; however, they can be steamed, roasted, fried, pureed, ground, or served in cream sauces and gravies.

Sprouts are absolutely delicious—anyone who enjoys raw vegetables will enjoy sprouts. They are also an excellent addition to cooked dishes, breads, casseroles, cereals and soups.

SPROUTS SAVE MONEY

As an example, one pound of dry beans will yield at least eight pounds of sprouts. One pound of sprouts will serve six to eight people, which means there will be 48 to 64 servings for the cost of one pound of beans! One and one-half tablespoons of alfalfa seed will yield approximately one quart of greened sprouts, while three tablespoons of mung beans will make one quart of bean sprouts.

SPROUTS SAVE TIME

Once the equipment and seeds are on hand and the routine of soaking, rinsing and sprouting are established, 10 or 15 minutes a day is all the time needed to care for a “sprout garden.” It takes no weeding, fertilizing, hoeing, spraying or working long hours in the hot sun. Winter or summer, wind, rain or snow, the sprouts will continue to grow.

Since sprouts are eaten fresh, there is no requirement to pick, can or preserve them. It only takes 2 to 6 days to produce sprouts, and if kept growing continually, there will always be a supply of fresh vegetables on hand at all times.

SPROUTS AID IN EMERGENCIES AND HOME STORAGE

Many of the dried grains and beans are already in your family’s food storage to sustain life in an emergency. Fresh produce is something that cannot be stored. In an emergency when fresh produce is not available, sprouts can be the answer. Seeds take little storage space, keep well, are inexpensive and easy to obtain. Sprouts can be produced any season of the year and may be sprouted only as needed.

Buying and Storing Seeds and Grains

Make certain that they haven’t been chemically treated in any way (seeds sold in seed and feed stores or nurseries are often for growing purposes only, and may have been chemically treated with insecticides to protect them from disease when planted in the soil).

Local health food stores generally stock seeds for sprouting and are often a good source for small quantities.

Seeds must be stored in moisture-proof containers in a dry place. Metal, plastic or glass containers with tight-fitting lids are suitable.

Practically all seeds, grains and legumes can be sprouted. Most common are mung beans, alfalfa, lentils, peas, wheat and rye.

Some seeds will germinate after several years, if they are sealed from moisture and stored in a cool, dark place; however, many seeds have a very low percent of viability after the first year. So, it is always good to not buy more than what can be used in one year and to rotate your supply to keep it fresh.

Certain seeds that have similar characteristics can be grouped and sprouted together:

SMALL SEEDS: Alfalfa, Clover, Millet, Sesame

GRAINS: Barley, Oats, Rye, Wheat, Triticale

TENDER BEANS: Adzuki, Black, Garden Peas, Garbanzo or Chick peas, Kidney, Navy, Pinto, Red, White, and other hard beans.

GELATINOUS SEEDS: Chia Seeds, Flax, Garden Cress

VEGETABLE SEEDS: Cabbage, Cauliflower, Broccoli, Brussels Sprouts, Mustard, Turnips, Beets, Chard, Endive, Lettuce, Radish, etc.

Basic Truths of Sprouting

RINSING: Water is the key ingredient in sprouts. Use it liberally. Keep sprouts moist, but not wet.

DRAINING: It is essential that sprouts be drained thoroughly after rinsing. Seeds must not stand in water or they will sour and have to be discarded.

AIR CIRCULATION: If your sprouts can't breathe while growing, they can die. Do not overcrowd the sprouts—be sure that there is one third of the space left in the container for good circulation of air while they are growing.

CLEANLINESS: Your seed should be clean and your sprouting device should be sterile. Wash your sprouter well between crops with dilute bleach (1 Tbsp. of bleach per pint of water is plenty).

Storage: Properly stored, fresh sprouts will keep for up to 6 weeks in your refrigerator, but fresher is better. Never refrigerate wet sprouts.

Basic Sprouting Equipment and Methods

GLASS JAR METHOD

- Wide-Mouth Glass Jar (1-quart size)
- Jar Ring, rubber band, or string
- Circle of plastic screen cut to fit jar, cheese cloth, nylon net, or piece of nylon stocking.

Measure, wash and place seeds in the jar with 1 to 2 cups of warm water at 70 to 80 degrees. Cover the top of the jar with the circle of plastic screen and secure it with the jar ring (or stretch cheese cloth, nylon net, or a nylon stocking over the jar opening and secure it with a rubber band, jar ring or string).

The next morning (or 8 to 12 hours later), drain the seeds. Rinse the seeds with cool water, then rinse them again with warm water and drain them well. Tilt the bottle on its side, mouth down, in a bowl, dish or pan so that excess water can drain away. Do not leave the seeds remaining in standing water, and be sure air can circulate in the bottle. Place the jar in a warm, dark place or cover the bottle with dark cloth or a paper bag to keep out light.

Rinse the seeds every 4 to 6 hours during the day, or can be done successfully by rinsing morning and evening and again at bedtime. With the exception of gelatinous seeds, the glass jar method is suitable for almost all types of seeds, beans and grains, and is the method most commonly used by beginners.

SPROUTMASTER METHOD (PLASTIC SPROUTER AND CRISPER)

Can be stacked with other sprouting trays (the crisper lid serves as the drip tray for the next sprouter)

- Drip tray
- Crisper lid
- Sprouting tray with removable divider and mesh bottom

Soak seeds overnight, or from 10-12 hours, in another container. This will give you approximately 300% increased volume over original measure. NOTE: Hard seeds are an indication of insufficient soaking.

Pour soaked seeds, beans, or grains into your sproutmaster. A light rinse will spread them evenly over the bottom of the sprouter.

Rinse thoroughly 2 times per day (morning/night) with a gentle spray of warm water or by filling the sink or flat container with 2 inches of warm water and dipping the sprouter repeatedly. NOTE: This step is needed to keep the seeds from drying out and to wash away natural toxins or by-products by giving the sprouts a gentle bath.

Drain the sprouter thoroughly after each rinsing. Tilting the sprouter will expedite drainage.

It is important to maintain a temperature from 75 to 80 degrees. You can make adjustments as follows: In cold temperatures, you can soak the seeds in warm water, rinse them in warm water, and use a warm damp cloth when covering the sprouter. In warm temperatures, you can soak the seeds in cool water, rinse them in cool water, and use a cool damp cloth to cover the sprouter.

Taste your sprouts as they grow to determine when they are most appealing to you. CAUTION: Do not put in direct sunlight. Seeds are sweeter if sprouted in the dark. Some seeds may only require two days for maximum sprouting, let your taste be the judge.

When seeds have reached the desired taste, you may halt their growth by putting the lid on top and placing them in the refrigerator. CAUTION: Do not rinse the sprouts prior to putting them into the refrigerator—this will only make them spoil more quickly.

Sprouting Guidelines

Bean, Pea or Lentil	Yield	Sprouting Time	Tips
Lentils	¼ cup seed = 2 cups sprouts	1 ½ to 2 days	½" to 1" tails
Mung Beans	¼ cup seed = 3-4 cups sprouts	1 ½ to 2 days (for long bean sprouts, sprout 5 to 8 days in the dark)	½" sprout tails
Pro-Vita-Mix (Adzuki Beans, Peas, Lentils, Mung Beans, Triticale, Wheat, Fenugreek)	1 cup seed = 1 qt. sprouts	1 ½ to 2 days	½" sprout tails
Dry Beans (pinto, chili, lima, navy, black, etc.)	1 cup seed = 1 qt. sprouts	1 ½ to 2 days	¼" to ½" sprout. Cook 15-20 minutes.

Sources

Larimore, Bertha. (1975) *Sprouting for All Seasons*. Horizon Publishers & Distributors, Inc. Bountiful, Utah.
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The Sproutpeople website: <http://www.sproutpeople.com>