Growing Groceries

Presented by Washington State University King County Master Gardeners

The Nutritional Powerhouse: Corn and Beans (Legumes)

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May 28, 2025

WASHINGTON STATE UNIVERSITY EXTENSION

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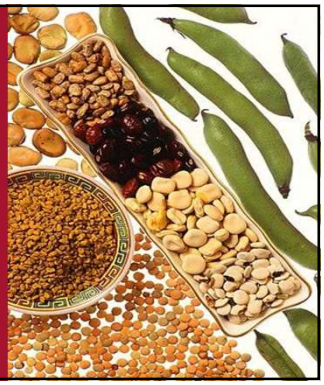
….and now for Legumes and Pulses

Commonly referred to as "Beans"



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Classification

- Botanically, beans are classified into a group of plants known as Legumes
- All Legumes are members of the Fabaceae family (also known as Leguminosae)
- The term "beans" refers to one category of legume seeds (peas, beans, chickpeas, lentils, lupins, peanuts are others
- Pulse vs. Legume
- When gardeners mentions beans they are mostly referring to species of the genus Fasoulus.
  - Phaseolus vulgaris (the most common varieties of which include: Kidney, Pinto, Navy, White)
  - Phaseolus lunatus (the lima beans)
  - Phaseolus coccineus (runner beans Scarlet runner)
- Pole vs. Bush
- Green vs. Dry

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Green beans

Dry beans

Other photos by Growing Groceries team

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Green Beans vs. Dry Beans

Green beans (snap or string)

- Bred to produce stringless pods
- Harvested and eaten while the pods are immature and still tender, with small, undeveloped seeds inside
- Most green beans are indeed green, they also come in purple, red, yellow, and streaked varieties
- French filet, Italian (Romano) green beans, yellow wax bean varieties and more!

Dry beans (shelling beans)

- Very fibrous pods, stringy and unpalatable
- Meant to be harvested when pods are seeds have mature and pods are dry
- Require soaking and cooking before consumption
- Pinto, navy, kidney and black varieties and more!

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Growing guide - Green Beans vs. Dry Beans

Green beans (snap or string)

Crop at a Glance	
Growing season	Summer
Time of planting	Late spring when soil temp. reaches 65 F.
Spacing	2" apart in rows space 18-24" apart
Average yield	6 to 8 lbs. per 10-ft. row
Common starting method	Direct seed or seedling transplants

Dry beans (shelling beans)

Crop at a Glance	
Growing season	Summer
Time of planting	May 15 – June 1
Spacing	2 – 3" apart in rows spaced 2-3 ft. apart
Average yield	1.2 lbs. per 10-ft. row
Common starting method	Direct seed into the soil

https://s3.wp.wsu.edu/uploads/sites/2071/2014/04/Green-Beans-FS088E.pdf

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Pole beans

Variety: Cherokee Trail of Tears
Photo credit: Darien Payne

Bush beans

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Pole beans

- Grow in a vining manner
- Require cage or trellis system
- Easier to harvest
- Need less space to grow
- Big yields in 55 – 60 days
- Varieties:
  - Blue Lake Pole Beans
  - P. vulgaris (pinto, kidney, navy, white, black, borlotti),
  - F. lunatus (lima beans),
  - P. coccineus (scarlet runners)

Bush beans

- Non-climbing growth habit
- Compact, great for raised beds
- Do not require extra support
- Require less maintenance
- Stagger plantings every 2 weeks and harvest daily for continuous production
- Varieties:
  - Mascotte and Seychelles are AAS winners
  - Dragon Tongue

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Pole beans

- Grow in a vining manner
- Require cage or trellis system
- Easier to harvest
- Need less space to grow
- Big yields in 55 – 75 days

Form	Variety Name (color)	Days to harvest
Pole bean (common)	Monte Gusto (yellow)	55
	Sunshine (yellow)	65
	Blue Lake (green)	75
	Kentucky Wonder (green)	70
Filet	Emerite (green)	55
	Fortex (green, 10")	70
	Carminat (purple, 8")	65
Romano	Musica (green)	67
	Helda (green)	60
	Golden Gate (yellow)	66

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Bush beans

- Non-climbing growth habit
- Compact, great for raised beds
- Do not require extra support
- Require less maintenance
- Stagger plantings every 2 weeks and harvest daily for continuous production

Dragon Tongue bush bean

Form	Variety Name/color	Days to harvest
String bean	Mascotte (green)	50
	Compass (green)	65
	Gold Rush (yellow)	58
	Dragon Tongue (streaked)	60
Filet	Maxibel (green)	60
	Borsalino (yellow)	60
	Celine (purple)	55
Romano	Capitano (yellow)	62
	Purpiat (purple)	60

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History of beans (P vulgaris)

- Origin
- Domestication
- Spread and Cultivation
- Modern Importance

https://psfaculty.plantsciences.ucdavis.edu/gepts/Gepts%20Evol%20beans.%201998.pdf

https://www.kew.org/plants/common-bean#:~:text=Food%20and%20drink,%2C%20steam%2Dfried%20or%20pickled

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Common bean (P vulgaris) – Modern importance

Common bean varieties	kidney beans, pinto beans, navy beans, black beans
Food and culinary uses Note: Large quantities of the raw mature seed are poisonous. The toxins play a role in protecting the plant from insect predation.	- can be consumed as whole seeds, canned or processed into flour - young, tender, immature pods harvested before the seeds inside fully develop, are eaten as a vegetable often eaten raw, boiled, steamed, stir fried, roasted, grilled, baked and even pickled - in some regions, the young leaves are also eaten as a vegetable.
Animal Feed	used as a protein source in **animal feed**, particularly for livestock and poultry
Soil improver	has the ability to fix nitrogen in the soil, **improving soil fertility** and benefiting other plants growing nearby

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Nutritional value

- Fiber
- Protein
- Carbohydrate
- B vitamins
- Iron
- Copper
- Magnesium
- Phosphorous
- Zinc
- Low in fat
- Practically free of saturated fat
- Cholesterol free
- Low glycemic index

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Healthy Diet

- Integral part of many healthy eating patterns
  - Mediterranean diet
  - DASH diet
  - Lower glycemic-index (GI) diets
  - Vegetarian diet
  - Vegan diet
- Role in management and prevention of
  - Type 2 Diabetes
  - Hyperlipidemia
  - Weight management

See the Resource page at the end of this presentation

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Health Benefits

- Cardiovascular health
- Blood Sugar Control
- Protect from damage by free radicals
- Weight Management
- Anemia Prevention
- Kidney Health
- Bone Health
- Muscle growth and repair
- Immune Function

https://pmc.ncbi.nlm.nih.gov/articles/PMC8779353/#:~:text=Abstract,regulated%20by%20the%20bioactive%20components.

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Questions?

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Cultivation

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Cultivation - Site selection

- Full Sun or partial shade (reduced yield)
- Requires consistent moisture in well draining soil
- Soil pH 6 – 6.8
- Low fertilizer needs
- Amend poor soil with aged manure or compost in the fall or a week prior to spring planting

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Considerations for planting

- Direct sowing after last spring frost date
  - To get a head start on planting, place black plastic or landscaping fabric over your garden beds to warm the soil prior to sowing seeds.
- Soil temperature should be above 60
- Inoculate with Rhizobium Leguminsarum (recommended, not required)
  - A bacterium that occurs naturally in the soil but is not present everywhere. The bacteria induce nodule formation on the plant roots and forms a symbiotic relationship with the plant to fix N from the air

https://wpcdn.web.wsu.edu/extension/uploads/sites/25/FS135E-Growing-dry-bean-in-home-garden-publication.pdf

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Planting guide for bush and pole beans

Bean Type	Planting Depth	# seeds /row-foot	In-row spacing	Btwn. row spacing	# days to germinate	Optimum soil temp
Bush	1.5 – 2”	4 – 6	2 – 3”	18 – 30”	6 - 14	60 – 85 F
Pole	1.5 – 2”	2 - 3	4 – 6”	36 - 48”	6 - 14	60 – 85 F

For both types, air temperature should be 50 degrees F consistently overnight otherwise the soil will be too cold and damp.

For Square Foot Gardening:

Plant 4 bush beans per square foot. This ensures they have enough room to grow without overcrowding.

Square Foot Gardening: A New Way to Garden in Less Space with Less Work by Mel Bartholomew

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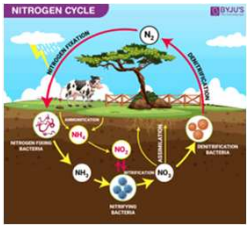
Nitrogen fixation



https://byjus.com/biology/nitrogen-cycle/

Naturally occurring nodules of Rhizobium on clover roots

In these leguminous associations, the N-fixing bacteria usually are *Rhizobium* species, but the root nodules of soybeans, chickpea and some other legumes are formed by small-celled rhizobia termed *Bradyrhizobium*

https://archive.bio.ed.ac.uk/jdeacon/microbes/nitrogen.htm

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Maintenance and care

- If using a trellis for pole beans, construct and place your trellis before or at the time of seeding
- Mulch
- Weed diligently
- Keep the soil evenly moist (avoid wetting the foliage)
- Do not use nitrogen fertilizer, instead
- Side dress with compost or aged manure halfway through the growing season

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Pests and Diseases

Halo blight

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Diseases

- Fungal
  - anthracnose
  - white mold
  - fusarium root rot/damping-off
  - powdery mildew
- Bacterial
  - halo blight
  - common blight
- Viral
  - bean common mosaic
  - beet curly top virus
  - common blight

Pests

- Bean Seed Maggot
- Cucumber beetles both spotted and striped
- Western bean cutworm
- slugs
- Brown marmorated stink bug

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Cultural practices

Incidence of disease and pests can be reduced by

- Purchasing certified disease-free seed
- Grow bean varieties bred for resistance to pests and diseases
- Plant in loose, well-drained soil
- Avoid overhead watering
- Avoid plant crowding
- Remove weeds and properly thin
- Clean up plant debris
- Remove any plants that are diseased and dying
- Rotate crops

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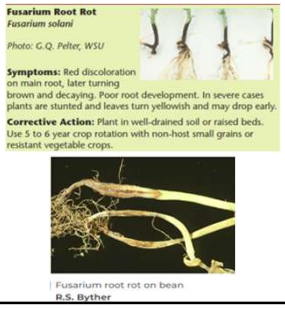
Pests and diseases

Root rot / Damping off



Fusarium root rot on bean
R.S. Byther

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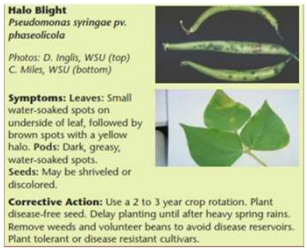
Bacterial Diseases

Common Blight

Halo Blight



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Pests and diseases

White Mold on snap beans

- This disease in named for the characteristic white, cottony growth of the pathogen on infected plants.
- Diagnostic are the black, round to oblong sclerotia the pathogen produces in its white growth.

Photo: C.D. Smart

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Virus diseases of beans

Bean common and yellow mosaic virus

Curly top (beet curly top virus)

Photo: G. Q. Pelter

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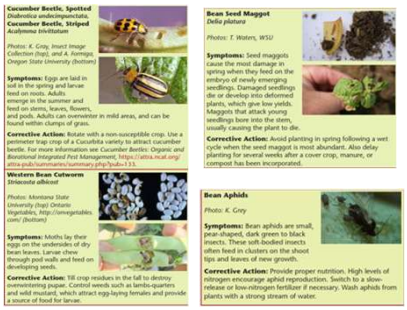
Pests

- Cucumber beetle
- Bean Seed Maggot
- Aphids: Wash off with hose
- Leafhoppers
- Spider mites: Wash off with water.
- Mexican bean beetles: Handpick and destroy
- Brown marmorated stink bug (BMSB)



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Brown marmorated stink bug

DISTINGUISHING MARKINGS

- White bands on the brown antennae.
- Bands on the dorsal side of the peripheral margin of the abdomen.
- Smooth leading edge of the shoulders.
- "Gem-encrusted" behind the head.

BMSB FEEDING DAMAGE

- Deformation
- Rotten blemishes of fruit and plants.

CONTROL METHODS

- Farmers are resorting to using broad spectrum insecticides until better management techniques are developed.
- Entomologists are researching long term tools such as biological control.
- Small wasps found to be helpful however, further study is needed before these wasps are proven safe to release.

https://pubs.extension.wsu.edu/pest-watch-brown-marmorated-stink-bug-home-garden-series

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Questions?

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Harvest and storage

This is the fun part!!

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Harvesting Green Beans

- Green beans are ready for harvest 50 to 80 days from planting
- Harvest beans by size, depending on their end use
- Pick when young and tender BEFORE the seeds have fully developed.
- Seed maturation is exhaustive for the plant so pick often, pick young.
- Delayed harvest results in reduced quality and less productive plants.

Photo credit: Gia Parsons

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Harvesting Green Beans (cont.)

- Do not allow pods to reach the yellowish stage as they will be tough and stringy
- Harvest often (the more you pick the more beans grow)
- Snap the pods off the plant. They should snap when bent/broken
- After the final harvest, remove and destroy the plant debris.
- Alternatively, turning under the remaining plant material in the fall can help replenish nutrients and contribute to the organic matter content of the soil.

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Storing green beans

- Store fresh green beans in an airtight container in the refrigerator for up to 4 days
- See table below for other methods and resources for storage

Method	Resource
Blanch and freeze	https://nchfp.uga.edu/how/freeze/vegetable/freezing-beans-green-snap-or-wax/
Canning	https://extension.sdstate.edu/canned-green-beans
Pickling	https://nchfp.uga.edu/how/pickle/vegetable-pickles/dilled-beans/

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Harvesting dry beans

- Dry beans are ready to harvest when the pods are dry and easily open
- Pick the pods (or the entire plant) and dry completely in a sunny spot
- Thresh when fully dry (Wrap in an old sheet and stomp on them)
- Separate the beans from the debris
  - I put them in the compost screen over a fan…the beans remain and the debris flies off

Figure 3. Threshing dry beans: stomping on plants that are in a burlap bag (left); sifting beans from plant debris using a compost screen. Photos: Carol Miles, Washington State University.

Figure 4. Cleaning dry beans: sifting out the smaller debris (left), and using a fan to blow out the remaining debris (right). Photos: Carol Miles, Washington State University.

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Storing dry beans

- Best stored in the absence of oxygen and light
- Up to 10 years in Mylar-type bags with oxygen removed (available on Amazon)
- Up to 1 year in canning jars (for small quantities) if stored in dark dry place.
- Up to 1 year in Polyethylene (food-grade) bags

https://extension.usu.edu/preserve-the-harvest/dev/storing-dry-beans-1#:~:text=Like%20most%20stored%20foods%2C%20beans,stored%20in%20a%20dark%20place.

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Questions?

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The “other” beans

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Fava Beans – *Vicia faba*

- History and distribution
- Uses
  - Animal feed and Forage Crop
  - Cover Crop
  - Insectary and pollinator plantings
- Warning: Favism

Photo: Maria Gerace

https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_vifa.pdf

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Cultivation

- Optimum soil temperature for germination 60 to 65
- Optimum temperatures for growth 65 – 85 degrees F
- Direct sow
- Depth (1 – 2 inches)
- Spacing (4 – 6 inches apart)
- Inoculation with a vetch strain of Rhizobium spp.

Photo: Maria Gerace

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Cultivation (cont.)

- Sun and Soil
- Fertilizer
- Watering
- Staking
- Pruning

Photo: Maria Gerace

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Pests and diseases

- Aphids
- Bean leaf roll virus
- Bean yellow mosaic virus
- Chocolate spot
- Faba bean rust
- Ascochyta blight
- Anthracnose, fusarium root rot, and downy mildew.
- Pea and bean weevils
- Broad bean seed beetles

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Harvest and Use

- Fresh shelling
- Eating whole
- Dried beans
- Cover crop

Photo: Maria Gerace

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Video resources

- Foul Recipe https://www.youtube.com/watch?v=j6F19RGRp0c
- How to shuck and eat https://www.youtube.com/watch?v=ZgPh1heB9Pk
- Growing guide https://www.youtube.com/watch?v=JvioEP4Crio

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Questions?

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Resources

- https://extension.uga.edu/publications/detail.html?number=C1006&title=home-garden-green-beans#:~:text=twice%20a%20week.-,Harvesting,canned%20for%20long%2Dterm%20storage.
- https://www.vegetables.cornell.edu/pest-management/disease-factsheets/virus-diseases-of-snap-and-dry-beans/
- https://www.vegetables.cornell.edu/pest-management/disease-factsheets/bacterial-diseases-of-beans/
- https://www.vegetables.cornell.edu/pest-management/disease-factsheets/white-mold/
- https://www.almanac.com/plant/beans
- https://www.almanac.com/gardening/frostdates
- https://www.almanac.com/pest/mexican-bean-beetles
- https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/legumes-pulses_en#:~:text=legumes%20and%20pulses-,Nutritional%20value%20of%20legumes%20and%20pulses,is%20presented%20in%20Table%202 https://www.pnas.org/doi/10.1073/pnas.1108973109#:~:text=In%20summary%2C%20our%20study%20presents,diversity%20of%20the%20ancestral%20population.

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Resources

- https://psfaculty.plantsciences.ucdavis.edu/gepts/Gepts%20Evol%20beans.%201998.pdf
- https://nutritionsource.hsph.harvard.edu/legumes-pulses/
- https://pubs.extension.wsu.edu/pest-watch-brown-marmorated-stink-bug-home-garden-series
- https://mtvernon.wsu.edu/path_team/brown-marmorated-stink-bug-6l/
- https://nutritionsource.hsph.harvard.edu/legumes-pulses/
- https://pmc.ncbi.nlm.nih.gov/articles/PMC4608274/
- https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_vifa.pdf
- https://vegvariety.cce.cornell.edu/main/showVarieties.php?searchCriteria=dry+beans&searchIn=0&crop_id=0&sortBy=overallrating&order=DESC&sideSearch=Search
- https://pubs.extension.wsu.edu/vegetables-growing-green-beans-in-home-gardens-home-garden-series
- https://pubs.extension.wsu.edu/vegetables-growing-dry-beans-in-home-gardens-home-gardening-series

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Upcoming Presentations

Growing Groceries
2025 Warm Season Series
Wednesdays 7:00pm-8:30pm

Date	Class
~~Wed, April 16~~	~~Growing the 'Other' Edible Nightshades: Peppers, Tomatillos, Eggplant~~
~~Wed, April 30~~	~~Roots and Rare Fruits~~
~~Wed, May 14~~	~~Grow Cukes, Squash and Melons- Big and Small~~
Wed, May 28th	The Nutritional Powerhouse: Corn and Beans (legumes)
Wed, June 11	Summer Starts for Fall and Early Spring Harvests
Wed, June 25	Caring for Community: Master Gardener Demonstration Gardens

PNW Garden Savvy
2025 Series 2
Saturdays 9:30am-10:30am

Date	Class
~~Sat, April 12~~	~~Gardening with Children~~
~~Sat, April 26~~	~~Plant It Where the Sun Don't Shine~~
~~Sat, May 3~~	~~Protecting Our Unsung Heros, Our Pollinators~~
~~Sat, May 17~~	~~Understanding King County Soils for Better Gardening~~
Sat, May 31	Rain Gardens
Sat, June 7	Deer Resistant Gardening

More info: https://kingcounty.mastergardenerfoundation.org/education

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Master Gardener Resources

Ask a Master Gardener
Visit: https://extension.wsu.edu/king/ask-a-master-gardener

Become a Master Gardener
For information on King County Master Gardener training (including signing up for the email notification list), visit: https://extension.wsu.edu/king/gardening/become-a-master-gardener

Applications for the 2026 class will open in September 2025

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