

**Advice to Grow By
... Ask Us!**

**UCCE Master Gardeners
San Mateo & San Francisco Counties**

Seeding Demystified

**Presented by Judith Dean
UC Master Gardener
San Mateo and San Francisco
Counties**



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Agriculture and Natural Resources ■ UCCE Master Gardener Program

Why Seeds?

- **Economical for large quantities**
- **Much larger selection of varieties**
- **New, rare, or unusual varieties**
- **Varieties impractical for commercial production**
- **Want to save seed from favorite plant to reuse**



Make a Plan

- What to grow? Vegetables?
Flowers?
- How many? Depending on
space available and size of
family
- Will you be preserving any
produce? Or do you want
to eat a little over a long
period?
- Where will you plant? Pots
or in the ground?
- Does your spot get the right
amount of sun?



PLANTING CALENDAR FOR **HOT** SOUTHERN AREA OF SAN MATEO COUNTY

EARLY SPRING			SPRING		SUMMER		FALL		WINTER
JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
Artichoke, root	Artichoke, root	Artichoke, root	Bean, runner (S)	Bean, runner (S)	Bean, runner (S)	Beet (S,T)	Beet (S,T)	Bean, fava (S)	Bean, Fava (S)
Lettuce (S,T)	Bean, fava (S)	Bean, fava (S)	Bean, snap (S)	Bean, snap (S)	Bean, snap (S)	Brussels Sp (T)	Broccoli (T)	Beet (S, T)	Broccoli (T)
Mustard (S)	Beet (S,T)	Beet (S,T)	Beet (S,T)	Beet (S,T)	Beet (S,T)	Cabbage (T)	Brussels Sp (T)	Broccoli (T)	Garlic (sets)
Radish (S)	Broccoli (T)	Broccoli (T)	Broccoli (T)	Corn (S)	Corn (S)	Corn (S)	Cabbage (T)	Carrot (S)	Lettuce (S,T)
Rhubarb, root	Cabbage (T)	Cabbage (T)	Cabbage(T)	Cucumber (S)	Cucumber (S)	Radish (S)	Celery (T)	Cauliflower (T)	Mustard (S)
	Carrot (S)	Carrot (S)	Carrot (S)	Eggplant (T)	Eggplant (T)	Squash, sum (S)	Collards (S)	Celery (T)	Parsnip (S)
	Cauliflower (T)	Cauliflower (T)	Cauliflower (T)	Leek (S,T)	Melon (S)		Kale (S,T)	Collards (S)	Pea (S)
	Celery (T)	Celery (T)	Collards (S)	Melon (S)	Okra (S)		Kohlrabi (S,T)	Kale (S,T)	Radish (S)
	Kohlrabi (S, T)	Collards (S)	Cucumber (S)	Pepper (T)	Pepper (T)		Lettuce (S)	Kohlrabi (S,T)	Spinach (S)
	Leek (S,T)	Kale (S, T)	Eggplant (T) *	Radish (S)	Radish (S)		Onion (S)	Lettuce (S,T)	Sw.Chard (S,T)
	Lettuce (S,T)	Kohlrabi (S,T)	Kale (S,T)	Squash, sum (S)	Squash, sum (S)		Pea (S)	Mustard (S)	
	Mustard (S)	Leek (S,T)	Leek (S,T)	Squash, win (S)	Squash, win (S)		Radish (S)	Onion (S)	
	Parsnip (S)	Lettuce (S,T)	Lettuce (S,T)	Sw.Chard (S,T)	Sw.Chard (S,T)		Shallot (sets)	Parsnip (S)	
	Potato (tubers)	Mustard (S)	Melon (S)	Tomato (T)	Tomato (T)		Turnip (S)	Pea (S)	
	Radish (S)	Parsnip (S)	Potato (tubers)					Radish (S)	
	Rhubarb, root	Potato (tubers)	Radish (S)					Shallot (sets)	
	Spinach (S)	Radish (S)	Spinach (S)					Spinach (S)	November
	Sw.Chard (S,T)	Rhubarb, root	Squash, sum (S)					Sw.Chard (S,T)	Garlic (sets)
	Turnip (S)	Spinach (S)	Squash, win (S)					Turnip (S)	Lettuce (S,T)
		Sw.Chard (S,T)	Sw.Chard (S,T)						Onion (sets)
		Turnip (S)	Tomato (T) *						Radish (S)
			Turnip (S)						DECEMBER
									Artichoke, root
									Onion (sets)
									Rhubarb, root

S = Seed
T = Transplants
= Week 1 & 2
* = Week 3 & 4

Adapted 8/19/2010 by Carol O'Donnell, UCCE Master Gardener San Mateo & San Francisco Counties from Golden Gate Gardening: Third Edition, Pam Peirce, Sasquatch Books, 2010



Gather Supplies

→ Seeding mix

◆ Commercial

◆ Homemade

- 1/3 sand or vermiculite
- 1/3 peat moss or coir
- 1/3 pasteurized soil or compost

◆ In a pinch, potting mix will do



Containers



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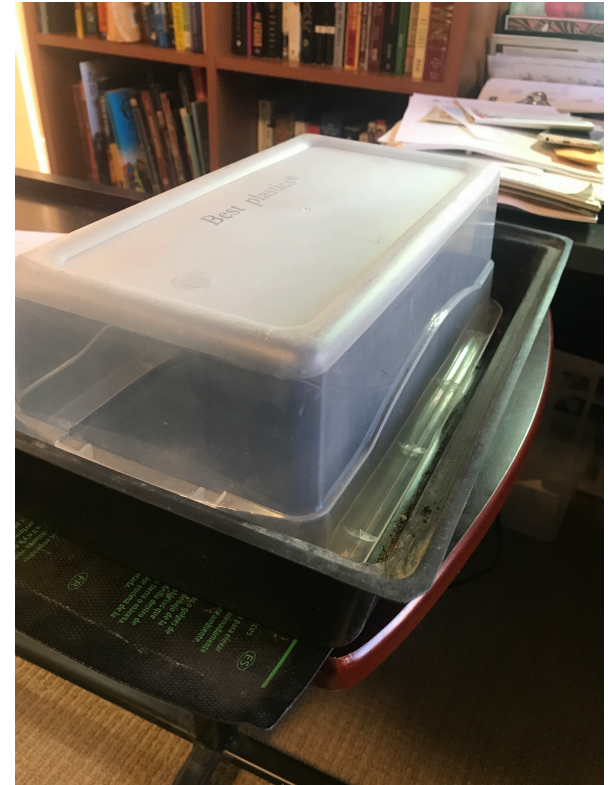
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Homemade Mini-greenhouse

→ Bottom container holds water



→ Upper plastic box acts as a humidity dome



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Questions?

- : Master Gardener helpline for San Mateo/San Francisco counties:
- mgsmsf@ucanr.edu



Seeds

- From a nearby nursery
- Online sources
- Public library seed 'lending' program

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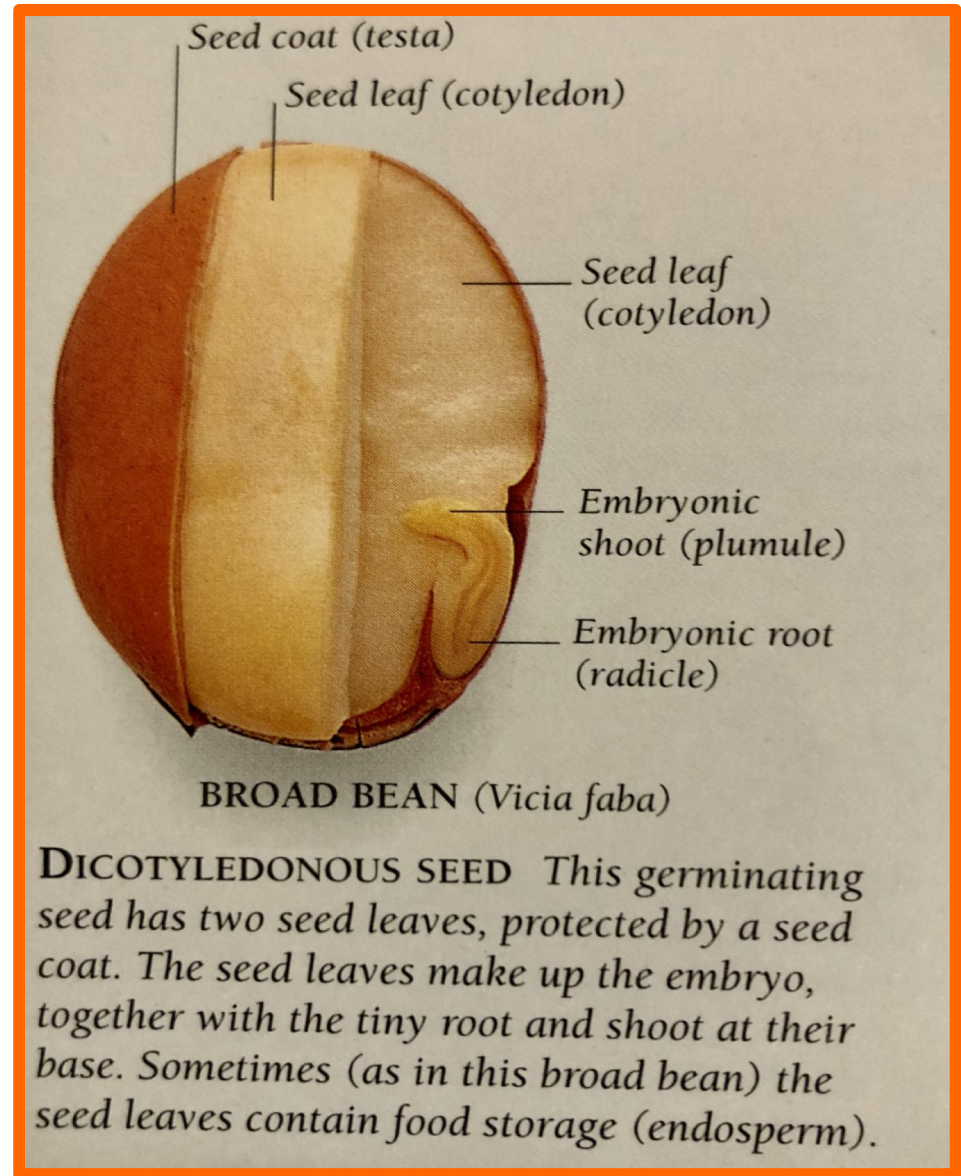
What is a seed?

Seeds contain:

→ Germ or embryonic plant

→ Seed leaf or cotyledon

→ Seed coat

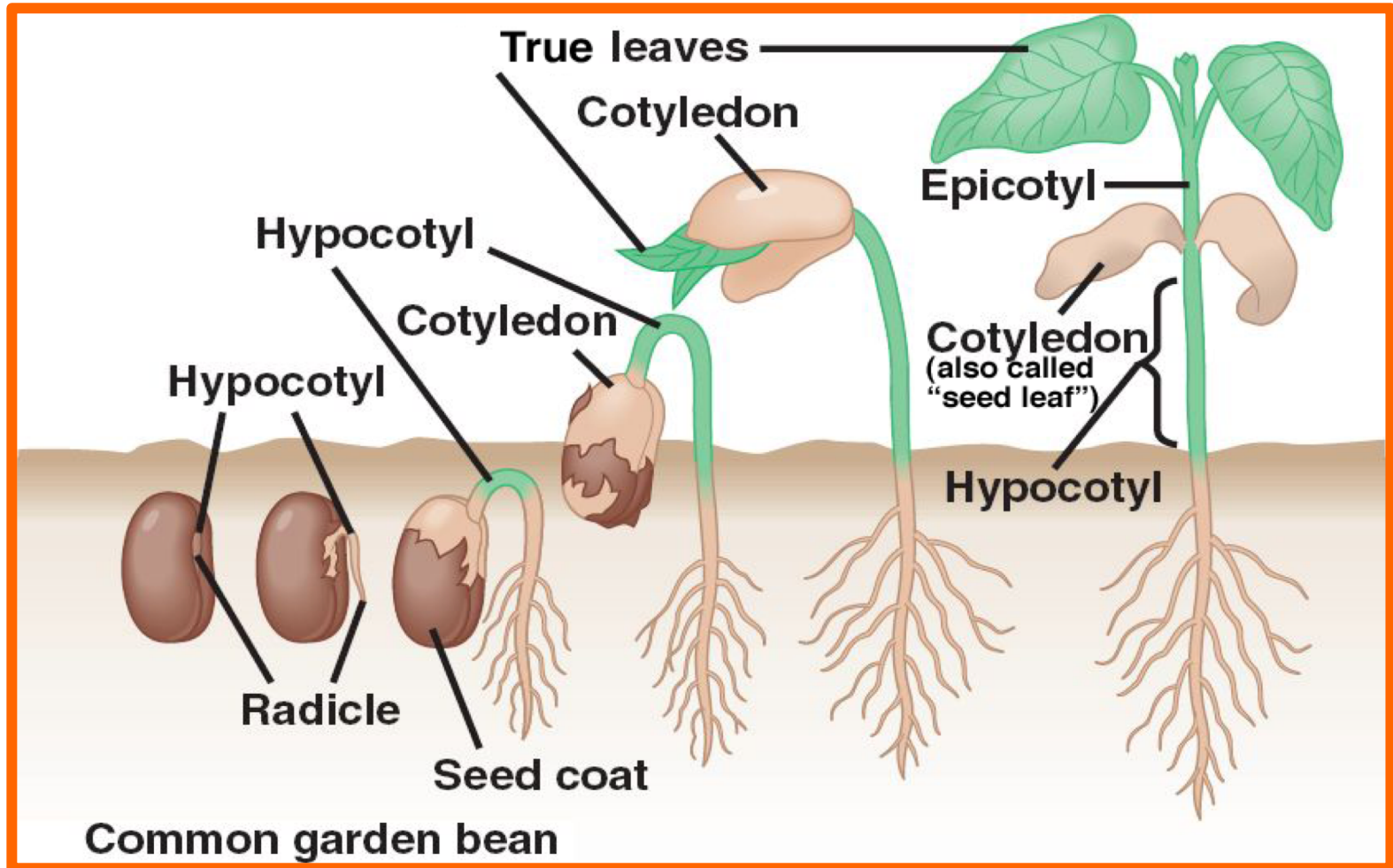


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How seeds develop





How to Read A Seed Packet



Type of Crop

Variety of Crop

Seed Company's name & logo

Total weight of seeds

USDA Certified Organic Label

Visual aid of the produce

Maximum Size

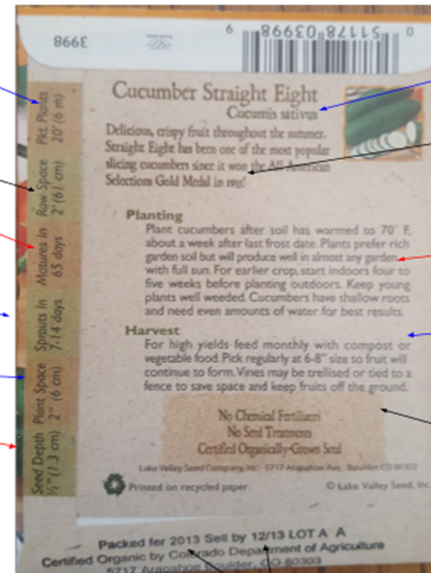
Row Spacing Requirements

Days until Harvest

Germination length

Seed Spacing Requirements

Seeding Depth



Crop's Scientific Name

Seller's Description

Planting instructions

Harvest Instructions

Information on what makes the product organic

Suggested Planting Year

What seeds need to germinate

→ **Right temperature**

◆ **Heat mats**

→ **Right moisture**

◆ **Plastic wrap**

◆ **Humidity hoods**

→ **Right light**

◆ **LED light strips**



Questions?

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Step by Step

- Gather materials
- Fill containers to the top and tap the soil down
- Water thoroughly (I prefer watering from the bottom)
- Prepare a label giving plant name and planting date
- Insert seeds and cover according to packet directions
- Press down lightly to ensure good contact
- Cover with plastic and place in bright place (but not direct sun)



Now the hard part—waiting...

- Seed packet will tell you how long for germination in general, but...
- Temperature and moisture differences will influence how long it really will take
- Monitor moisture and mist soil or water from bottom as needed
- When first true leaves appear, fertilize with quarter strength solution



Almost there—Potting on and Transplanting

- When plants are 2-3” and true leaves are large, it’s ready to pot on to larger container
- If plant is large enough and weather is right it could be transplanted directly to the garden
- Protect from pests and water carefully until plant is well established



Successful Transplanting Tips

- Plant in late afternoon and protect from direct sun for a day or two
- Move damp seedlings into damp soil
- Handle only by the leaves
- Check for watering needs daily until you see that the plant is well established











Pricking out seedlings

→ Marigolds are easy



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Direct Sowing

- **What seeds require direct sowing?**
- **How to sow**
- **Water requirements change after true leaves emerge**
- **Protect from weather and pests**



Hot caps made from milk cartons (courtesy Alaska Public Media)



Potential Problems

- Damping Off Prevention
 - ◆ Sanitation
 - ◆ Quick germination
 - ◆ Excellent drainage and air circulation
- Cutworms, earwigs, snails and slugs, flea beetle, root maggots
- Check out the UC IPM website to get information on prevention and treatment (Their URL is listed in the resource section.)



References

American Horticultural Society. Toogood, Alan, Editor. Plant Propagation. 1999. DK Publishing. ISBN 978-0-7894-4116-4

Bryant, Geoff. Propagation Handbook: Basic Techniques for Gardeners, 1995. Stackpole Books. ISBN 0-8117-3065-4.

Bubel, Nancy. The New Seed-starters Handbook. 1988. Rodale Organic Gardening Books. ISBN 0-87857-747-5

Powell, Eileen. From Seed to Bloom: How to Grow over 500 Annuals, Perennials & Herbs, 1995. Storey Communications. ISBN 0-88266-259-7

Thompson, Peter. The Propagator's Handbook. 1996. Trafalgar Square Publishing. ISBN 1-57076-040-3



Useful URLs for seed propagation

https://ag.umass.edu/sites/agcenter/files/pdf-doc-ppt/SeedCropChart_Ball.pdf

Chart giving lots of information about a wide variety of seeds, including time from seeding to transplant size and transplant to flowering times.

<https://casfs.ucsc.edu/about/publications/Teaching-Organic-Farming/PDF-downloads/1.3-propagation.pdf>

Mainly for commercial growers, but the appendices have an excellent list of non-GMO seed companies, an extensive glossary, charts that give soil temperature conditions for vegetable seed germination and duration of seed viability.

<http://ipm.ucanr.edu/index.html>

Research based information on dealing with pests in an environmentally sound way.

https://vms-mg.ucanr.edu/files/mg/documents/5795Library_of_Presentations-Handouts_-_MGs60329.pdf

Master Gardener Ann Gahagen's PowerPoint slides on saving seeds.

https://vms-mg.ucanr.edu/files/mg/documents/5795Library_of_Presentations_-_MG_Speakers79160.pdf

Powerpoint presentation by Janice Moody and Carol O'Donnell on Growing a Year Rounds Edible gardening on the San Mateo Coast. Has lots of useful charts that apply to our area in general.



More Useful URLs

<https://www.groworganic.com/organic-gardening/videos/seedling-care>

<http://www.johnnyseeds.com/growers-library/key-growing-information-index.html>

<http://www.territorialseed.com/product/basic-growing>

Three worthwhile offerings from commercial seed companies. Catalogs from these companies also have lots of useful information for success with seeds.

<http://www.theseedsite.co.uk/>

A vast resource of seed growing material. Even though it's a United Kingdom site, there's lots of relevant information for California growers. A special treat is a synthesis of Norman Deno's seed starting technique that will save you hours of poring through his lengthy treatise: Seed Germination-Theory and Practice.

<https://www.youtube.com/watch?v=7dlGQP81yfo&feature=youtu.be>

Video shows how to make a container from newspaper (like the photo in the Container section of the class)



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Acknowledgements

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Got Questions? Ask a Master Gardener!

Call our helpline at: (650) 276-7430

Email questions along with an attached photo to: mgsmsf@ucanr.edu

Please do not bring plant samples to the San Francisco Helpline location.

For now we are working remotely, but normally you could visit us here:

Mondays 9-am - 4pm	Wednesdays 10:30 am - 2pm	Thursdays 9am - 4pm
at UC Elkus Ranch in the Conference Center 1500 Purisima Creek Road Half Moon Bay	San Francisco Botanical Garden (SFBG) Library 1199 9th Avenue San Francisco, CA 94122	Veterans Memorial Senior Center (VMSC) 1455 Madison Ave. Redwood City

Please provide the following information to facilitate a prompt response:

1. Name
2. City of Residence
3. Email
4. Phone – Best Time to call
5. Description of Problem/Question*
6. *For plant or pest problems, please attach Photo(s).

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Seed Biology

Asexual vs.
sexual
reproduction
and why it
matters

