

# SEED BROADCAST



**How to.....**

Outside cover image: Cathy Kahn with her anasazi beans.

**Dear Seed Exchangers,**

We wanted to share a few ideas of how to protect ourselves, our gardens, our water, our lives...

With the sustained winds, the drought, and Monsanto all working against our efforts to garden with calm, we felt it important to start thinking about ways to conserve, protect, and recycle materials to help us help ourselves, our neighbors, our communities, and our planet to the best of our abilities!

So here are a few things you can do to help yourselves and the Earth!

Enjoy and keep on planting, growing, exchanging, and co-creating a sustainable future for our children!

Cathy Kahn, Romeroville, April 14<sup>th</sup> 2012.



Trini Martinez's saved cucumber seeds, 2011.



# Seed Saving

Seed saving is easy! Plants want to produce seed, and the seed wants to grow; and nearly everything you're likely to get will be edible. It gets interesting when you want to get specific repeatable results; and when you want to consider long term health of a variety. But what makes seed saving seem so overwhelming is that every vegetable variety is different.

## The Processes - Skills

### 1. Starting seed to grow into plants

Before you start worrying about saving seed, you should be able to start plants from seed. This is a prerequisite skill for the seed saver!

### 2. Managing pollination and controlling cross-pollination

For regular gardening, for food production, this is only a consideration for corn, in which accidental cross pollination shows up in this year's crop. And some plants won't set fruit if there is only one; tomatillos, for example. But for most vegetables, any cross pollinating only matters when you are saving seeds.

To produce seed, pollen from the male flower or flower part, must get to the female flower or flower part. This can be done by proximity, for vegetables that can self-pollinate within the same individual flower (such as tomatoes and peas). Or it may be insects (ants and flies as well as bees - even cucumber beetles) that move pollen from flower to flower, as for squash. A few vegetables are wind-pollinated. Insects may also visit self-pollinating flowers (again, like tomatoes and peas) and cause unexpected crossing; experts disagree on the risks of this. It's apparently affected by the number of insect pollinators in your particular garden, how it is physically arranged, wind, climate, etc.

Avoiding unwanted pollination is done by:

- Isolation, so the wind or insects are unlikely to bring pollen that far. Reference books list very large isolation distances - a mile! This may be critical for commercial seed, or to preserve the purity of a special heirloom; but for your own production, where you can tolerate or remove off-types, it's less important.
- Physical barriers - insect-proof cages or bags. For varieties that need insect cross-pollination this can get tricky; there are many complex ways of hand-pollinating, schemes of caging so insects can get to some plants and not others, etc. Consult the reference books for these details.
- Separation in time, making sure that one variety is done producing pollen before the next one has any flowers.

### 3. Getting plant to stage where it has good seeds

If you leave your vegetables alone, eventually they get to the stage where they produce seed.

- With fruit and pod type vegetables, generally you let the fruit get very ripe - possible too ripe to eat, which may impact your edible crop. Remove the seed and that's it.
- For leaf-type plants, they generally will flower, either the first summer or the second summer. They put up one or more seed stalks with lots of flowers, followed by seed.
- Root vegetables, including some brassicas and chard, store energy the first year in their root, so early the second year they put up flower stalks. These are more effort, since you need to save the plant over the winter. In the Rogue Valley the winters are mild enough that most biennials will overwinter in the garden without any special care.

### 4. Processing seed, and storing until the following season

Usually all that's required is to get the seed dry. Seed must be totally dry to store; otherwise it will rot, sprout or get moldy. A few vegetables, like tomatoes and cucumbers, are usually fermented before drying - this increases their ability to sprout and gets rid of some diseases. Imagine how in nature the ripe fruit falls and decays, this is the same system. But usually, just get the seed very dry, and store in a cool place or freeze until the next year. Do not dry seed in the oven or a hot dehydrator or anywhere it may overheat, which will kill the seeds.

Some types of seed will remain viable for many years, but other seed loses its ability to sprout after a year or so, even under the best condition.

# The Science - Knowledge

## 1. Hybrid, open pollinated and heirloom

Commercial seed is either **hybrid** (F1) or **open-pollinated**. Hybrids are crosses between two distinct and different varieties; the first generation is consistent but later ones may vary greatly. Sometimes the results of saving seed from hybrids are good, other times very disappointing. **Open pollinated** varieties will produce seed that will in turn produce new plants just like themselves. When seed saving, it's better to start with open-pollinated seeds. **Heirlooms** are open pollinated varieties that have been around by name for a long time, usually 50 years.

There's nothing inherently wrong with hybrids - it's completely different than GMO (genetically modified organisms). You could produce your own hybrid seed at home, and there are commercial organic hybrids. Hybrids are a problem when we're dependent on them and therefore on seed companies.

## 2. Genetic diversity

How many plants should you save seed from? This is a big question without easy answers.

Vegetables are either inbreeding or outbreeding. Inbreeding vegetables pollinate themselves. For these vegetables, you only \*need\* one plant to save seed. However, this means there's risk:

- With each generation that you save seed, you lose genetic diversity; one plant can only pass down one-half the genes of each parent. The other genes aren't available later to adapt to changing conditions.
- A random mutation could show up - possibly one that's not immediately obvious - and spoil your entire gene pool (all your seed).

Outbreeding plants need another plant of the same variety to pollinate them. Outbreeding plants are subject to a varying degree to **inbreeding depression**. This means that if the population from which you are saving plants is too small, after some generations of saving seed, your yields are reduced, plants may die easily, germination may be bad, and strange recessive traits may show up. By this time it's too late to fix the problem, you need to find new seed to mix in.

If you are saving seed for just a few generations, and then willing and able start over with fresh commercial seed, this isn't so much of an issue. The problem of inbreeding only lies in perpetual reproduction.

For plants subject to inbreeding depression, it's recommended to save seed from 40 plants - planted closely in blocks so that they all cross pollinate each other. To retain full genetic diversity, more would be needed; "Seed to Seed" cites a general rule of 100 outbreeders. But you can save seeds from just 20 plants, or even 10, being aware of the risks.

Corn is a special case, since it's very sensitive to inbreeding depression. 100 plants is considered the bare minimum, 200 or more is recommended.

## 3. Selection, evolution and responsibility as curator

When you select individual plants to use to produce seed, you are selecting the traits that this plant will pass on. Select the best plant for reproduction! If you select the first spinach to flower, or the last beet to get to full size, the next generation is likely to bolt quickly, or grow slowly. Selecting the healthiest, best adapted plants over several generations will adapt the variety to your specific growing conditions.

To make sure the vegetable seed is the highest quality, start extras of the seed crop, and "rogue" (yank out) the least desirable - off types, the ones that grow slowly, are smaller, or produce less fruit or fewer leaves. Eat them! It's hard to do this, but this is the responsibility we take on when we save seeds.

## 4. References

Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners, Suzanne Ashworth and Kent Whealy

Breed Your Own Vegetable Varieties: The Gardener's & Farmer's Guide to Plant Breeding & Seed Saving by Carol Deppe

Seed Saver's Exchange: <http://www.seedsavers.org>

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This source can be found at the following web address: <<http://www.sprg.info/seedsave101.pdf>>

## Details for Selected Vegetables

### Lettuce

- Allow to bolt and flower; collect seeds as they are ready to fall from plant.
- Inbreeding, self-pollinating, possible but not likely to cross, separate slightly
- No inbreeding depression, can save from one plant (although more is better)

### Beans and Peas

Peas, beans, soybeans, chickpeas and favas will not cross between families, but within each species may cross, so for example snow, snap and shell peas may cross with each other but not with beans.

- Long lived seed
- Let pods dry on vine
- Inbreeding, self-pollinating, may insect pollinate, possible to cross if you have insects, separate slightly.
- No inbreeding depression, can save from one plant (although more is better)

### Tomatoes

- Long lived seed
- Allow fruit to get very ripe, squeeze out seeds and let the juice/seeds ferment, then clean and dry.
- Inbreeding, self pollinating, possible but not likely to cross, separate slightly or bag.
- A few specific varieties have different flower shape, and are much more likely to cross.
- No inbreeding depression, can save from one plant (although more is better)

### Peppers

- Allow fruit to get very ripe, remove seeds
- Self or cross pollinating, very likely to cross by insect visits, separate a good distance or bag
- “Hot” is dominant; the results when sweet pepper flowers get pollen from hot peppers will be hot.
- No inbreeding depression, can save from one plant (although more is better)

### Beets and Chard

- Long lived seed
- Biennial, will flower and set seed the second year; don't save seed from any that flower the same year.
- Allow to flower, set seed, seed dry on plant
- Outbreeding, wind pollinated, will cross with other beets and chards
- Need minimum 6 plants, ideally 20+ recommended for genetic diversity

### Arugula

- Annual, will flower when it gets warm, don't harvest first plants to flower.
- Allow to flower, set seed pods, pods dry on plant
- Outbreeding, insect pollinated, likely to cross with other arugulas.
- Need minimum 6 plants, better 20+, 40 is recommended for genetic diversity

### Brassica oleraca - broccoli, cabbage, cauliflower, kale, collards, brussel sprouts, gai-lan and kohlrabi

These are in the same family, will cross with each other but don't cross with other brassicas.

### Brassica rapa - turnips, broccoli raab, chinese cabbage/mustard, bok choy

These are in the same family, will cross with each other but don't cross with other brassicas.

For all Brassica:

- Leaf and root types are biennials and will flower second year; others such as broccoli, cauliflower, raab, etc., for which the edible part includes the flower, are annuals. For biennials, don't save seed from plants that flower the first year.
- Allow to flower, set seed pods, pods dry on plant
- Outbreeding, insect pollinated, likely to cross within species.
- Subject to inbreeding depression. Need a minimum of 6 plants, better 20+, 40 is recommended, for genetic diversity

### Radish

- Biennial, will flower second year. Use caution in saving seed of early plantings that flower the same year, to avoid encouraging early bolting trait.
- Allow to flower, set seed pods, pods dry on plant
- Outbreeding, insect pollinated, likely to cross with other radishes but not other brassicas.
- Subject to inbreeding depression. Need a minimum of 6 plants, better 20+, 40 is recommended for genetic diversity.

### Spinach

- Allow to bolt and flower; don't harvest first plants to bolt
- Outbreeding, with separate male and female plants
- wind pollinated, very likely to cross with other flowering spinaches.
- Need at least 8 plants to ensure male/female ratio and genetic diversity

## Squash and pumpkins

There are a number of species that are difficult to tell apart. Each will cross within species but not between species. There's no separate pumpkin species or family; pumpkin is a label used on squashes of certain shape and color.

- **curcurbito pepo** (c.pepo) - summer squashes, crookneck and pattipan, zucchini, acorn squash, spaghetti squash, hull-less pumpkin, some other pumpkins (including the very large ones), some smaller gourds such as nest egg gourd.
- **c.moschata** - Butternut, some pumpkins, some asian squash/pumpkins, other squashes
- **c.maxima** - Hubbard, Buttercup, Turban, Potimar- ron, some pumpkins
- There are other species that are less common, including **c. mixta** (cushaws and others). Large gourds are another separate species.

For all the squashes:

- Long lived seed, 5+ years
- Save seed from ripe fruit; for zucchini/summer squash this means they are far past the edible stage.
- Plants have separate male and female flowers, insect pollinated.
- Female flower can be pollinated by male flower from same plant but prefer a different plant. Very likely to cross; separate very widely, grow only one of each species, or hand pollinate.
- Easy to hand pollinate
- Can possibly save from 1 plant, minimum 6 recommended or 12-20 preferred.

## Carrots

- Biennial, save seed second year. Don't save seed from any that flower the same year.
- Will cross with wild Queen Anne's Lace; ensure none is growing nearby, check for and remove white (accidentally crossed) roots.
- Outbreeding, insect pollinated, crosses readily
- Subject to inbreeding depression. Need 20+ plants for genetic diversity, 50 recommended.

## Melons

Watermelons are a separate species and will not cross with cantaloupes and other common melons.

- Save seed from ripe fruit
- Plants have separate male and female flowers, insect pollinated.
- Female flower can be pollinated by male flower from same plant but prefers a different plant. Very likely to cross; separate very widely, grow only one variety, or hand pollinate.
- Can save from 1 plant (although more is better)

## Cucumbers

- Long lived seed, 5+ years
- Plants have separate male and female flowers, insect pollinated.
- Allow fruit to get large, yellow, soft; squeeze out seeds and juice and let ferment
- Female flower can be pollinated by male flower from same plant but prefers a different plant. Very likely to cross; separate very widely, grow only one variety, or hand pollinate.
- Can save from 1 plant (although more is better)

## Onions

Will cross with shallots, but not with leeks or chives.

- Short lived seed, 2 years or less
- Biennial, save seed second year. Don't save seed from any that flower the same year, or onions with double cores.
- Outbreeding, insect pollinated, will cross.
- Subject to inbreeding depression. Need 20+ plants for genetic diversity, 50 recommended.

## Corn

- Short lived seed, 2 years.
- Wind pollinated, readily crosses.
- Crosses affect the current crop, not just next years. For Some hybrids, the crop is badly affected by current year cross pollination.
- Severely subject to inbreeding depression. need minimum 100 plants for genetic diversity, 200 or more recommended.

## Other Tips

- Remember to save seed from the best plants; healthiest, fastest growth, largest crop, most true to type.
- Be aware of what your neighbors are growing; in particular for vegetables that flower as part of normal production (squash, for example)
- For root crops, it's recommended to dig them up and inspect, then replant the best ones for the seed crop.
- For plants subject to inbreeding depression, plant in close blocks to allow as much cross-pollination as possible. Bees moving down a single long row would only pollinate adjacent plants.
- If you are saving seed for a year or two, then restarting with commercial seed, genetic diversity isn't a significant issue.
- Don't forget to take notes and label the seeds and their history.

## Cover Crops

Here at Story Ranch in Mineral Hill we have been working with ways to help lighten our heavy clay soils. This will be our second season working with cover crops and we are intrigued with the results. The past two falls once a bed has been harvested we plant winter rye. As some crops stay in the ground longer than others we can be planting rye from September through late October. Rye planted in early fall can be sown by spreading the seeds on the soil surface and lightly working it in with a rake. We then cover it with straw and water. In later fall when the frosts are heavier we plant the rye in furrows a couple of inches apart and proceed with the straw and watering. Both methods need light watering to encourage good sprouting and once up the rye needs virtually no additional care. In the spring, 3 weeks before a bed is to be planted we dig in the rye so all the green matter is completely covered by soil, break up large dirt clods and cover lightly with straw and water. When ready to plant prepare the soil as usual.

During the summer we cover crop any bed or garden area we are 'resting' with buckwheat and follow the same procedure as above. It is best to dig in buckwheat before it goes to seed. Should either cover crop become too tall to break down adequately after it's turned in, the greens can be cut for composting and what remains tined into the soil.

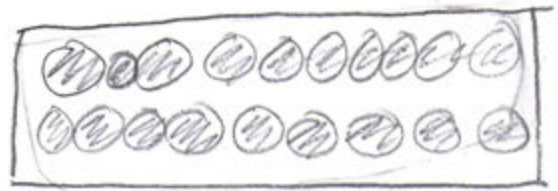
We have found that when the cover crop has broken down the soil is lighter, more open, and better able to absorb water. However, as the growing season progresses the soils begin to become more compact and difficult to work. It is our hope that as we continue cover cropping the benefit will last longer into the season.

Contribution: Suzanne Coffey





# Egg Shell seed pots



When you break your egg try to make 2 equal halves and let the shells dry. With an icepick (or sharp point) put a hole in the bottom of shell, fill with potting soil, put your seed in, water, and watch it grow!

When you are ready to plant, crush shell slightly and plant the whole thing! Source of calcium too...

## Getting Them Seeds to Start

Last year when I realized that my artichoke seeds needed a higher temperature to germinate than existed in our home- I sought a consistent warmth that would not plummet at night. The great realization was that seeds do not need light to germinate- what an idea! They need soil, warmth and moisture. In search for warmth, two places came to mind- Our hot water heater closet and our elderly O'Keefe Merritt cook stove. For convenience, the cook stove won out. Our oven pilot has often been seen as a waste of gas and generally we keep it off (or rather it obstinately keeps itself off).



I planted the seeds in clear recycled salad containers with lids, moistened the soil, closed the lid, wrapped it loosely in aluminum foil and placed it in the dark confines of the oven chamber that with the pilot light was able to maintain a low 70 degrees. You need to keep a daily watch on them after 2-3 days for once they sprout, it is time to pop them out of the oven and into the cooler, clear light of day

Contribution: John McLeod

## Make your own mini greenhouse!



To protect your young seedlings from the spring cold and winds, try covering them with clear plastic bins. This is an excellent way to create a cost-effective, low-labor, mini greenhouse.

Please remember that you may need to uncover these during day, depending on daytime temperatures and sunshine.

This method works wonders for keeping transplants protected from nighttime, freezing temperatures and the dry, gusting, spring winds. It is also a great way to germinate seeds, by keeping the moisture levels high, and soil temperatures warm.

Place large rocks on top, to keep the wind from blowing these over.

Contribution: Barbara Ewing



# Seed Envelope

## Materials:

recycled brown paper bag

scissors

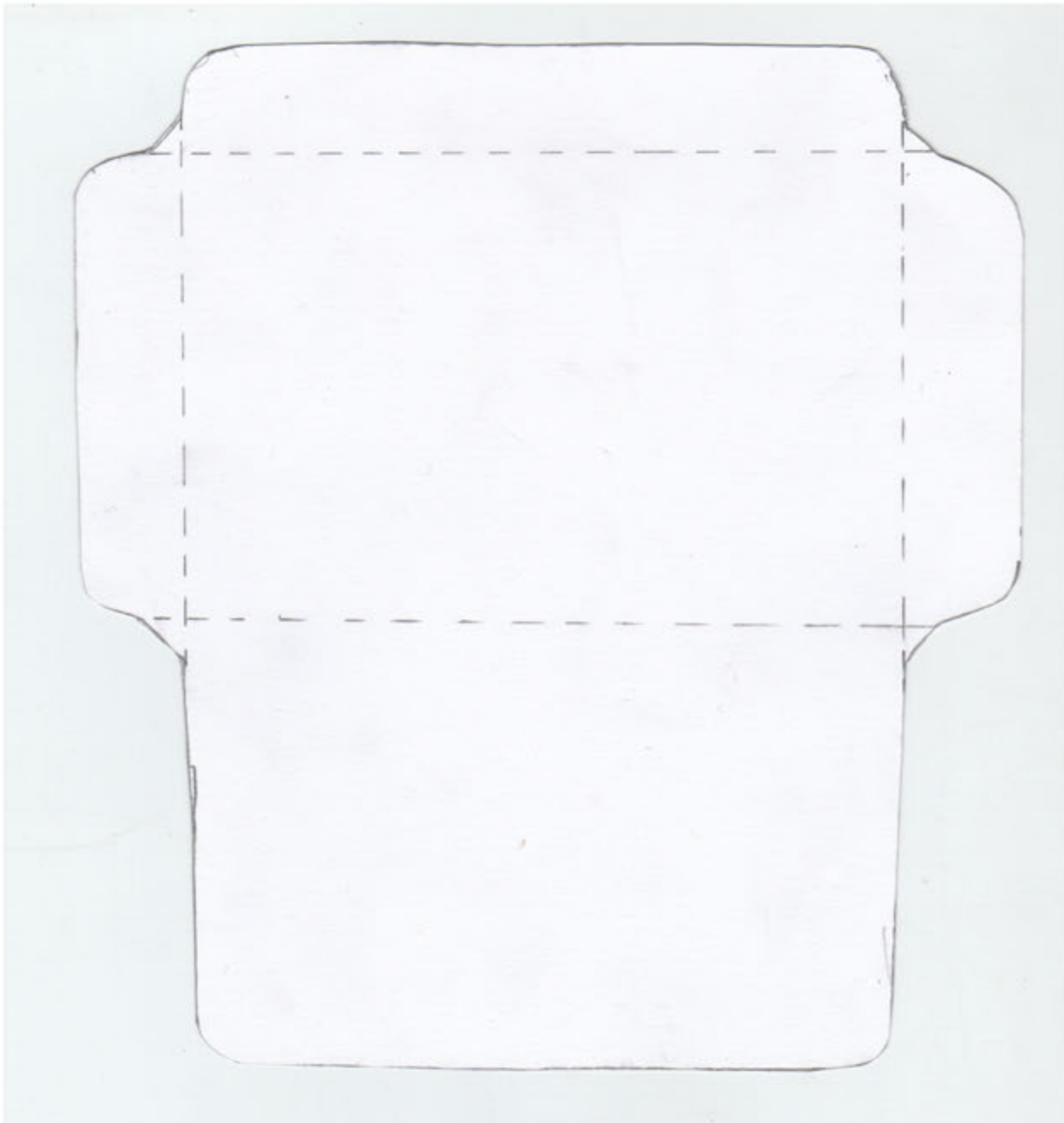
straight edge

pencil

glue(non-toxic water based)

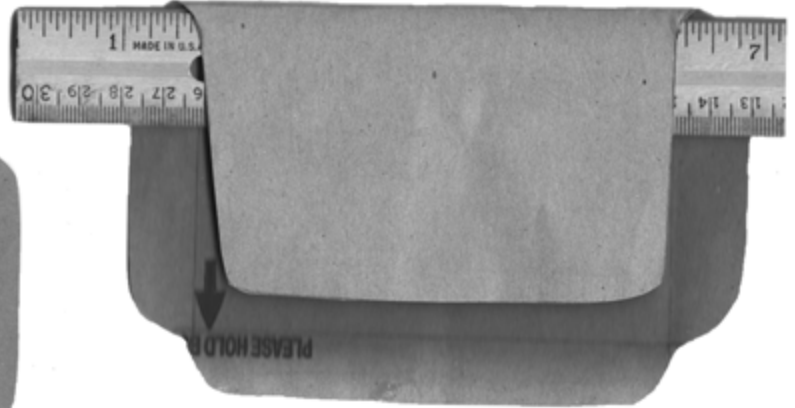
## Template

cut this out and use to draw shape on the brown paper

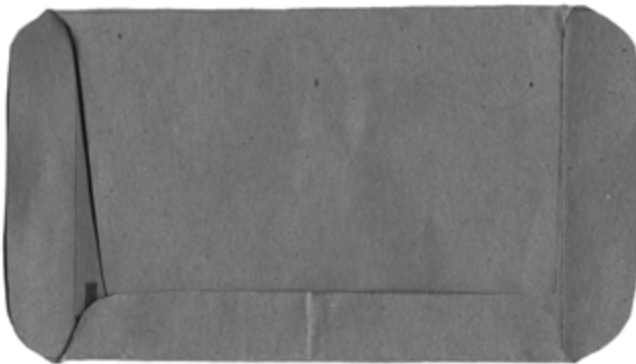




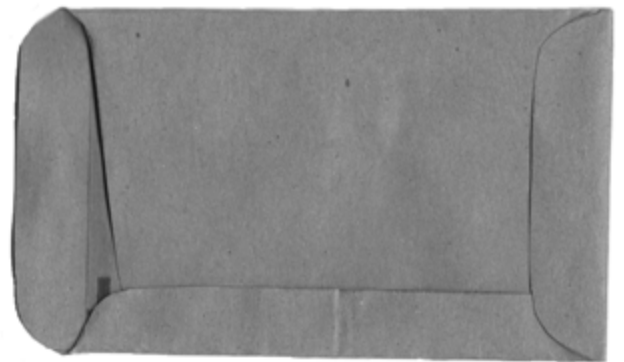
Mark fold lines.



Fold. A straight edge helps.



Glue small flap over large.



Glue end flap. Leave top open.



Label. For example:  
images and details of your seeds.

Contribution: Chrissie Orr



## Panocha

Place wheat in a flour sack.

Soak in water 24 hours.

Take from water and after draining put in warm place for about 2 days, till the wheat sprouts.

Then place on a table to dry.

When well dried, grind fine like flour.

Mix 1 part wheat flour to 2 parts sprouted wheat flour.

Add caramelized sugar to taste and enough hot water to mix well.

Let stand 30 minutes before cooking.

Bake in oven till brown and thick like jam.

*From New Mexico Dishes compiled by Margarita C. De Baca. Copyright 1937.*

Contribution: Adrienne O'Brien



**The way I store and use Calabacita Mexicana (Pumpkin) throughout the winter and save the seeds for the next growing season.**

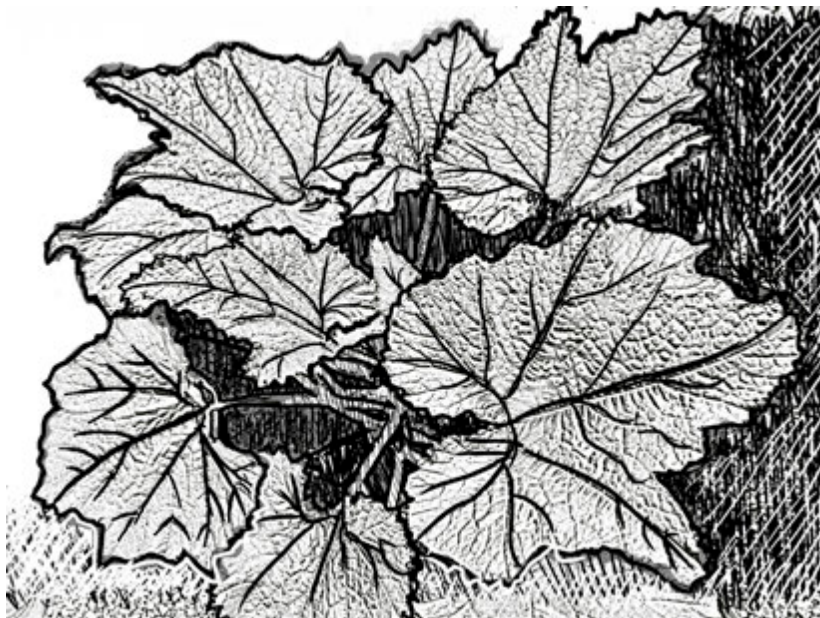
1. Choose three or so pumpkins from different plants and allow to grow as large as possible.
2. Ripen on the vine.
3. Harvest in the fall and store over the winter in a cool room.
4. As you are going to use them for winter meals, pull them out of storage, slice them up, and scoop out the seeds.
5. Place seeds on an old newspaper. (Newspaper absorbs the moisture)
6. Separate pulp from the seeds. Feed the pulp to your chickens.
7. Allow the seeds to sit on your countertop for 4 - 5 days or until dry.
8. Then mark on an envelope - type of variety of vegetable, what year, and where it was harvested. Place seeds in the envelope.
9. Cut calabacita meat and shell into 4 x 5" squares and boil until soft.
10. Then remove the shell. Feed shells to chickens.
11. Use the cooked calabacita meat for baking, or you can put it in a bowl and cover with honey to eat for breakfast.

The sweetest calabacita (pumpkin) is the Calabacita Mexicana when fully mature. SWEET!

When baking with calabacita (pumpkin) add a little millers wheat (wheat bran) to the mixture. This adds fiber to your diet.

Bake calabacita with any of your favorite recipes. Enjoy!

Contribution: José Maestas



Spring is in the air. You can smell it. One's hands want to get in the dirt.

So much to do.

So much happening and each day flip flops from spring to winter.

I start de-grassing the beds and start planning what to plant and water.

Sort through seeds. Get rid of old seeds and figure out what I will need to get my son to do in the garden.

Prepare the beds for strawberries, water, find existing strawberries from last year, find out what strawberries need soil wise, etc.

Plant peas, lettuce greens, and root crops.

Get mulch, weed garlic and check.

Weed and water rhubarb.

Look and help perennials.

Good luck.

Start the next time I am home with time energy and weather.....



Contribution: Lucille Joseph

## For Garlic

The timing is offset from the other gardening activity.  
Garlic put in the ground between Columbus Day and when the ground is frozen.

Harvest in July once the tops start to yellow.....  
Do not water too much before harvest.

Save larger heads and let them dry and cure totally.  
Keep them in a cool dark place until planting time.

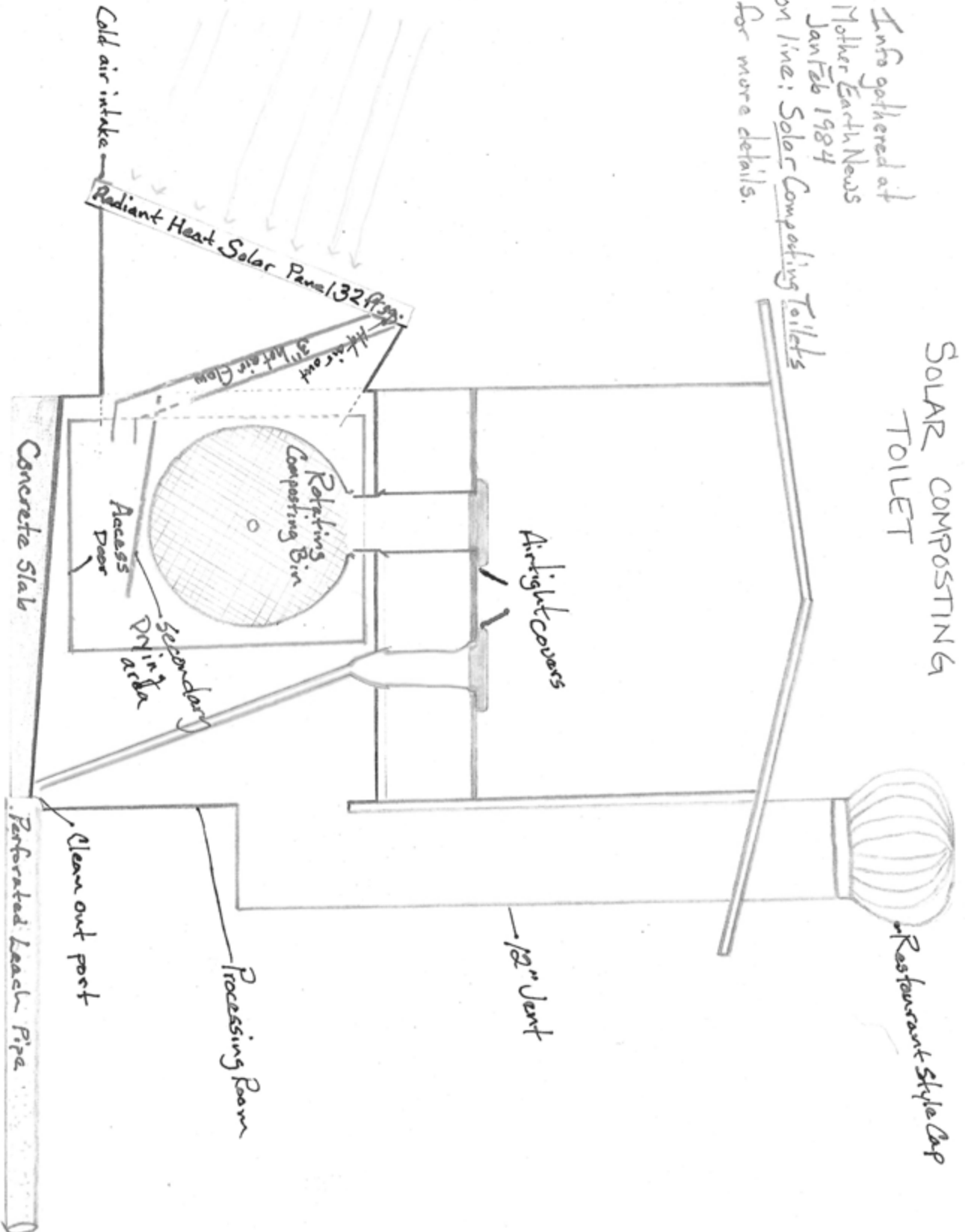
Plant individual cloves for top setting garlic. The bulb can also be planted but they will take two years to form a full garlic.

Good luck, keep it weeded and mulched.



# SOLAR COMPOSTING TOILET

Info gathered at  
 Mother Earth News  
 Jan/Feb 1984  
 on line: Solar Composting Toilets  
 for more details.

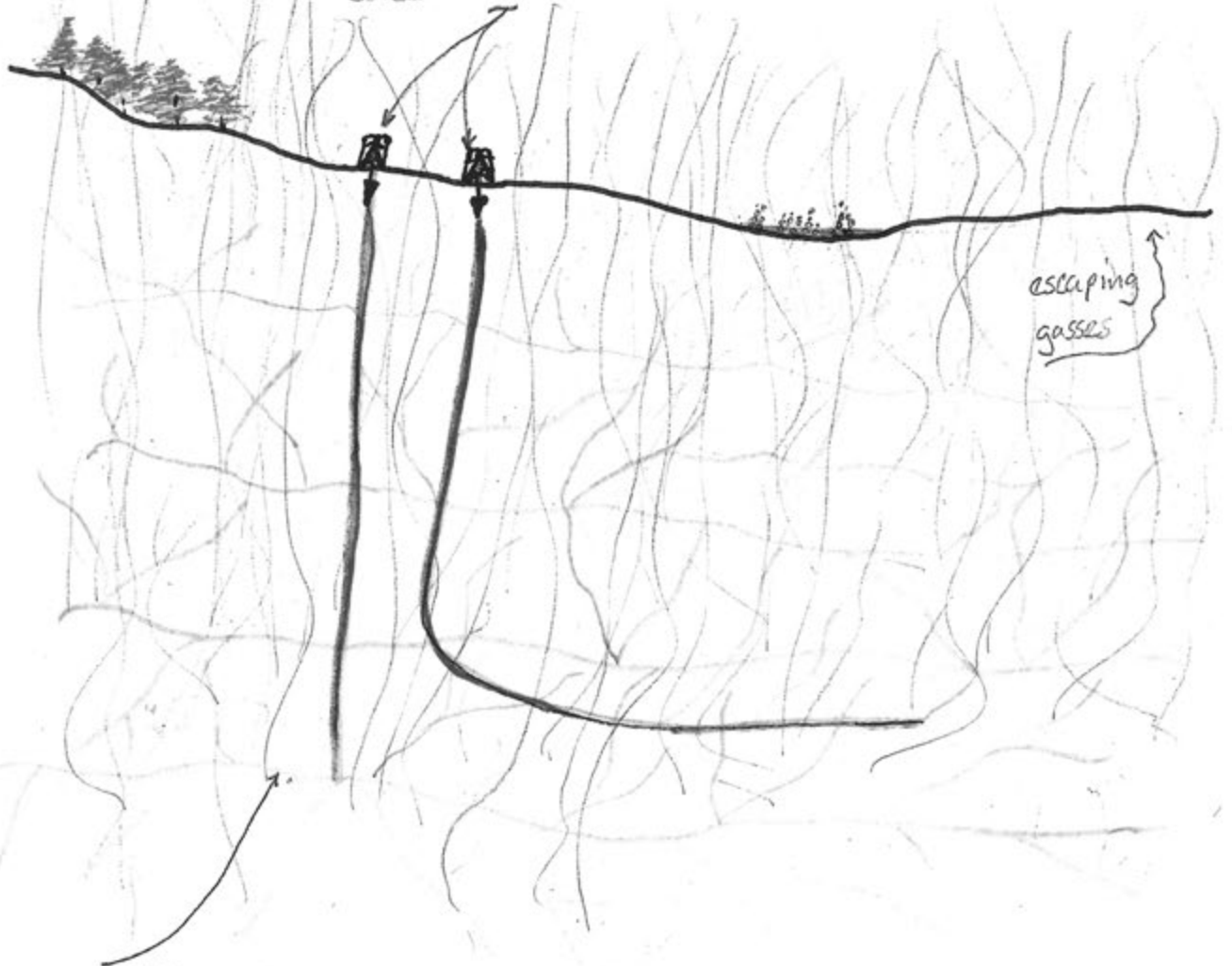




## You Can't Catch a fart

Fracking requires: one million to five million gallons of water minimum per hole, per fracking plus over 2000 "secret" chemicals. Dangerous, Toxic chemicals.

The Fracking mixture is forced into shafts bored into the earth.



The Fracking mixture travels into sand beds, faults, and natural cracks randomly and expands to fracture the bed rock. There is no way to predict where the fractures will occur. As a result, the gas escapes from the ground everywhere the fractures go. There is no way to contain the escaping gasses. These gasses are toxic to humans and animals. It would be as difficult to catch a fart as to catch the gasses from Fracking.



# MOBILE SEED LIBRARY



What is a seed library, you ask...?

A seed library is many things: a year around location where you can drop off and pick up local, open-pollinated seeds, a great place for finding gardening, farming, seed saving information, a community bulletin board, and most importantly a place where we can hear the stories of seeds and the people who grow them.

Seed Broadcast is now working on establishing a mobile seed library, housed in the van above. We are at the beginning stages of this project, and would love to hear from you and what you think a seed library should be.

This summer we will be traveling around Northern New Mexico, asking folks about seed stories and what they value in saving and sharing seeds. Then, we will conduct a cross-country exploration of grassroots, seed libraries. We hope to learn a lot from everyone sharing their stories and library how-to's. We also hope to broadcast these seed stories across the country, forming a diversified voice of grassroots seed sovereignty in cumulus solidarity. In the fall, 2012 we hope to be back in Northern New Mexico, returning with a wealth of inspirations and a desire to hear local seed stories. In 2013, we will actively begin forming the Seed Broadcast Mobile Seed Library.

Here are some of the questions we are asking:

Why did we stop saving seeds?

Why did you start saving seeds?

Why do you share your seeds?

Do you think, you can grow all the seeds you need in your garden or on your farm?

Do you have any concerns regarding seeds and seed saving?

Do you have a particular seed story, you would like to share?

If you are interested in helping with this project please fill out a Seed Library Survey at the Las Vegas Seed Exchange and keep in touch!

Contact:

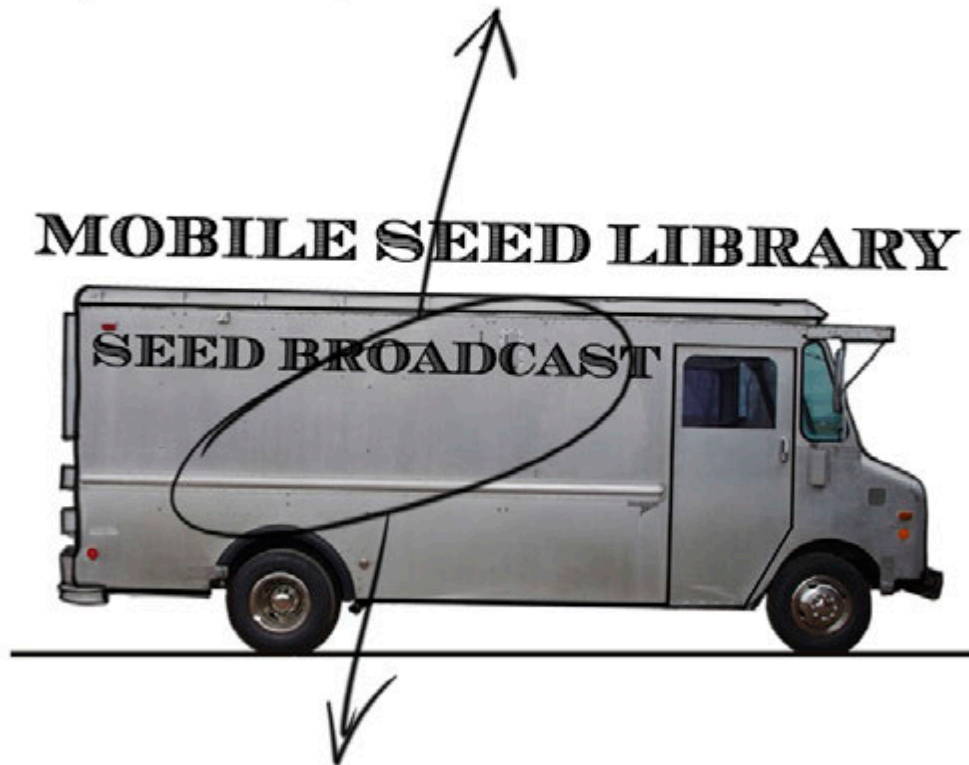
[seedbroadcast@gmail.com](mailto:seedbroadcast@gmail.com)

Jeanette Hart-Mann at 1-575-427-0037

Chrissie Orr at 1-505-699-7269

# Calling all artists and lovers of seeds:

*Would you like to help create a mural for the  
Seed Broadcast Mobile Library?*



*What do you think should be included in the mural?*

*This summer we would like to invite local artists, students, kids, gardeners, farmers, and anyone who eats, to collaborate on a community mural project. The Seed Broadcast Mobile Seed Library needs a retrofit to voice our imaginations and intentions!*

*If you are interested in this project please contact us and let us know.*

*Please call or email:*

*seedbroadcast@gmail.com*

*Chrissie Orr 1-505-699-7269*

*Jeanette Hart-Mann 1-575-427-0037*

# SEED BROADCAST

Seed Broadcast is a collaborative project exploring grassroots seed action through collective inquiries and hands-on creative practices. Throughout the year, we gather to discuss critical issues surrounding seed and food sovereignty, visit local farms and gardens to experience what is happening in the field, and engage in creative projects, to dig deeper into the real how-to's of local agri-culture.

Seed Broadcast believes that all individuals in our communities possess a genius of place that nourishes our subsistence. This is the fluid, dynamic, and innovative knowledge we uncover in ourselves and the world around us, that pollinates our thinking and grows our gardens, as creative forces to be reckoned with. These are our seed stories, voicing a declaration of food for thought, vitality, and our future, while countering the political and economic domination of our current life-blood, our food, seeds, and natural resources.

We welcome all interested to join us, as we continue to be inspired by the seed stories of farmers, gardeners, and everyone who eats, as well as, the stories of the seeds and environments that sustain us all.

Do you have a seed story to share? We would love to hear it...

Contact:

[seedbroadcast@gmail.com](mailto:seedbroadcast@gmail.com)

Jeanette Hart-Mann - 1-575-427-0037

Chrissie Orr - 1-505-699-7269

[www.seedbroadcast.org](http://www.seedbroadcast.org)



## How to.....

Contributions by:

Lucille Joseph, Guadalupita

Seva Joseph, Taos

Adrienne O'Brien, Las Vegas

Barb Ewing, Mineral Hill

Cathy Kahn, Romeroville

Chrissie Orr, Santa Fe

Jeanette Hart-Mann, Anton Chico

John Mcleod, Mineral Hill

José Maestas, Las Vegas

Ralph Laumbach, Romeroville

Suzanne Coffey, Mineral Hill