

## **Saving and Storing Seeds** by Sr. Glen

Seeds are vital to every type of agriculture. This chapter is about preserving and storage of seeds without refrigeration.

In agriculture we often refer to seeds in two different forms or styles. For example we call the small plants coming from bananas trees or plantain tree “seeds”. We do the same with the stalks or the canes of zacate. They are often called seeds. But that is not the type of seed this chapter is talking about. In this chapter we’re talking about the normal typical seeds like corn, beans, tomatoes, papaya, watermelon, cantaloupe, cucumbers, Leucaena, sorghum and amaranth. That is the style of seeds we are discussing in this chapter.

Storing Seeds is extremely important for agriculture because that is the primary way that people grow plants. Most seeds do not need any special care if they are going to be stored for only a few months. But most seeds need special care for storage if they’re going to be used next year or in two years. In other words storing most seeds for three or four months is easy but storage for one or two or three years requires extra effort. In this chapter we will discuss the extra effort.

The two main considerations for maintaining healthy seeds that will germinate after storage for a year or more are temperature and moisture.

Getting the moisture down low is very important. Typically drying seeds will require from 1 to 3 weeks in a dry environment. A drying environment is a warm or hot place with good air circulation and no rain or moisture. The ideal temperature is approximately 35° Celsius . A lower temperature can be used but will require more time. If the temperature is over 45, the germination rates begin to suffer. Therefore it is best to keep the temperature 35 to 40°.

There are several ways to try to evaluate if the seeds are dry enough. Some seeds like corn and beans can be tested with a tooth or a fingernail. When the bean is sufficiently dry, a finger nail or a tooth should not be able to easily dent the seed.

After the seed is believed to be thoroughly dry, this is a simple way to test if it is really dry enough. Begin with a thoroughly dry jar or bottle that is clear allowing you to see into the bottle or jar. Put 3 spoonfuls of dry salt into the jar and place the lid on the jar and shake the salt around the jar. If none of the salt sticks to the side of the jar, then the salt and the bottle are dry and ready to add the seeds into the jar. Add approximately one cup of seeds to the jar and and shake the jar so the salt and the seed are thoroughly mixed and then allow it to sit for 20 minutes. After 20 minutes shake the jar again. If salt sticks to the side of the

jar, the moisture in the seeds is too high and needs more drying. If salt does not stick to the side of the bottle, then the seeds are sufficiently dry to be saved.

Steps for storage of seeds.

Seeds should be stored in clean dry jars or bottles that have good airtight lids. The size of the jar should be the correct size for the amount of seeds being stored. In other words, the goal is to have a bottle that is totally full. In some situations multiple bottles will be needed. Some bottles might be large like 3 liters and some bottles might be very small like half a liter. But the goal is to fill every bottle 100% full. Be sure that every bottle is 100% dry. Put the empty bottle and lid in the sun to be sure that it is 100% dry. The purpose of filling the bottles totally full is to reduce the amount of oxygen in the bottle.

Put a small amount of a powdered insecticide in the bottom of the jar. A portion of the pill that is normally put with corn or bean could be used. Powdered insecticide is not absolutely necessary. It is only good insurance. If powdered insecticide is not available, don't worry. Also, later when we have Neem available, that is an excellent natural insecticide. Hot chile powder is also a good natural insecticide. But if none of those are available, then just depend on a full bottle that has no oxygen and very dry seeds. Without oxygen the insects will soon die.

Prepare approximately 1/2 cup of dry uncooked rice to go into each 3 liter bottle. Smaller bottles would receive less amount of rice. Put the rice in a pan on the stove. Be sure the pan is dry and has no water. Heat the rice in the pan for approximately five minutes shaking and moving the pan so the rice does not burn. Allow the rice to cool until it does not burn your hand. Then using a funnel pour the rice into the jar. After the rice, add the insecticide and then pour in the seed shaking the bottle so the seed compacts and is very tight and the bottle is totally full. Now apply the lid tightly so no air leaks out or in. Now that bottle is ready to be saved. A piece of tape with the date and the name of the seed should be applied to the bottle. If there are multiple bottles repeat this process with each bottle.

The next thing is for the storage of the bottles. They should be stored in the coolest possible place. That is normally on the floor in the center of the house or the room.

Corn and bean seed should remain good for planting for approximately two years. Watermelon and cantaloupe and cucumber seed should remain useful for approximately three years.

When we harvest seeds at CAO, if the seeds are very moist, they should be put outside on the ground on top of a piece of plastic or a table or something or cement floor to dry in the shade until they do not feel moist anymore. When they feel dry to the touch, they can go into a clean empty feed sack and that sack can be tied to the ceiling of the bodega where it is extremely dry and hot. The string should be long enough so that the bottom of the sack is approximately your head height. Inside the sack they should dry completely in 1 to 3 weeks. The amount of time depends on how dry the seeds were at the beginning and what is the climate like. If the climate is hot and dry, they will be ready more quickly than if the climate is cool and wet.

With your hands move the sack so the seeds inside the sack move each 2 days. In other words shake the sack so the seeds move around and have a new place inside the sack every other day. After a week you can begin to examine of them for moisture using the techniques that we described previously first using your tooth or fingernail and then with salt. When they are totally dry, then follow the bottling instructions that I described previously.

Keeping seeds in the refrigerator preserves the life of the seeds for much longer time. Five years or more is possible in the refrigerator. But the problem with the refrigerator is moisture. If a bottle goes into the refrigerator and is not opened, those seeds can keep for many years. But the problem is when the bottle is opened to use some of the seeds, warm air enters into the bottle and the warm air has moisture. That creates a problem. If we have seeds in the refrigerator and you need to use some of those seeds, before opening the bottle have everything ready so that when you open the bottle you pour out the seeds and immediately put the top back on and put the bottle back in the refrigerator. All of that should happen in maybe 10 seconds.

For our purposes at CAO sometimes we will keep our seeds in the refrigerator especially if they are rare seeds that we will not be planting for years but normally when we are teaching rural people how to save seeds, we will not talk about a refrigerator. We will only teach them the bottle technique.

Let's all be on the lookout at CAO for seeds to save so we can save them for planting and for donating.