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Storing Seeds in a Home Refrigerator

Note that this only applies to seeds that tolerate refrigeration ("orthodox" seeds). There are some seeds that do not, or, in any case, do not last long when refrigerated (these are called "recalcitrant" seeds). Most small seeds that are dry when mature are orthodox. Large seeds that are moist when mature, such as mangoes and avocados, are usually recalcitrant. If you know the scientific name of a plant, you can try looking it up in the Kew Gardens seed data base at:
http://www.kew.org/data/sid/sidsearch.html

Storage Life of Seeds in Refrigetators

In my apartment in Honolulu, the average air temperature is around 24.6 deg. C (76 deg. F), and the relative humidity is 62%. Inside my self-defrosting home refrigerator, the temperature is 4 deg. C (39.2 deg. F) and the rel. hum. is 35%. We can use an equation called the "seed equation" to calculate changes in seed life span under different temperature and moisture regimes. If seeds last 1 year left in the open in my apartment, we would expect them to last 12 years in open storage in the refrigerator. Drying them to germplasm gene bank standards, then storing them in airtight containers in the refrigerator would extend their expected life to 25 years. If they could tolerate freezing, freezing would extend their storage life still longer.

Practical Aspects of Storing Seeds in Home Refrigerators

Drying seeds to gene bank standards requires some special procedures. Once they are dried, they need to be stored in containers that will be airtight for many years. Otherwise, moisture will gradually seep through the seal and change the moisture level of the seeds over time. In our seed bank, we take these measures, since our goal is to maintain maximum viability for long-term storage.

For many users, the difference between extending shelf life 12X over open storage and 25X over open storage may not be important. Such users can use the following procedure to prepare their seeds for storage:

After cleaning the seeds, spread them in a thin layer in a container with an airtight lid. Leave the lid off and place the container in a self-defrosting refrigerator. Leave the seeds in the refrigerator for a month or so to let them dry. After they are dry, open the refrigerator door, immediately cover the container with the airtight lid, and take the container out. Let it sit until the seeds come to room temperature. This is to prevent moisture from the air from condensing on the seeds and undoing the drying. Once the seeds have come to room temperature, you can package them for storage and put them back in the refrigerator. The containers do not have to be airtight, but they should not allow condensation to form on the seeds when you take them back out.

When you are ready to use the seeds, take the container out from the refrigerator and let it come to room temperature before opening it. The seeds will have become unnaturally dry during storage, so you should not sow them right away. Instead, leave them in a very humid atmosphere for a day or two before allowing them to contact water. Otherwise they may absorb water too fast, causing damage that will disrupt germination.

This method works because the air inside a self-defrosting refrigerator is very dry. By coincidence, at least in Hawai`i, the moisture level inside is not far from the optimal relative humidity for seed storage. (The optimum is 20%.) The rel. hum. inside nonself-defrosting refrigerators is higher. If seeds are stored inside nonself-defrosting refrigerators, they should be dried elsewhere, then stored in airtight containers.