

# SAFE STORAGE FOR SMALL QUANTITIES OF SEED

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## INTRODUCTION

Seeds are stored for several reasons. It is sometimes cheaper to produce your own seeds and store them until they are needed, than to buy them. The seeds you want may not be available for sale in the stores. For some crops, packaged seeds are not prepared at all. This is the case with many of the traditional leafy vegetables grown by subsistence farmers.

If you want to store seeds, they must be properly prepared and protected so that they do not get spoiled or destroyed during storage. All seeds eventually die if they are not planted. Seeds that are stored badly die sooner than seeds that are well stored.

Well prepared and safely stored seeds ensure that a crop can be grown again in the next season.

## PREPARING SEEDS FOR STORAGE

### Drying

The most important thing in preparing seeds for storage is to make sure that they are well dried. Seeds which have not been properly dried may be attacked by moulds and insects.

One way to dry seeds is to lay a mat or plastic sheet on the ground or on a platform raised off the ground. This should be in an unshaded place where the sun shines all day. Spread the wet seeds thinly over the mat. To make sure that the seeds dry evenly they should be stirred and turned 4-5 times a day. If it starts to rain, the seeds can be quickly covered by pulling one end of the mat, or plastic sheet, up towards the other, and taking it into a house or under a shelter.

Every evening before it gets



*Dry your seeds on a mat or plastic sheet in the sun. They can then easily be carried indoors when it gets dark or starts to rain.*



dark, the seeds should be covered and taken indoors or under cover. Take the seeds out again in the morning when the sun is shining. Spread the seeds out, as before. Do this until the seeds are well dried.

There are several ways to find out when a seed has been dried well enough for storage:

1. If it is a large but thin seed, it will break with a 'snapping' sound when twisted between the fingers. This method works with seeds of melons, pumpkins and gourds, and other similar seeds.
2. If it is a large, thick seed and cannot be broken between the fingers, it will break with a 'crack' when bitten between the front teeth. This works well with maize (corn), beans, peas and also for smaller seeds like sorghum.
3. Smaller seeds are best squeezed between the fingernails. They will break with a cracking sound. This works for cabbage, lettuce, radish, capsicum, chilli, okra and amaranth.

Store only well dried seeds - they will live longer than badly dried seeds.

### Cleaning

The dried seeds should be cleaned. Any dirt, stones, straw or other rubbish must be removed from the seeds. At the same time, remove any small misshapen or broken seeds. Only good well formed seeds should be kept. These will give you large healthy plants and a good crop.

### PROTECTION OF SEEDS FROM INSECTS

Seeds are attacked by a number of insects called stores products insects. These insects

feed on stored seeds and foods. If they are not controlled they can eat up and destroy stored seeds. Some stored products insects will feed on almost all kinds of seeds, others feed on only one kind of seed. Stored bean seeds are attacked by a group of beetles called bruchids.

It is therefore necessary to protect all seeds from being attacked by insects while they are stored. There are a number of ways to protect seeds from insect damage:

1. Dry ashes from a wood fire can be used to protect seeds. It is important to use only the white ash from a fire - any wood or charcoal must be thrown away. The ash must be fresh, dry and cold. Hot ash will kill your seeds. Wet ash will wet the seeds you have just dried. Old ashes are usually wet. It is best to collect ash from a fire-place in the morning before the fire is lit again. 500 g of fresh dry wood ash are required for every kilogram of seed to be stored. After the ash has been mixed with the seed, add a little more to cover the seed in the container.
2. Lime (Tok pisin - kambang; Motu - ahu) (as used with betelnut). When lime is mixed with seeds it will protect them from insect attack. 50 g (15 teaspoonsful) of lime are needed for every kilogram of seed to be stored. The lime must be thoroughly mixed with the seed, by shaking it in the packet or container in which it is to be stored.
3. Diatomaceous Earth - This is widely available in most of the larger towns in Papua New Guinea to filter swimming pool water. Diatomaceous earth can also be



used to protect stored seeds. It is more effective than the two methods given above. 10 g (or 3 teaspoonsful) of diatomaceous earth are required for every kilogram of seed to be stored. The diatomaceous earth should be thoroughly mixed together with the seed by shaking it in the packet or container in which it is to be stored.

### Bean seed

To stop bruchid beetles damaging bean seeds these can be coated with vegetable oil. Any vegetable oil can be used: marita oil, coconut oil, palm oil, vegetable cooking oil. DO NOT USE ENGINE OIL.

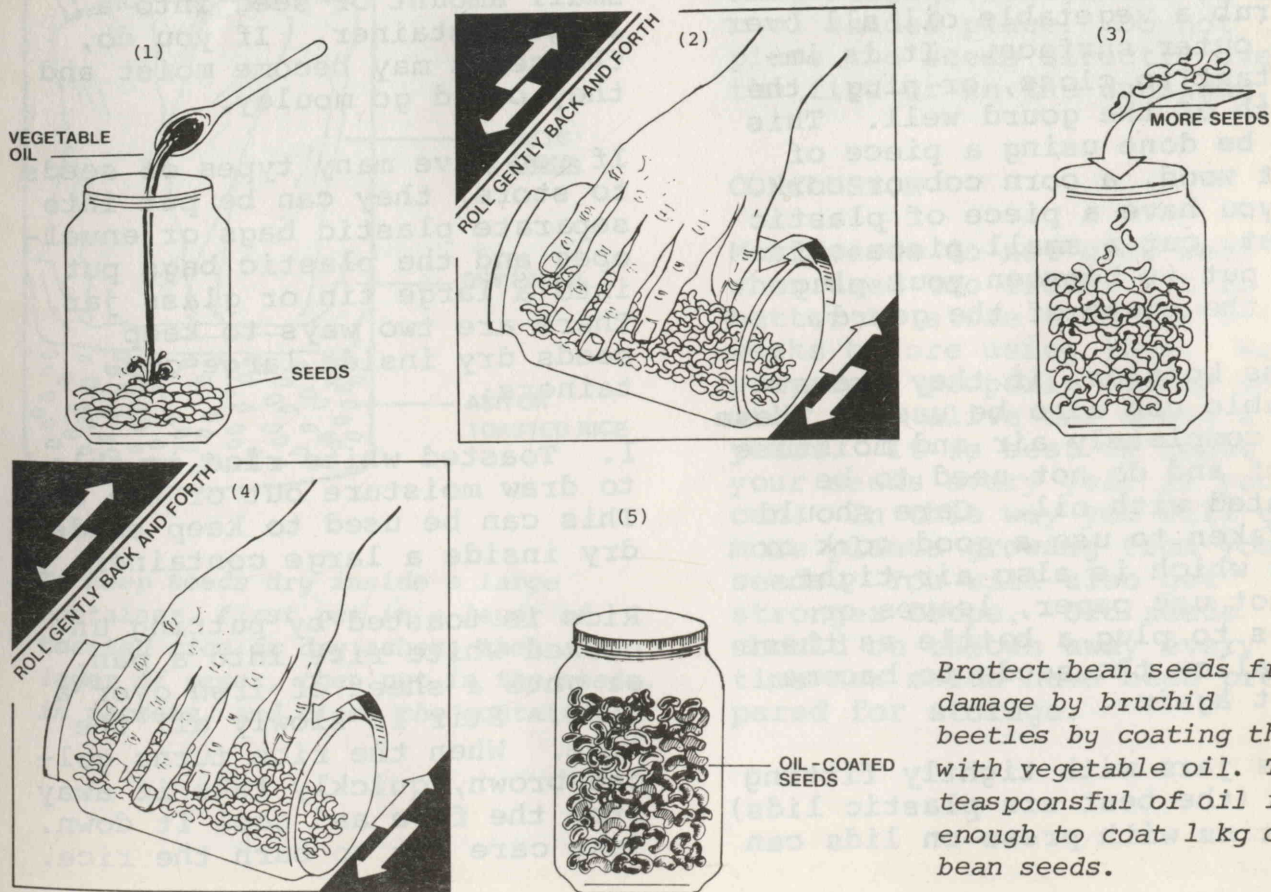
Add 10 ml (2 teaspoonsful) of vegetable oil to every kilogram of bean seed to be stored. This is done by first mixing the oil with about a quarter of the seeds to be stored. Take a

clean dry plastic bag, tin bottle or glass jar; make sure it is large enough to hold all the seeds. Place a quarter of the seeds into the container. Now add all the oil required for all the seeds. Mix well till all seeds are coated with oil. Now add the rest of the seeds to the container and again mix well until all seeds are coated with oil. They will now appear to be shiny. The seeds are now ready to be stored.

### STORAGE

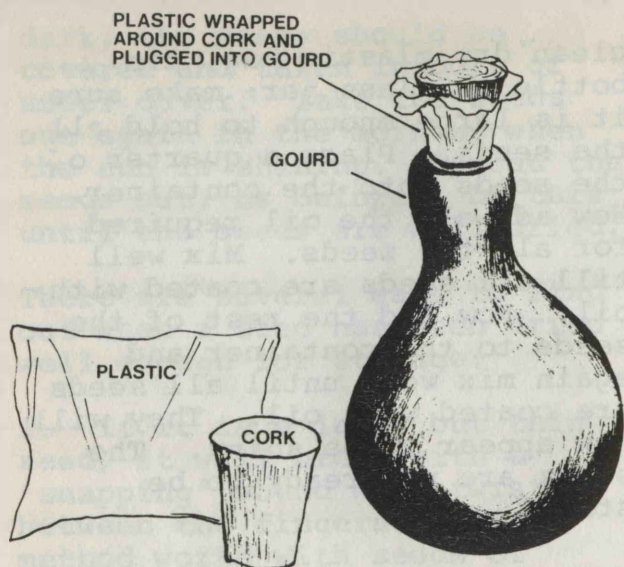
Your seeds have been well dried and protected against insect attack. Now they have to be stored safely so that they remain dry and cannot be attacked by insects, rats or birds.

In many parts of Papua New Guinea seeds are traditionally stored in gourds (Tok-pisin -



Protect bean seeds from damage by bruchid beetles by coating them with vegetable oil. Two teaspoonsful of oil is enough to coat 1 kg of bean seeds.



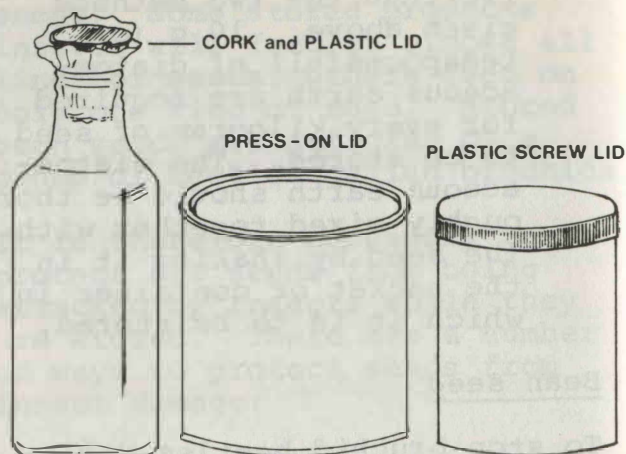


*A gourd with a cork and plastic plug can protect your seeds from insects*

sel kambing; Motu - poupou). These, if unbroken and well closed provide protection against insects. However seeds can get moist again if they are kept in gourds for a long time. This can be prevented by using gourds which were previously used to store coconut oil, or marita oil. Another way to make a gourd moisture proof is to rub a vegetable oil all over its outer surface. It is important to close, or plug, the mouth of the gourd well. This can be done using a piece of soft wood, a corn cob or cork. If you have a piece of plastic sheet, cut a small piece off and put it between your plug and the mouth of the gourd.

Glass bottles, if they are available can also be used. These are completely air and moisture proof and do not need to be treated with oil. Care should be taken to use a good cork or plug which is also air-tight. Do not use paper, leaves or grass to plug a bottle as these all allow the seeds to become moist again.

Glass jars with tightly fitting lids (the best are plastic lids) and tins with press-on lids can



*Bottles, tins and glass jars all make good seed storage containers, but they must have tightly-fitting lids*

also be used to store your seeds in. Make sure that the glass jar or bottle is quite dry before you put your seeds into it.

When you choose your seed storage containers, take one that is just large enough to hold all your seeds. Do not put a small amount of seed into a large container. If you do, the seeds may become moist and they could go mouldy.

If you have many types of seeds to store, they can be put into separate plastic bags or envelopes and the plastic bags put into a large tin or glass jar. There are two ways to keep seeds dry inside large containers:

1. Toasted white rice is able to draw moisture out of the air. This can be used to keep seeds dry inside a large container.

Rice is toasted by putting uncooked white rice into a pan, or onto a sheet of iron over a fire. Stir it slowly all the time. When the rice turns golden-brown, quickly take it away from the fire and cool it down. Take care not to burn the rice.



It is best to put the rice into another cold pan, plate or woven mat to cool down. Don't use a plastic sheet - it will melt and spoil the toasted rice.

Allow the toasted rice to cool down before using it. Remember heat kills seeds. It is not a good idea to leave the toasted rice in the open too long after it is cool or it will lose its power.

You will need enough toasted rice to quarter fill your container.

Put the toasted rice into the storage jar as soon as it is cool, then put the bags or packets of seeds in and close the container. Every time you open the container, remove the old toasted rice and replace it

with freshly toasted rice. The old rice can be fed to chickens or pigs.

2. Dry ashes from a wood fire are also able to draw moisture out of the air. Use only the white ash - any wood or charcoal must be thrown away.

The ash must be fresh, dry and cold. It is best to collect ash from a fireplace in the morning before the fire is lit again.

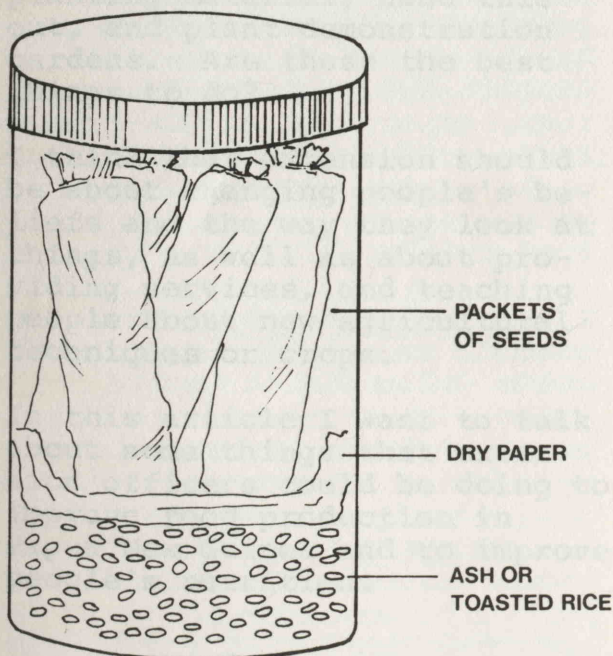
You will need the same amount of ash as toasted rice, enough to quarter fill your container. Cover it with a little dry paper or a small piece of plastic then put the bags or packets of seeds in and close the container. Every time you open the container remove the old ash and replace it with fresh ash.

REMEMBER....

Heat kills seeds, so keep your seed storage containers in a cool shaded place. Do not place the seeds directly over the fire or in the sunlight.

## CONCLUSION

Most seeds do not grow well when used too fresh. It is better to store them for 3-4 weeks before using them. Well prepared, properly stored seeds will stay alive for about 2 years. It is best to renew your seeds every year if you can. In this way you will get more plants growing from your seeds. You will also get stronger crops. Old seeds should be thrown away every time new seeds have been prepared for storage.



To keep seeds dry inside a large container, first put in a layer of toasted rice or dry ashes, then a layer of paper, then put in the seeds, in packets, and close the container.

## FURTHER READING

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(Illustrations: Busisi Siwaka)

