

VILLAGE HEALTH

A Handbook for Village Health Workers in Southeast Asia



BOOK 6
UNIT 22 - FAMILY AND VILLAGE PROJECTS

Editors:
J. H. Richardus MD PhD DTM
M. Wannemacher MA

Illustrations:
G. Sharmars

Produced by the Community Medical and Development Text Translation Project (CMDTTP), in cooperation with the Payap University Research and Development Institute and the Summer Institute of Linguistics, Chiang Mai, Thailand.

1993, Revised 2001

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The "Village Health" English version consists of 6 books:

Book 1: Introduction and Translation Manual

Book 2: Unit 1 - The Village Health Worker
Unit 2 - How to Prevent Many Health Problems
Unit 3 - Nutrition
Unit 4 - How to Take Care of Sick People
Unit 5 - First Aid

Book 3: Unit 6 - The Body and How the Body Works
Unit 7 - Introduction to Sickness
Unit 8 - How to Examine a Sick Person
Unit 9 - How to Use Medicines

Book 4: Unit 10 - Signs Index
Unit 11 - List of Sicknesses
Unit 12 - Dehydration, Diarrhea and Vomiting
Unit 13 - Skin Problems
Unit 14 - Eye Problems
Unit 15 - Teeth, Gums and Mouth

Book 5: Unit 16 - Family Planning
Unit 17 - Women's Health, Pregnancy and Childbirth
Unit 18 - Health and Sickness of Children
Unit 19 - How to Prevent Disabilities
Unit 20 - Health and Sickness of Old People
Unit 21 - Addiction

Book 6: Unit 22 - Family and Village Projects

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Thailand

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If you are interested in translating this book, please contact the editors at the following address:

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This book series has currently been translated into Thai, Jinghpaw, Rawang, Burmese, Sgaw Karen, and Lisu.

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UNIT 22

FAMILY AND VILLAGE PROJECTS

[How do most people measure things? Be sure to convert to common measurements.]

There are projects that a family can do together to make their home a more safe and more healthy place to live. There are projects that the people in a village can do together to make the village a more safe and healthy place to live.

[Who should be involved in planning projects? Who should be involved in doing projects? When do local people normally meet to discuss things?]

The village health worker should talk with the village leaders to organize the projects. The village leaders can choose a village health committee to oversee the projects. The village health worker should encourage people to help with the projects. The village health worker should help people do the projects.



[Try to make the projects fun. You can arrange food or music for the people who work. Try to involve many people in the projects. School children can do a lot of work and make it fun. If people make something themselves, then they are more likely to use it.]

All of the material for these projects should be available to you locally. But, if the material is not available, do not stop trying to solve the problem. Think of new ways to make the village a safer and healthier place to live. Try to find someone with experience to help with each project. But, if you do not know anyone with experience, you can still try to do the project yourself.

VILLAGE HEALTH TRAINING

The village health worker's most important job is to teach people how to prevent and treat sickness. You can meet with each family or have a village meeting. You can train 1 or 2 assistants who learn and teach others about specific things. For example, in many cultures it is good to train a woman to treat and check pregnant women, to assist with the delivery of babies and to care for women after they have a baby.

When you teach, be sure people have the opportunity to practice what you teach them. For example, if you teach people how to make rehydration drink, then show them how to make the drink, then watch them make the drink and correct them if necessary. Be sure the people you train know how to do the things that you teach. The people you teach should demonstrate the method for you or be able to answer questions that show they understand the information. Only teach one thing at a time.

Here are some examples of information you can teach to families or groups. Use your "Village Health" manual to help teach the information. Decide what the people need to learn first.

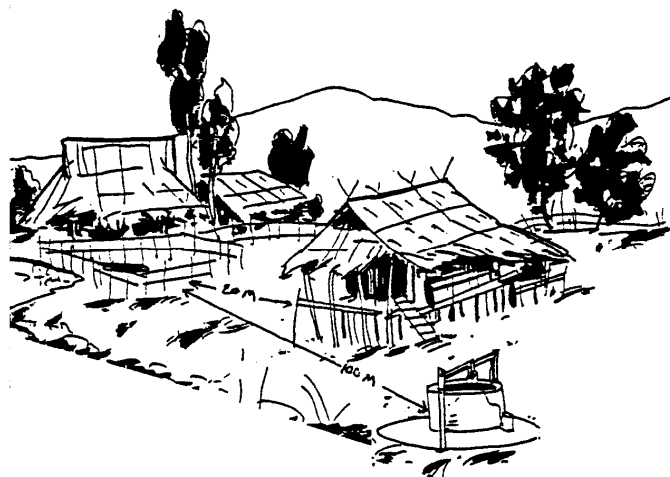
- * Teach mother's how to give medicines to children.
- * Teach families how to use medicines properly.
- * Teach everyone basic information on how to take care of sick people.
- * Teach mother's how to make and use rehydration drink.
- * Teach pregnant women how to have a healthy pregnancy and how to care for a newborn child.
- * Teach mother's how to feed young children and how to recognize signs of sickness in young children.
- * Teach families about good nutrition.
- * Have 1 day each month when women bring children under 5 to check their weight and check for health problems. Teach one new idea each month.
- * Teach families how to care for wounds and how to prevent accidents.
- * Teach people how sickness spreads and how to prevent sicknesses. Be sure to include the benefits of being healthy.
- * Teach people how to do the projects in this unit.

HOW TO DIG AND USE A GARBAGE PIT

[How do people dispose of garbage?]

A garbage pit will help keep the village clean and take away food and hiding places for rats, flies and mosquitoes. A garbage pit keeps garbage away from the house. This helps keep away the rats, flies and mosquitoes that cause sickness. A garbage pit will also help prevent accidents if you bury dangerous or sharp garbage.

1. Choose a place that is convenient for you walk to, but at least 20 meters from any house. Choose a place that is at least 100 meters from the village water supply. Dig the pit in a place that water does not stay in after it rains.



2. You need to decide how big to dig the pit. During the dry season you can dig a large pit since it will not fill with water. During the rainy season you might want to dig a smaller pit that will hold the amount of trash you make in 1 or 2 weeks.

3. Dig the pit and keep the dirt in a pile next to the pit.

4. Put your garbage in the pit each day and cover it with a small layer of dirt. If you have a natural fertilizer pile, be sure to put the trash that is useful for fertilizer on the fertilizer pile.

5. If you put a fence around the pit, children will not fall in and animals will not get into the garbage.



6. When the pit is full, cover the pit with dirt. Next dig a new pit.

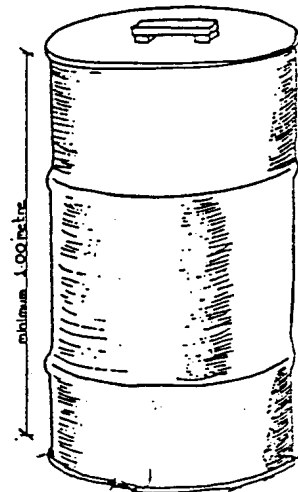
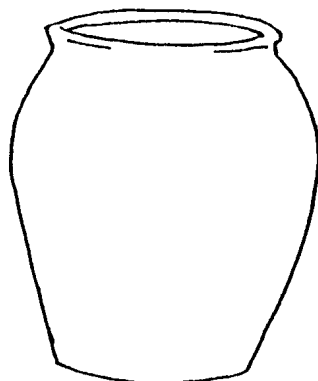
7. The village leaders should assign someone to make sure everyone puts their garbage in the pit. Someone should be responsible to take care of the pit, be sure the garbage is covered and be sure the fence is repaired.

HOW TO MAKE A SAND AND CHARCOAL WATER FILTER

[What is the source of drinking water?]

A sand and charcoal water filter takes some germs out of the water. The water from a water filter is cleaner than water from the river or well.

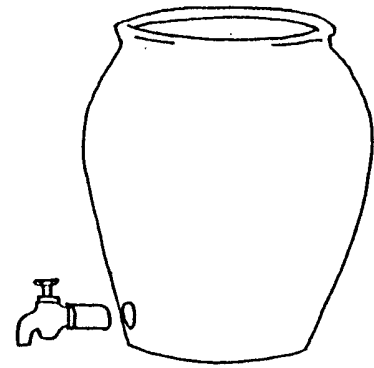
1. Get a large metal barrel, clay jar or other large container.



2. Scrub the container with soap and water.

3. If you use a metal barrel, paint the inside so that it does not rust.

4. Make a hole near the bottom of the container for a spigot or pipe to go in.

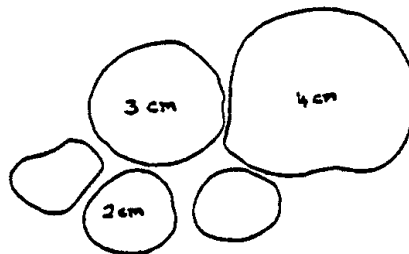


5. Put in the spigot. For a metal barrel, weld the spigot to the drum or use rubber seals. For a clay jar, seal the spigot with wax or sealer.

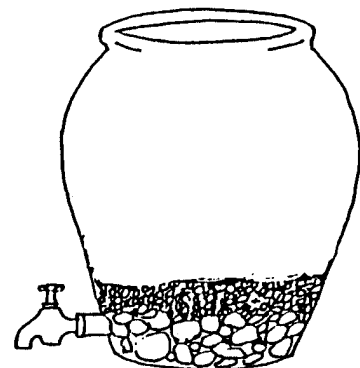
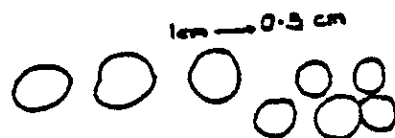
6. Put the container in the place you will keep it. It will be very heavy to move when you are finished. Be sure the filter is high enough to put a water container under the spigot.

7. Collect enough large gravel (approximately 2 - 4 cm wide) to fill 20 cm of the container. Collect enough small gravel (approximately 1/2 - 1 cm wide) to fill 10 cm of the container. Collect enough sand to fill 1/2 of the container. Collect the sand from a river bottom and keep it wet all the time. Wet sand from a river bottom has good germs that will help kill bad germs. Wash the gravel before you use it.

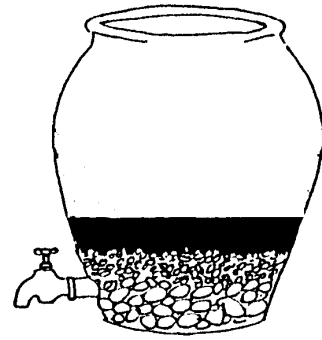
8. Put large gravel in the bottom of the container until it covers the hole.



9. Put about 10 cm of small gravel on top of the large gravel.



10. Crush some charcoal until it is the size of small gravel. Put about 10 cm of charcoal on top of the small gravel. You can also use burned rice husk.

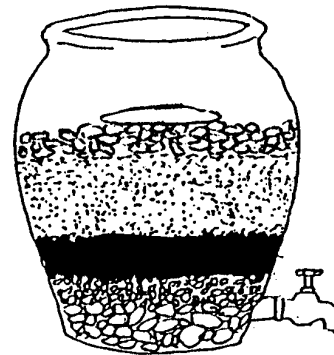


11. Put enough wet sand over the charcoal to fill about 1/2 of the container.



12. Put 10 cm of large gravel over the sand.

13. Put a flat rock on top of the large gravel.

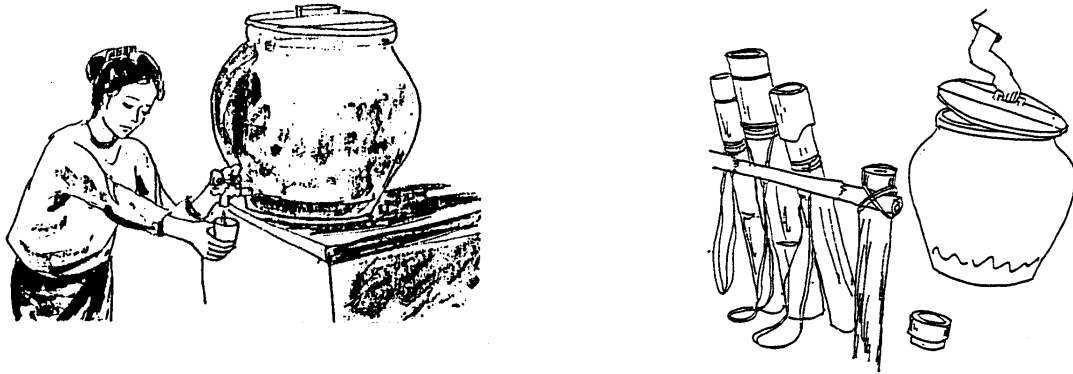


14. Fill the container with water and let all the water flow out to clean the gravel, charcoal and sand. Do this until the water looks clean.

How to use the water filter:

1. Fill the container with water and open the spigot when you want to get clean water.
2. Fill the container often. Do not let the sand dry out. If the sand dries out, then the good germs will die.
3. Cover the filter with a lid when the filter is not used. This will keep dirt, bugs and mosquitoes out of the water.
4. If the water that you want to filter is very dirty, then let the water sit for 10 minutes. Then pour the clear water into the filter and throw away the water at the bottom of the container.

5. Dirt and germs can fill in the spaces between the sand and make the water flow slowly. If the water comes out of the filter very slowly, take out the top layers of gravel and about 1/2 of the sand. Wash the gravel and sand with water and then put them back into the filter the same as before.



6. Store the filtered water in a clean, covered container.

HOW TO MAKE AND USE A LATRINE

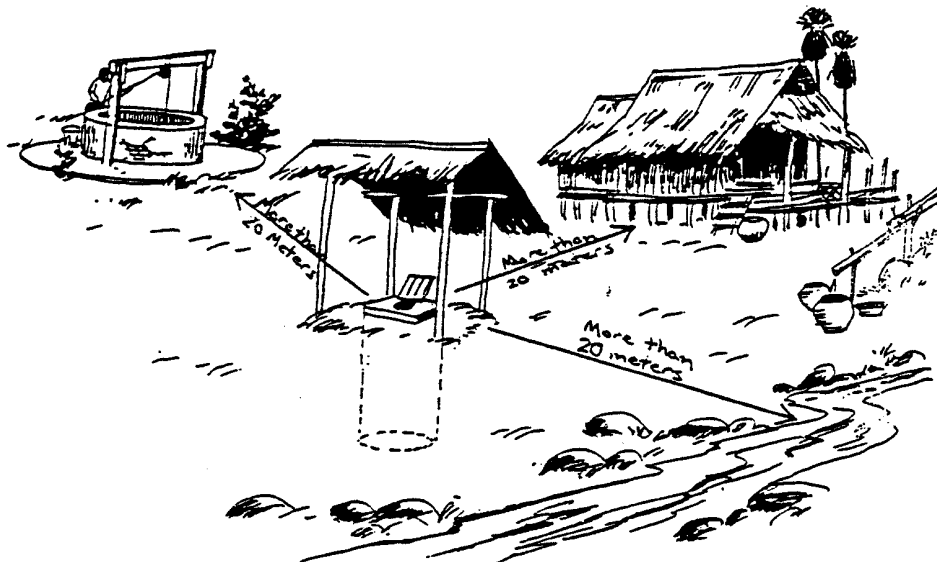
[Where do people in the village defecate? What are the obstacles to using latrines?]

When people use latrines, they prevent pigs and flies from eating feces and spreading sickness. When people use latrines they make the village cleaner. But, all or most of the people in the village must agree to use a latrine when they defecate. If only a few people use latrines, there will still be a lot of feces on the ground for flies and animals to eat and spread sickness.

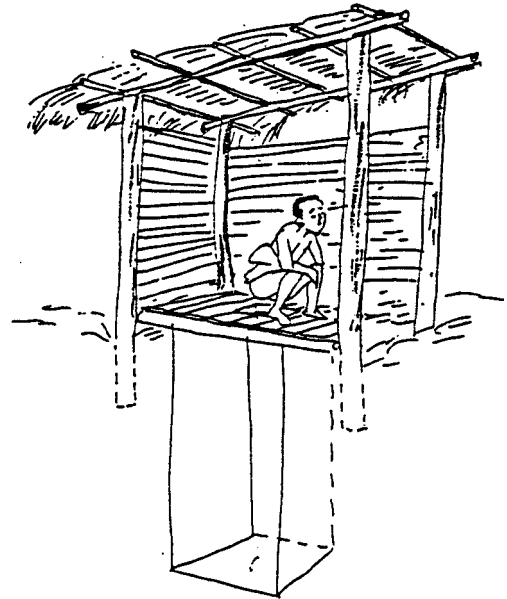
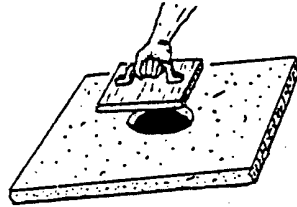
Tell the village leaders why all people should build and use a latrine. The village leaders can be sure everyone has a latrine. You must also teach people how to use a latrine. A latrine is no good if people do not use it.

How to make a latrine:

1. Choose an area about 20 meters from houses, rivers and water supplies.



2. Dig a hole about 1/2 to 1 meter wide. Dig the hole 1-2 meters deep.
3. Cover the hole with a bamboo, wood or concrete cover. The cover should have a 30 cm (10 inch) hole in the center.



4. Make a wood lid to go on top of the hole to keep flies out of the latrine.
5. Build a small house around the latrine.
6. Keep water for washing the buttocks [or paper/leaves for wiping] in the latrine house.

How to use a latrine:

1. Take the lid off the latrine hole.
2. Defecate in the latrine hole.
3. After you defecate, throw some dirt, ash or lime in the hole to reduce the smell and help cover the feces.
4. Put the lid back over the latrine hole.
5. Keep some water and soap outside of the latrine for people to use to wash their hands after they defecate. It is best if the water flows or is poured onto the hands.
6. Keep the latrine clean. Wash the floor often. Teach children how to use the latrine and teach children not to defecate on the floor.
7. When the latrine is full, dig a new latrine. Use the dirt from the new latrine to cover the old latrine hole. Use the old latrine cover and lid for the new latrine. You can also use the same latrine house.

Be sure the school and church also have a latrine. There are many other different kinds of latrines. Check with people about what is available in your area.

ACCIDENT CHECK AND VILLAGE CLEAN UP

All villagers should help keep the village clean. People in a clean village have less sickness and less accidents. A village committee, school group or church group can help make sure the village stays clean. The committee should check the village and places that the villagers commonly use, such as the area to collect water, the bathing area, and trails.

The committee should look for the following things:

- * Sharp or dangerous objects left on the ground.
- * Broken glass.
- * Dogs or animals that try to bite people.
- * Areas with a lot of garbage, especially garbage that attracts flies and rats.
- * Areas where rain washes animal or human feces into the water supply.
- * Poisonous plants.
- * Steep areas where children play.
- * Areas where there is standing water.
- * Areas where the water is deep and children can drown.

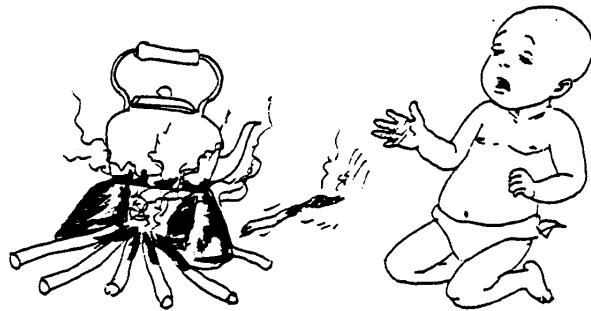
The committee should make a list of the dangerous or unhealthy things. They can present the list to the village leaders and decide how to solve the problems.

Each family should do the same check inside and around their house. Inside the house, the family should check the following:

- * Is the fire in a place where small children cannot get burned?

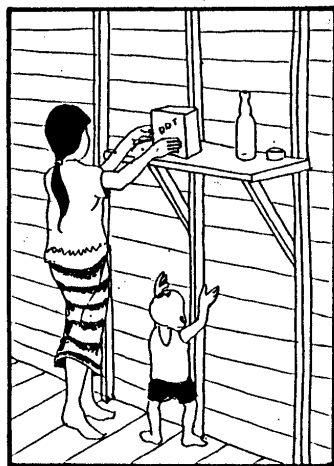


Yes

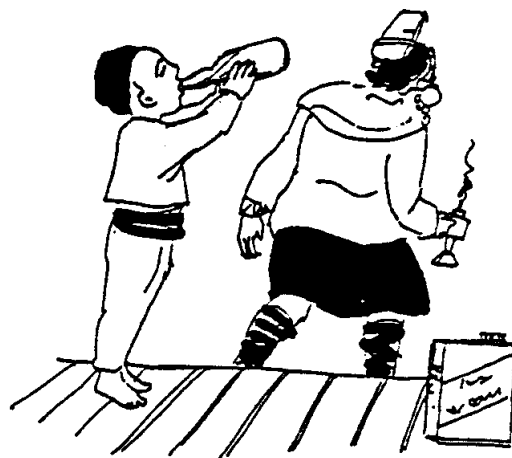


No

- * Are medicines, kerosene and chemicals kept where children cannot get them?



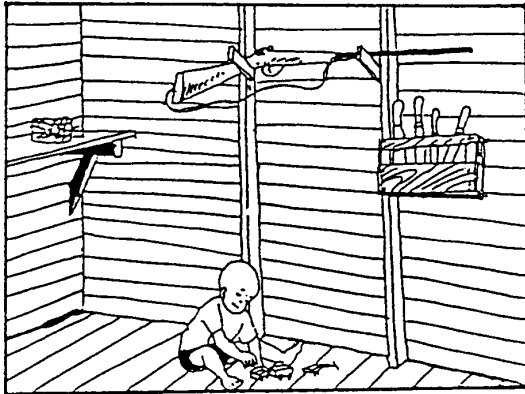
Yes



No

- * Are there rails around the house to stop children from falling off?

* Are sharp and dangerous objects such as guns, knives and tools kept where children cannot get them?



Yes



No

* Are electrical wires covered with insulation or electrical tape to prevent electrical shock?

The family should work together to make the house a safe place for everyone, especially small children.

HOW TO MAKE POLE GUARDS

[Is sheet metal available?]

Rats spread sickness and eat people's food. Pole guards keep rats from climbing poles and going into the house, cooking house and food storage containers. When the rat tries to climb the pole, the rat cannot climb past the pole guard.

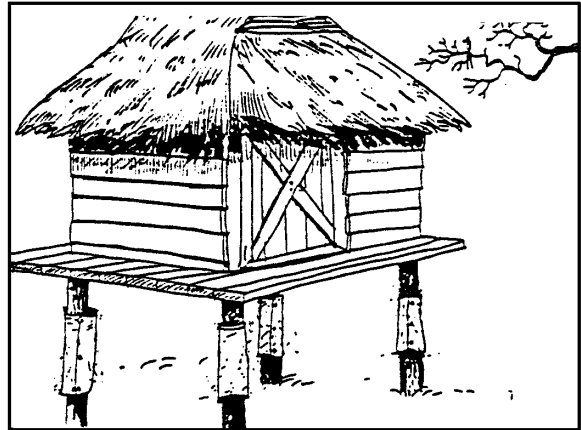
Some pole guards attach to the pole at the top and are wide at the bottom. You can use an old bucket without a bottom for this type. The easiest pole guard to make is a piece of tin wrapped around the house poles. The rats cannot dig their claws into the tin and cannot climb past the tin. You must put a pole guard on every pole that attaches to the ground to keep rats out.

1. Cut the bottom out of an old bucket. Next cut the side. Wrap the bucket around the pole with the wide part down. Nail the narrow end to the pole.



or

2. Cut a piece of tin about 35 cm (1 foot) high and wide enough to go all the way around the house pole. Nail the tin to the pole where the tin overlaps at the top and bottom. You can also put pole guards on coconut and fruit trees to prevent rats from eating the fruit.

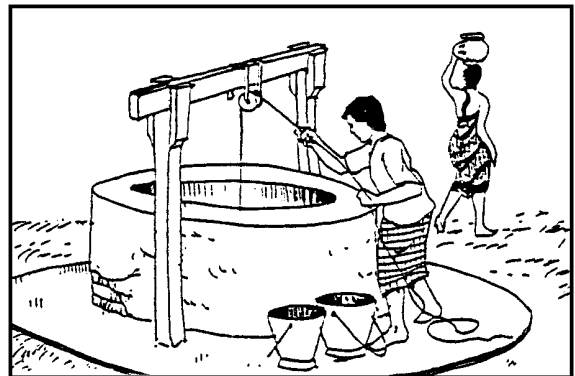


HOW TO KEEP THE WATER SUPPLY CLEAN

[What is the most common water source? Where is it located?]

The village leaders should select a person to care for the village water supply. This person is responsible to keep the area around the water supply clean, to build and repair the fence around the water supply and to make sure people use the water supply properly.

If the water supply is a well, build a wall around the hole with concrete or bricks. This will stop rainwater from washing feces and garbage into the well. Someone should clean the dipper or bucket every week.



If you collect water from a spring, then put a fence around the spring. Do not let animals graze uphill from the spring. Build a small concrete or brick wall above and around the spring on 3 sides to keep out rain water that washes down the hill.



If people collect their water from the river, they should collect the water from the highest place on the river near the village. Everyone should agree not to defecate, wash clothes or bathe at that place or above that place. Keep animals away from that place. Animals should graze downhill from the water supply. If possible, put a fence up to keep animals away from the water supply.



FILL IN AND DRAIN STANDING WATER

Mosquitoes spread many sicknesses such as malaria, dengue fever and encephalitis. Mosquitoes breed in water. Fill in and drain standing water to reduce the number of mosquitoes in the village and reduce sickness that mosquitoes spread.

If you dig small trenches leading downhill, then you will drain water away. You can use the dirt from the trenches to fill in smaller areas that hold water. Be sure to drain or fill in wet areas under houses. Some wet areas are good places to plant a family garden.



Dig shallow trenches around houses that have floors on the ground to drain rain water away from the house.

Mosquitoes can breed in only a little water. Fill in bamboo fence posts with sand. Cover all water containers, wells and latrine holes. Mosquitoes can breed in the water under tall grass. Cut all tall grass near the village.

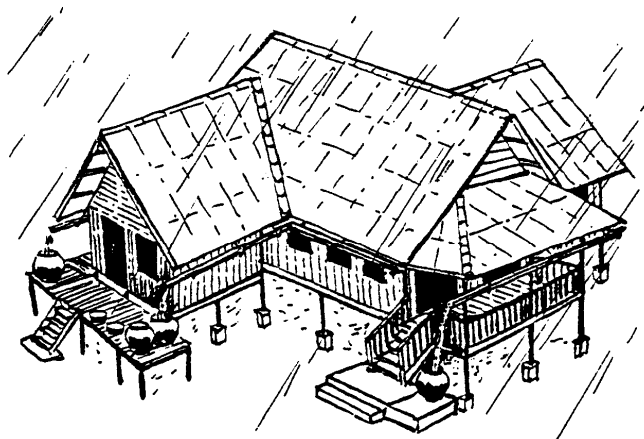
After it rains, check around each house and the village. Fill in or drain places that have standing water. The village leaders should choose a person to be responsible for draining and filling places with standing water.

COLLECTING RAINWATER FOR DRINKING

[Are there any cultural beliefs about rain water?]

Rainwater is clean and good to drink. There are many ways to collect rainwater to drink. Here is one way to collect rainwater to drink. You can think of a way that is best for your house.

1. Split bamboo and put the bamboo along the edge of the roof so that rainwater from the roof will run into the bamboo. The bamboo should slope down to make the water flow into a storage container.



2. Let the water from the roof flow onto the ground for a few minutes so that the rainwater will clean the roof and the bamboo. Then move the bamboo spout to make the water flow into the container.

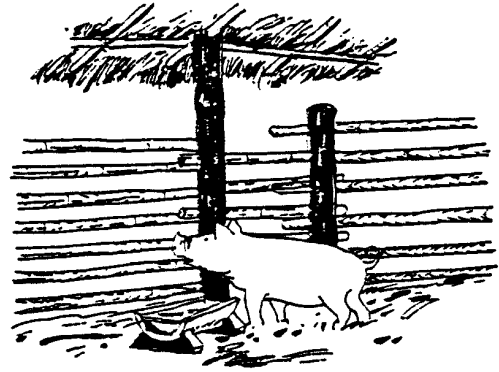
3. Keep the water storage container covered. If the water stays in the container for a long time, then germs will grow and the water will not be clean. You should clean the container every 3-4 weeks during the rainy season. Drain the container and scrub the sides, top and bottom of the container. You can also put a sand-charcoal filter where the water comes out to help clean the water before you drink the water.

If there is no rain for a long time, or if the water in the container is dirty, then you can make the water clean other ways. Boil dirty water 10-15 minutes before you drink the water. If you do not have enough wood to boil the water, you can add 4 drops of 2% tincture of iodine to each 1 liter of water. Wait 1/2 hour and then you can drink the water. The iodine kills the germs. Do not use more tincture of iodine than suggested.

KEEPING ANIMALS IN A FENCE

[Where are animals kept?]

Germ in animal feces spread sicknesses such as hookworm and diarrhea. Do not let animals walk around and defecate in the village. Build fences and keep the animals in the fences. Rain water washes animal feces into the water supply. Be sure to keep animals below the place where you collect water.



HOW TO MAKE NATURAL FERTILIZER

You can make natural fertilizer for your gardens and crops using manure, plant and animal garbage and plant materials. Natural fertilizer makes the soil stronger, makes your plants grow better and is much cheaper than chemical fertilizer.

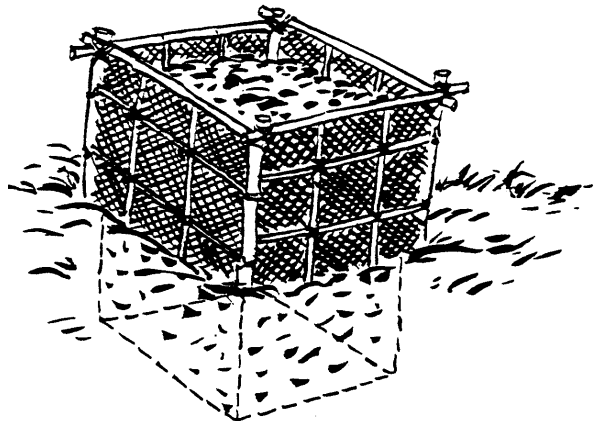
Materials You Can Use to Make Natural Fertilizer:

dry leaves	green leaves
<u>plant stalks</u>	fruit and vegetable peelings
bark and branches	<u>fruit cores</u>
<u>sawdust</u>	animal manure
<u>corn cobs</u>	hair
nut shells	feathers
eggshells	ashes
<u>coffee grounds</u>	<u>seed pods</u>
<u>corn husks</u>	dry grass
rice straw	peanut shells
any other plant material	

How to Make Natural Fertilizer

1. Gather and save enough material to fill your natural fertilizer pit. Collect manure and cover the manure to help prevent drying. Begin making your natural fertilizer pit at least 9 weeks before you plant your garden or crops.

2. Choose a location for the pit near your garden and near a water source. Dig a hole 1 meter (3 feet) deep, 1.3 meters (4 feet) wide and 1.3 meters (4 feet) long. Build a fence around the pit to keep the fertilizer in and animals out. If possible, cover the inside of the pit with plastic.



3. Put a 15 cm (6 inch) layer of chopped plant material and food trash on the bottom. Then add 8 cm (3 inches) of animal manure. Next add 3 cm (1 inch) of good soil from an area outside of the garden. Repeat the layers in the order above until the pit is full and 30 cm (1 foot) above the ground.



4. Add water until all the material is wet. Cover the material with banana leaves. Never let the material dry out. Add water when necessary to keep the material moist. Sunlight makes the fertilizer weak. You can build a roof over the pit or dig the pit under a tree to reduce the heat from the sun.

5. The material will get hot inside. After about 3 weeks dig the material out and mix it again, then put it back into the pit. Do this every 3 weeks until the material is dark brown. The natural fertilizer should be ready to use in 6-9 weeks. You can also make natural fertilizer without digging a pit. To do this, put the material in a pile and follow the steps above.

6. Put 1/2 a finger length (1 ½ inches) of the natural fertilizer on your garden or in the holes for planting. Be sure to mix the fertilizer with the dirt in the garden immediately. It is best to spread the fertilizer on a cloudy day because the sun dries the fertilizer and makes the fertilizer weak.

There might not be enough material in the village area to make natural fertilizer for everyone. Discuss this situation with village leaders if necessary.

FAMILY AND SCHOOL GARDENS

[What vegetables grow best in the area? What seeds are available? Where do people get their vegetables?]

Every family and every school should have a vegetable garden. Eating vegetables helps a person stay healthy and fight sickness. A small garden can provide enough vegetables to eat all year. Children in the school should help to prepare and care for the school garden. The children can eat the vegetables with their school lunches.

What to Plant

Plant vegetables that are nutritious and easy to grow in your area. Plant vegetables that you harvest at different times so that you will have some vegetables all the time. Try to plant vegetables that give you many parts to eat such as the leaves, roots, and flowers. You should plant vegetables that give you energy and different vitamins.

Vegetables that give us energy are: potato, sweet potato, rice, some beans, corn.

Vegetables that have vitamin A and help prevent night blindness are: peppers, spinach, pumpkin, sweet potato leaves, squash.

Vegetables that help build the body are: various beans, peanuts, soybeans.

Vegetables that have vitamin C and help prevent sickness are: mustard, spinach, horseradish, onions.

Vegetables that have iron and help prevent anemia are: peas, various beans, sweet potato leaves, spinach, pepper leaves, dark green leafy vegetables.

Also be sure to plant some fruit trees such as papaya, mango, banana and other fruits that grow well in your area.

Some plants that have a strong smell help repel insects. Mint, onions, garlic and marigolds help repel insects. Plant some of these around your garden.

When to Plant

Some vegetables grow for a long time before you can harvest them. Some vegetables grow for a short time. Plant some vegetables that grow for a long time and some vegetables that grow for a short time so you will always have vegetables. Make a small garden to grow seedlings and plant the seedlings when you harvest another vegetable from the main garden. The best time to plant is different for different areas. Ask a local farmer for help.

Some vegetables that grow for a short time are:

Lima beans - 50-65 days	Leaf lettuce - 30-40
Mustard - 30-40	String beans - 40-70
Cucumber - 35-45	

Some vegetables that grow for a long time are:

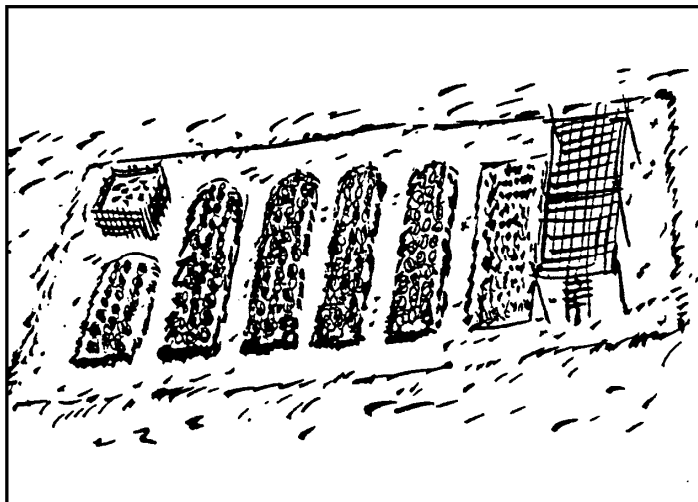
Cabbage - 60-70 days	Corn - 68-70
Peas - 65-70	Squash - 75-100
Tomato - 70-100	Peppers - 90-110
Onions - 90-150	Sweet potato - 90-120
Garlic - 100-140	Various beans - 65-75

How to Plant Your Garden

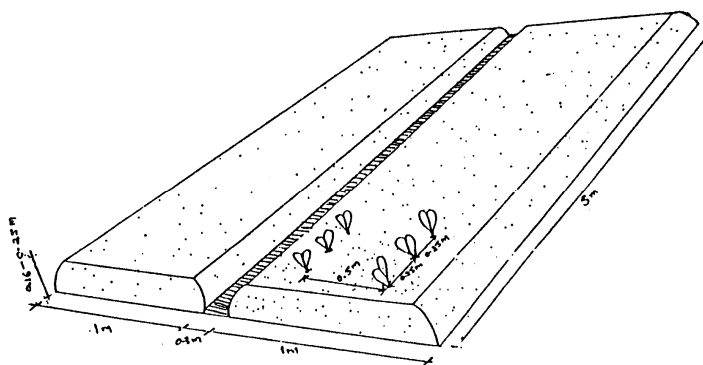
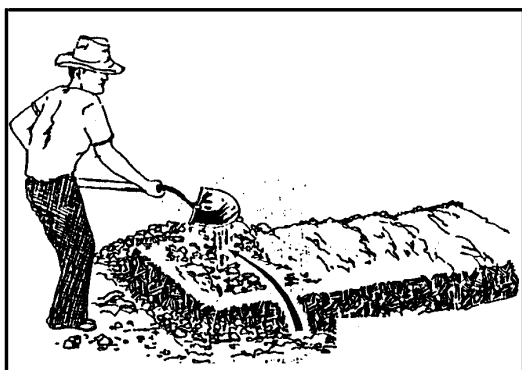
There are many ways to plant a garden. You should check with local farmers about what works best in your area. Here is one way to plant your garden.

1. Find the best place for your garden. The area should have consistent sunshine, fertile soil, a good water supply and good drainage.

2. A garden that is 6 meters wide and 12 meters long can provide vegetables for a family of 6 people all year. If you build a platform at one end of the garden, then pumpkin, squash, and vines can grow up the platform. You can plant vegetables that like shade under the platform (ginger, peppers and sweet potatoes). Make a natural fertilizer pit at one end of the garden to provide natural fertilizer. Make the garden larger or smaller depending on the number of people you need to feed.



3. Dig and break up the soil in the garden 15-20 cm (6 or 8 inches) deep. Then divide the garden into sections about 5 meters long (5 1/2 yards) and 1 meter (1 yard) wide. Dig a ditch around each section about 20 cm (8 inches) deep and about 30 cm (11 inches) wide. Pile the dirt on the ground inside the garden.



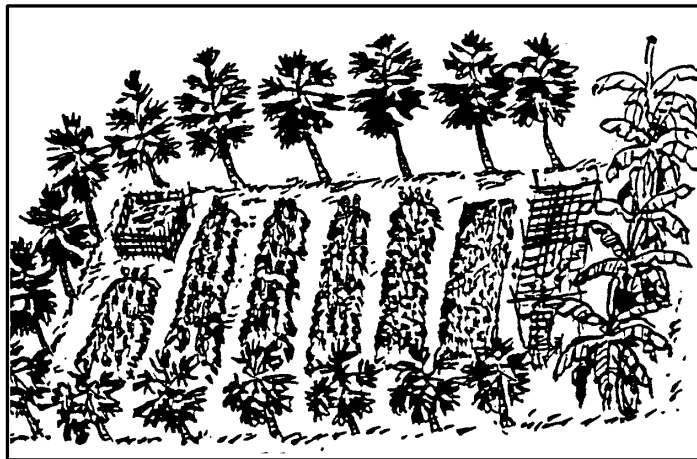
4. Mix natural fertilizer with the soil before you plant the vegetables. The first year, cover the soil with about 3 inches of natural fertilizer if possible. After the first year, cover the soil with 1 inch natural fertilizer before you plant your vegetables. Also add wood ash, crushed bones and egg shells if possible. If you plant vegetables during the dry season, cover the ground between the small plants with dried rice straw or dry grass to keep moisture in the soil.

5. Plant vegetables that grow quickly in 1/3 of the garden. Plant vegetables that grow slowly in another 1/3 of the garden. Save the other 1/3 of the garden for planting seedlings later. Plant the seeds or seedlings so that when the vegetables are mature, the leaves will touch.

The best distance apart to plant certain vegetables is:

<u>2-4 in.</u>	<u>6-8 in.</u>	<u>12-15 in.</u>	<u>18-24 in.</u>	<u>30 in.</u>
carrots	beans	broccoli	corn	pumpkin
garlic	leaf lettuce	cabbage	eggplant	squash
onions	mustard	cauliflower	sunflower	melons
peas	potatoes	cucumber	tomatoes	
spinach		head lettuce	watermelon	
		peppers		

6. Around the edges of the garden plant papaya trees, pineapple, banana trees, or sugar cane. Also grow plants that have a strong smell such as garlic, onion and marigolds. These plants keep some insects away.



7. About 1 month before you harvest a certain crop, begin to plant the crop again in the areas that are open. Plant different crops in the different parts of the garden each time you harvest and plant. See "Planning Your Crops", page 22, for suggestions.

8. Be sure to add natural fertilizers, weed the garden, and water the garden when necessary. Save some seeds from the strongest and best plants to use later.

SOME SUGGESTIONS ABOUT SEEDS

[What seeds are available? How are seeds obtained?]

Collecting Seeds

You can collect seeds from fruits, nuts, firewood trees and vegetables in order to plant the seeds. You should choose the best seeds to make the best plants.

- * Collect seeds from healthy, strong plants that grow well. Collect seeds from plants that make a lot of fruit, healthy fruit and large fruit. Collect seeds from vegetables that taste good and have a good color. Seeds usually grow to be like the plant they came from.
- * Collect seeds from plants that are mature. Avoid trees that are very old.
- * Do not collect seeds from trees that are isolated. Seeds from isolated trees are usually weak.
- * Do not collect seeds from plants that are a strange shape, a strange color, abnormal or sick.
- * Remember the trees or mark the trees that you collect seeds from. If the seeds make good plants, collect from the same tree again.
- * Seeds should be ripe but not old when you collect them.
- * Collect seeds during the dry season if possible. This will help prevent some plant sicknesses.
- * Plant a few of the seeds 2 months before planting time to make sure the seeds grow well.

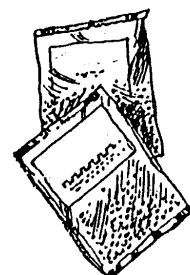
Storing Seeds

Most seeds get weaker when they dry out for a long time. It is best to dry seeds for only a few days, then store them in a container. Here are some suggestions for storing seeds.

- * Store only new, mature, healthy and well-dried seeds. Keep the seeds in a dry, cool place until you plant them.
- * Seeds easily absorb water after they dry out. This can make the seeds rot. Keep seeds in a tin can, plastic bag or glass jar with a tight lid. Put some material in the container that absorbs water such as dry ashes, dry charcoal, powdered milk, toasted and cooled rice or newspaper. Fill the container about 1/4 full with the drying material and put a piece of paper on top of the material. Then fill the container with seeds. Do not open the container until you want to use the seeds.
- * If necessary you should protect the seeds from insects. You can put various things in with the seeds to keep insects out.
 - Add 1 or 2 naphthalene balls to 10 kg of seed.
 - Mix seeds with dry ashes.
 - Mix seeds with powdered black pepper.
 - Mix 1 kg of seeds with 1 teaspoon of peanut oil or coconut oil.
 - Mix seeds with basil leaves.
 After you add one of the materials above, store the seeds in a closed container.



- * Rambutan, durian, mangosteen, mango, jackfruit and avocado seeds are different from other seeds and should only dry for 2 days. Then you should put the seeds in sealed plastic bags 1/2 filled with seeds and 1/2 filled with air. You should also add a little moist charcoal, sawdust or sand to the bag to help keep the seeds moist. Open the bags one time each day to let fresh air in.



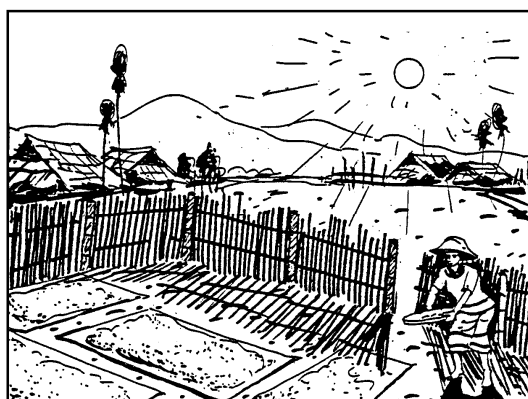
Here are some suggestions for storing certain types of seeds:

<u>Seed Type</u>	<u>How to Store the Seed</u>	<u>How Long to Store the Seeds</u>
Cashew	Dry in the sun for 2 days. Store. No other special care is necessary.	1 year
Coconut	No special care necessary	16 months
Durian	Store moist seeds in a plastic bag.	2-3 weeks
Guava	Dry 1 week. Keep in a closed tin can or glass jar.	15 years
Jackfruit	Store in sawdust.	1 month
Lemon	Store moist seeds in a closed, plastic bag. Keep cool.	?
Mango	Store moist seeds in a closed plastic bag with moist charcoal.	13 weeks
Mangosteen	Store moist seeds in moist charcoal in a plastic bag.	6 weeks
Papaya	Dry seeds in the sun for 2 days. Store in a closed glass jar.	1 year
Passion Fruit	Store in a closed container in a cool place.	9 months
Rambutan	Store seeds with moist sawdust or charcoal in a closed plastic bag.	3 months
Star Fruit	No special care necessary	A long time
Tamarind	Dry seeds in the sun. No other special care necessary.	6 months
Teak	Dry seeds in the sun. No other special care necessary.	1 year

How to Prepare Seeds for Planting or Storing.

A. To prepare Pods or cones:

1. Dry the seeds in the sun on a sheet or in a sack. Dry the seeds until the pods split open or the seeds make a cracking noise when you break them.
2. Shake, step on, or beat the pods until the seeds come out. Open the closed pods with your hands.
3. Blow away the seed covers.
4. Put the seeds in a bucket of water. Throw away the seeds that float. Dry the seeds that sink again or plant them immediately.



B. To prepare fruits and some vegetables:

1. Take the seeds out of the mature fruit as soon as possible.
2. Put the seeds in water until the fruit that remains on the seeds becomes soft. This is usually 1-2 days.
3. Rub the all the fruit off the seeds.
4. Throw away all the floating seeds.
5. Drain the seeds, wash the seeds, then dry the seeds for 2 days.
6. Blow away any seed covers that come off.

How to dry seeds:

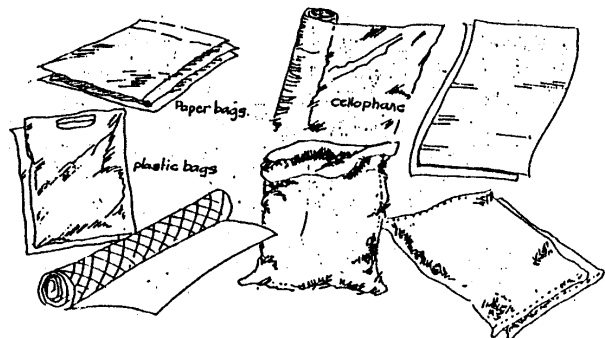
1. You should dry most seeds in the sun for 1-3 days before you store the seeds. But do not dry rambutan, durian, mangosteen, mango, jackfruit or avocado in the sun.
2. Put the seeds on a mat in a place where the sun shines all day.
3. Spread the seeds thinly and evenly.
4. Stir and turn the seeds 4 times each day to be sure the seeds dry evenly.
5. If possible, put the seeds in the shade from noon until 2:00 pm when the sun is very hot.
6. Take the seeds inside before it rains and before nighttime.



TAKING CARE OF YOUNG FRUIT

[What materials are available locally to cover fruit?]

You can put bags around young fruit on the tree. This will keep insects and plant sicknesses out and you will not have to spray insecticides. You can use paper bags, plastic wrappers, newspaper, plastic bags or cloth sacks to cover each piece of fruit.



The best time to put a bag around certain fruits is shown below:

Put a bag around mangos 15 days after the fruit appears.

Put a bag around bananas as soon as you remove the flower.

Put a bag around jackfruit when it is the size of your fist.

Put a bag around guava right after the fruit appears.

GROWING CROPS TOGETHER

You can grow 2 different crops in alternating rows in the same field to improve the amount of your harvest. For example, plant 2-3 rows of highland rice alternating with 1 row of cowpeas, soybeans, peanuts or mungbeans.

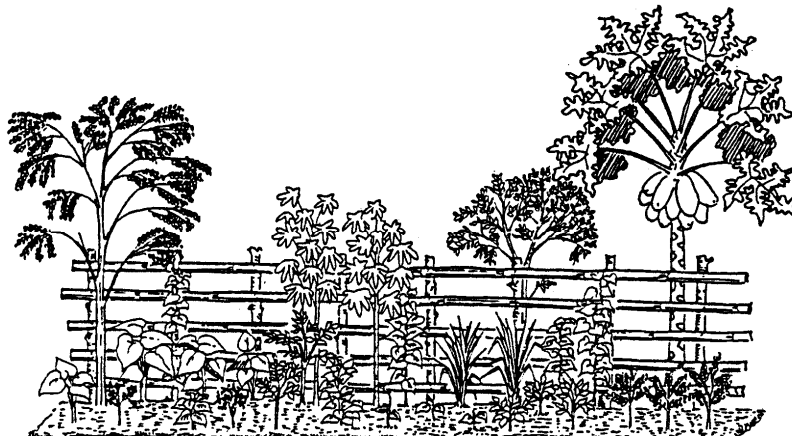


The beans make the soil stronger and are very nutritious. The alternating rows help form a barrier to insects and plant sicknesses that attack only certain kinds of plants.

PLANTING PLANTS NEXT TO YOUR FENCES

The ground that animals live on is fertile because animal manure makes soil strong. You can plant fruit trees around the fence you use to keep animals in. The manure in the soil will help the trees grow.

1. Dig a ditch 45 cm (1 1/2 feet) wide and 45 cm (1 1/2 feet) deep along the fence.
2. Mix the soil with wood ash, natural fertilizer or animal manure and return the soil to the ditch.
3. Plant the seeds or small trees.



PLANNING YOUR CROPS

[Do people rotate crops? What method do they use?]

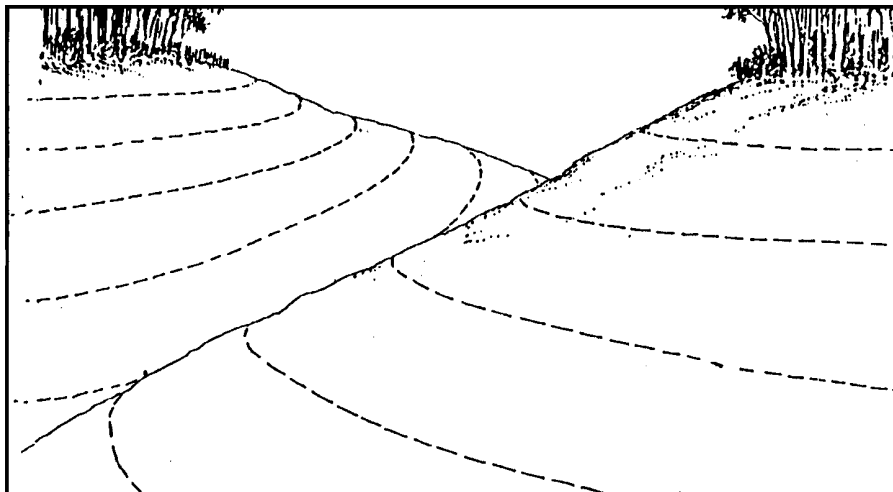
Different plants use different parts of the soil. Some plants help make the soil strong. Changing the crops you plant in your fields helps make the soil stronger and helps the plants grow better. Ask a local farmer which plants grow best in which season. Here is an example of a good way to change the crops you plant in different fields:

<u>Field</u>	<u>Planting Season</u>			
	1	2	3	4
1	leafy vegetable	peppers, pumpkins	root crop, onions, potato	peanuts, beans
2	peppers, pumpkins	leafy vegetables	peanuts, beans	root crop, onions, potato
3	root crop, onion, potato	peppers, pumpkins	leafy vegetable	peanuts, beans
4	peanuts, beans	root crop, onion, potato	pepper, pumpkin	leafy vegetable

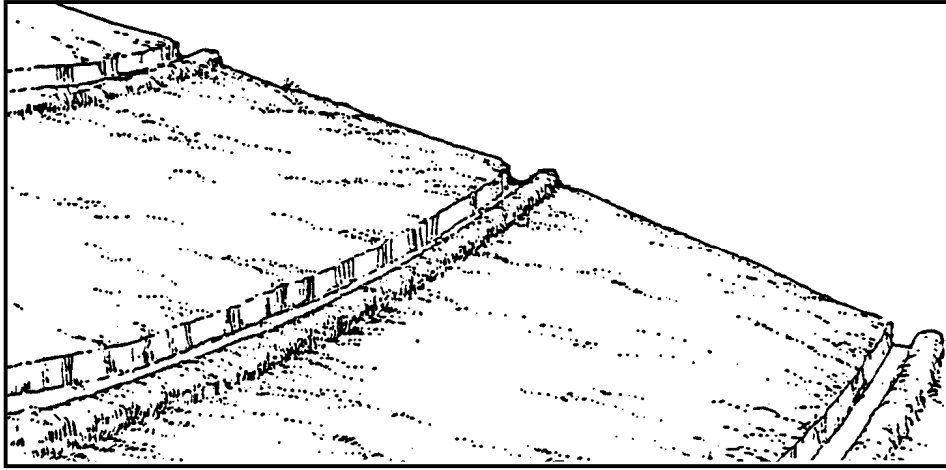
HOW TO MAKE BARRIERS TO PREVENT EROSION AND INCREASE WATER FOR HILL FARMING

[What effect will this have on slash and burn farming? What long term effects will it have on migration? Social structure?]

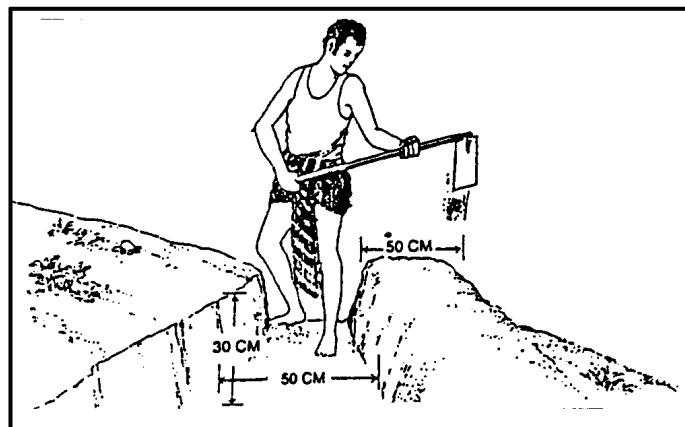
Making barriers for hill farming helps slow the rain from washing soil away, helps make the soil more fertile, and helps the soil absorb water. You can use a hill field for many years if you use this method. You can divide the hillside into smaller sections to slow the water flow when it rains. You can dig ditches and make dirt barriers in lines across the hillside to slow water flow. Try to make the lines at the same level all the way across the field. The lines should not slope up or down.



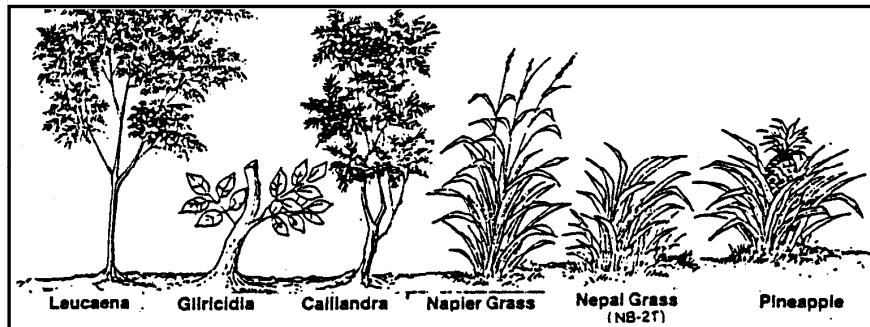
You should make a barrier of dirt and plants every 5 or 6 meters apart along a level line across the field. If the soil is deep, you should also dig a ditch uphill from the barrier. This will help the soil absorb the water better.



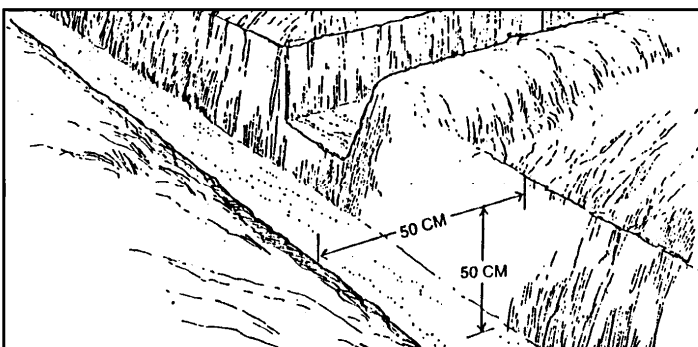
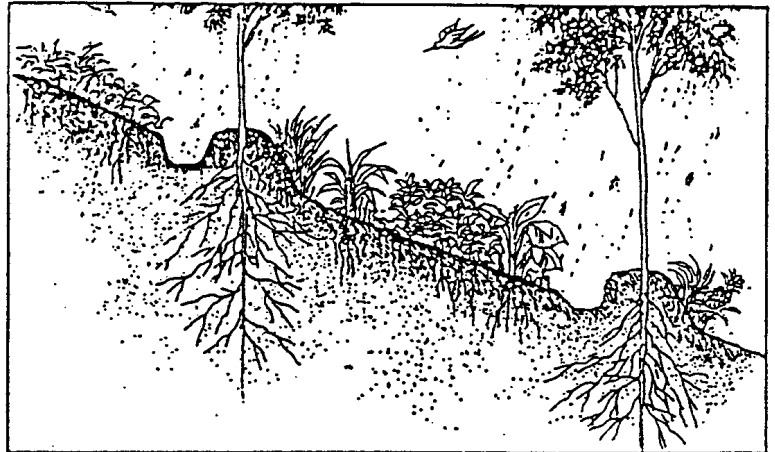
Start at the top of the hill. You can dig the ditch about 30 cm deep and 50 cm wide and use the dirt to build the barrier.



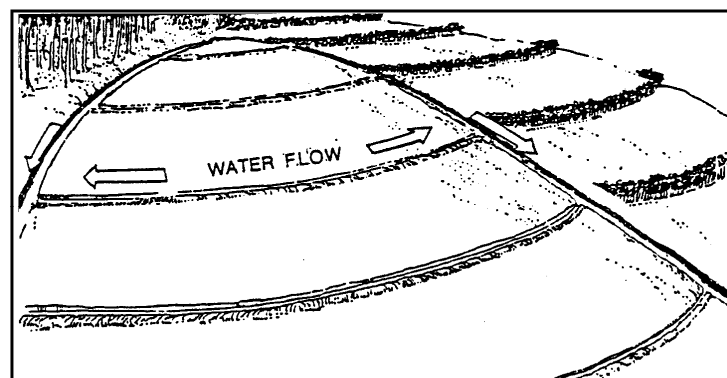
You should plant trees or plants on the dirt barrier. This will help prevent soil erosion and make stronger soil. Be sure to use plants that will benefit you such as pineapples, food crops or plants to feed animals. Plants such as soybeans and gliricidia make the soil strong. Grow the plants close together to help prevent erosion.

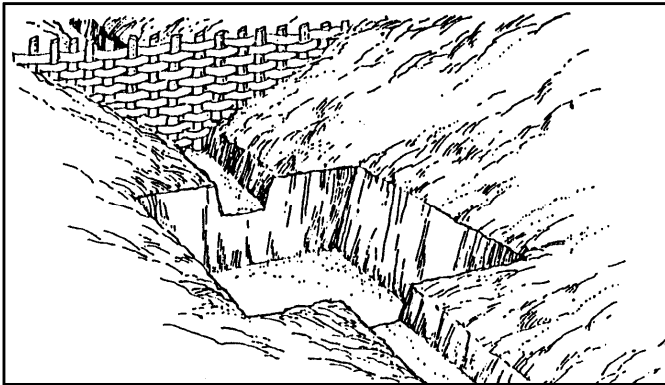


Remember to dig out the ditches when they begin to fill with soil. You can plant trees to use as natural fertilizer. Cut the trees down to 1/2 meter and mix the leaves and cut branches with the soil. You should not let the trees grow tall and shade the crops. If you planted grass on the barrier, you should cut the grass very close to the ground and use the cut grass to feed your animals.



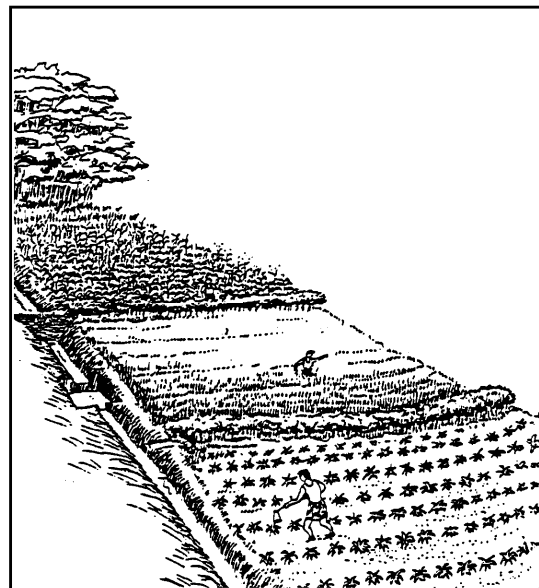
It is also important to dig a drainage ditch around the top and sides of the field to drain water. You should dig the drainage ditches 50 cm deep and 50 cm wide. The water from the smaller ditches going across the field should flow into the drainage ditches.





The water that flows in the ditches can move fast and erode the soil. To help slow down the water flow and prevent erosion of the soil around the ditches, build bamboo fences across the drainage ditches. You can also dig pits 50 cm deep and 1 meter wide to help catch the dirt in the water. Clean the dirt away from the bamboo fence and out of the pit when full. Put the dirt on the surrounding fields.

These methods will help you grow more food and use your fields for a longer time.



HOW TO USE PESTICIDES

[Do people use chemical pesticides?]

Pesticides are poison! Use pesticides carefully.

Mixing Pesticides

1. Read the label on the pesticide bottle completely. If a person cannot read he should have someone read the label for him and tell him what the label says. Be sure you know how to use the pesticide properly before you start.

2. Pesticides are poison. Pesticides can harm you if you breathe them, get them on your skin, eat them or get them in your eyes. To protect your body from pesticides, you should wear gloves, a mask or cloth over your mouth and nose, long shirt sleeves, long pants, boots, a hat and glasses.



3. Stand so that the wind blows pesticide away from you. Do not mix pesticides with water on a windy day.
4. Mix the correct amount of pesticide and water.
5. If pesticides get into a water source, then the pesticides can poison the water. Do not mix pesticides and water near a water source.
6. Keep the measuring containers with the pesticide equipment. Do not use the measuring containers for any other purpose.
7. Clean equipment and spills immediately.

Spraying Pesticides

1. Wear clothing as shown above.
2. Follow directions for the amount of pesticide to spray. Spray during the morning or late afternoon when it is cool.
3. Do not spray when the wind is strong. Spray so that the wind blows the pesticide away from you.
4. Do not eat or drink when using pesticides. Do not open pesticide containers or touch pesticide equipment with your mouth.
5. Wash all equipment and clothes. Take a bath when you finish spraying the pesticide.

Storing Pesticides

1. Keep pesticide containers closed tightly.
2. Do not store pesticides near water, food or animals.
3. Keep all chemicals in a place that children cannot reach.
4. Keep all chemicals in the original container and label the container as a poison.

Disposing Empty Pesticide Containers

1. Pesticides are difficult to wash out of the containers. Do not store water in empty pesticide containers.
2. You should burn empty pesticide containers away from the village when the wind does not blow. If the containers will not burn, then rinse the containers, make holes in the top and bottom of the containers and bury the containers.
3. Do not bury an empty pesticide container near a water source.

How to Make a Safe Pesticide

You can also try to make a natural pesticide which is safer than chemical pesticide. Crush lemon grass and the leaves from a neem tree. Mix 3 kilograms of the crushed material with 200 liters of water and sprinkle the water on your young plants every other day to keep insects away.