

# FOOTSTEPS

No.10 MARCH 1992

SMALL LIVESTOCK

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## Fodder gardens for goats

by Mike Carter

MANY SMALLHOLDER FARMERS are short of land. They may want to keep livestock because animals provide security, but are unable to do so because they do not have enough land for large animals. One solution to this is to raise goats in pens and to grow fodder to feed them.

For example, in Nigeria, some farmers are keeping goats permanently in houses raised about 60cm above the ground. Bamboo, split poles and thatching grass are used as building materials. The floors are slatted and made of wood or bamboo, with about 2cm between slats to allow urine and dung to fall through. The houses are built in sunny sites, sheltered from the wind. Feed racks are made outside the house under the shelter of the roof.

For feeding the goats, intensive fodder gardens are grown. Goats like variety in their diet. They need plenty of fresh, clean fodder each day.

Fodder gardens are grown on whatever land is available; it may be a plot next to the goat house; or waste land, field edges and soil conservation ridges may be planted.

Manure from underneath the goat houses is used to dig into

the garden soil to improve fertility. A wide variety of plants are grown including trees, shrubs and grasses. Legume plants or trees are particularly valuable because their leaves are generally high in protein. They also help to improve the soil.

Goats can live on the water they find in leaves, but they will do better if clean water is always available. This is especially important for milking goats.

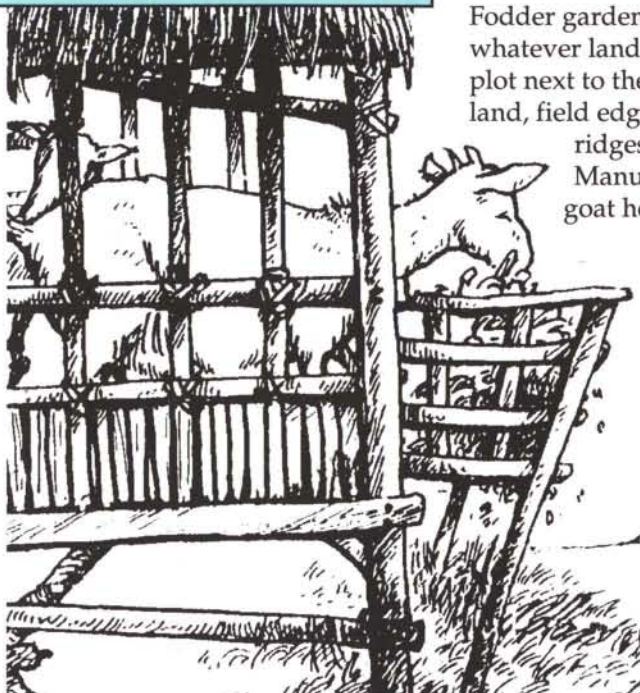
Females which are pregnant or lactating will raise healthier kids if their diet is nutritious. You may be able to buy commercial concentrates locally. If not, here is an example of a concentrate mixture you could make yourself...

rice bran	5 tins
crushed maize (only if available)	3 tins
copra meal or groundnut cake	1 tin
salt	1/10 tin

Feed these to your female goats twice a day.

## Some useful fodder plants...

SMALL LEGUMES	calapo centro lablab	<i>Calopogonium mucunoides</i> <i>Centrosema pubescens</i> <i>Lablab purpureus</i>
LEGUME TREES OR SHRUBS	pigeon pea gliricidia leucaena calliandra	<i>Cajanus cajan</i> <i>Gliricidia sepium</i> <i>Leucaena leucocephala</i> <i>Calliandra calthyris</i>
OTHER USEFUL LEAVES AND GRASSES	amaranthus banana guinea grass	<i>Amaranthus spinosus</i> <i>Musa species</i> <i>Panicum maximum</i>





## FOOTSTEPS

*Footsteps* is a quarterly paper linking health and development workers worldwide. Tear Fund, publisher of *Footsteps*, hopes that it will provide the stimulus of new ideas and enthusiasm. It is a way of encouraging Christians of all nations as they work together towards creating wholeness in our communities.

*Footsteps* is free of charge to individuals working to promote health and development. It is available in English, French and Spanish.

Readers are invited to contribute views, articles, letters and photos.

**Editor:** Isabel Carter  
83 Market Place, South Cave, Brough,  
N Humberside, HU15 2AS, UK.  
Tel: 0430 422065

**Editorial Committee:**  
Jerry Adams, Revd David Applin, Mike Carter, Richard Franceys, George Goddard, Sue Hanley, Dr Ted Lankester, Sandra Michie, Jim Rowland, Muriel Scott, José Smith, John Wibberley

**Illustrator:** Rod Mill

**Design:** Wingfinger Graphics, Leeds

**Translation:**  
Alison Coz, Totoya Dew, Helen Machin,  
Nicole Mauriange

**Mailing List:**  
Write, stating preferred language, to:  
Footsteps Mailing List, Tear Fund, 100  
Church Road, Teddington, Middlesex,  
TW11 8QE, UK.

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## 'Barefoot vets' for sheep and goats

by Dr Roger Sharland

SHEEP AND GOATS are often neglected in development projects. But they are very important in the lives of those who do keep them. They act as a type of bank – animals can be sold for special occasions or for a particular need.

Their importance was recognised by the ACROSS project in Mundri District in Southern Sudan in the late 70s and early 80s. Investigation showed that although the sheep and goats survived under the local system of management, they were not very productive and there were many losses due to sickness.

One of the biggest problems was parasites. These were of two types:

- **external parasites** including lice, mites and ticks which pierce the skin and suck blood

- **internal parasites**, especially worms, which have the same effect from within the body.

These parasites weaken the animals, making them more likely to suffer from other diseases. They also reduce their growth rate and limit the fertility of the females.

A local programme was set up to reduce the very high number of parasites.

### Treating external parasites

There are three main ways of treating the external parasites:

**1 Spray the animals** with an appropriate chemical using a backpack sprayer. Take care to spray the parts of the body where ticks hide. The person spraying must be very careful not to breathe in the chemical, or allow it to contact the skin.

**2 Spread grease over the animals** to help reduce the parasite numbers. In Sudan the locally available shea butter was reasonably effective. Used engine oil is also effective but messy.

(The fish poison bean, *Tehrosia vogelii*, is reported to be effective in controlling ticks. Soak 1 litre of pounded fresh leaves in 1 litre of water for some while. Then brush the juice onto animals.)

**3 Dip the animals** in chemical dips. Because of their size, sheep and goats can be dipped in a 200 litre oil drum which has had the top removed. This is very effective but expensive and hazardous. Wear some form of waterproof clothing: for example, gloves and gum boots or plastic bags over the hands and feet and a long plastic apron.

### Treating internal parasites

**Drenching** is necessary to treat the internal parasites. A solution is made up containing either commercial preparations or natural, locally available drugs. This is firmly poured down the throat of the animal using, ideally a large plastic syringe, or a soda bottle. Two good medicines are *Nilzan* and *Valbazen* which kill both worms and flukes. They are usually available in tablet form and must be



Goats are sold for special needs – they act as a kind of bank.



ground up and diluted to the correct strength following instructions very carefully. Use a carefully marked bottle for measuring the right dose.

Lift the animal's head and hold it firmly. Put the bottle or syringe into one side of the mouth and pour the medicine slowly on top of the tongue, giving the animal time to swallow. Make sure the animal has swallowed all the medicine before releasing its head.

Never use insecticides as drenches. Use only the correct chemicals.

If commercial drugs are either not available or too expensive, consider using naturally occurring drugs. Ask local healers what drugs they use for treating worms in people. Are there drugs known to be effective in treating animals? If so, what dosages are recommended?

These plants have been reported to be effective in controlling internal parasites:

- juice from boiling the roots of African Breadfruit, *Treculia africana var africana*
- juice from boiling the leaves and fruit of *Morinda morindoides*
- juice from the leaves of *Chenopodium ambrosioides*, known as Wormwood or Mexican Tea
- Neem, *Azadirachta indica* – give a handful of young leaves mixed in with the feed at regular intervals.

In Sudan, ACROSS used the network of extension agents in the area to manage the programme. ACROSS trained local volunteers to carry out drenching and dipping, using supplies bought through the project.



Spraying a goat with a back-pack sprayer.

At first, treatments were given to sickly flocks so that the effects could be readily seen. Treated animals were stronger and better able to fight off disease. Growth and fertility were greatly increased.

These local volunteers, both men and women, who were reliable owners of sheep or goats, were the key to the success of the programme. They were the people who, for a small fee, actually carried out the treatments. The fee charged for treatment covered the cost of the medicines used, as well as giving a small payment for the work involved. These local volunteers were, in effect, 'barefoot vets'. They met regularly for discussion and training on subjects such as improved

pasture, breeding and other aspects of preventative veterinary health. The dipping and drenching were, however, the core of the programme. Because these were based on commercially produced supplies, the programme has now ceased due to the disruption caused by the civil war. It may be worth considering carefully the use of naturally occurring products before setting up a similar programme.

*Can any readers help with information on naturally occurring chemicals?*

*Roger Sharland worked with ACROSS in Sudan as an agriculturalist. He is now a coordinator with RDE, OAIC, PO Box 21736, Nairobi, Kenya encouraging church rural development programmes.*



FROM THE EDITOR

THE ROLE which various small livestock play in the nutrition and economy of most families is an important one. In rural areas, many farmers unable to keep larger livestock regard sheep and goats as an investment – ready cash when money is needed for school fees or sickness. Smaller livestock – chickens, rabbits, etc – mean that hospitality is always available for visitors, and provide a supply of eggs and meat for the family, even though this is often only for special occasions.

This issue does not place much emphasis on special breeds and equipment. Instead we look at making the most of what is already available. Village chickens are generally ignored, but here are some practical and tested ideas to improve production. Rabbits are available in most countries, but projects often fail through lack of awareness over breeding, handling and feeding. In just a few pages we cannot hope to cover all the necessary information but there are plenty of recommended books. Often the ideas given for one animal can be adapted for use with another. For example, the guinea pig breeding scheme can easily be adapted to use with rabbits.

Improving production of small livestock will bring great benefits for the health of the whole family. We hope health workers can use some of these suggestions in their communities. Would a rabbit project, for example, be a useful addition to your community clinic?

Dr Chris Curtis shares new information on the treatment of nets to help in the fight against malaria. Your letters raise other useful points about subjects we have looked at in previous issues.

Thank you for the flow of encouraging letters about *Footsteps*.

*Isabel Carter*





## Issues raised by AIDS

WE HAVE DISCUSSED protection of health workers from AIDS at a number of meetings. The conclusion is always – not a great risk, unless you have cuts and even then it's OK as long as you're careful to cover the cut and wear two pairs of gloves!

On several occasions I have been liberally splashed with blood, and it's not always possible to run and wash it off in an emergency. One day I received a large cut on my hand while hurrying to break open an ampoule of valium for a patient having a fit. Next day, I was handed a baby to resuscitate. It was an emergency and the last thought on my mind was putting on gloves. Other health workers I talk with have had similar worrying incidents.

However careful our medical training about how to protect ourselves, there are always emergencies which demand an immediate response. I know of six doctors who have contracted AIDS through their work in Africa. Doctors, nurses and midwives are at greatest risk, especially in Africa.

I find myself hoping that I won't be asked to give blood if no donors are available for a patient. All donors are tested – how would I cope if the lab staff came and told me I was positive?

One of the hardest things for me would be the way people would assume I had contracted the disease – through immoral behaviour. Would I be able to stay quiet and not try to justify myself, not say to people in a self-righteous way, 'Oh, but I got it while taking care of a patient, you know.' What does this tell me about my own attitude to people with AIDS? Disturbing...

Sitting in church one Sunday, I was thinking it all over again – particularly the cost of remaining silent about the reason for contracting AIDS. In an amazing way it made Isaiah 53:7 come alive. What it must have cost Jesus to bear our sins silently!

*'He was oppressed and afflicted, yet he did not open his mouth. He was led like a lamb to the slaughter and as a sheep before her shearers is silent, so he did not open his mouth.'*

Was this the way to react? Could I do it? What would be my response to the Lord if he allowed me to get this disease when I was working to serve him? Would I be able to love and trust him? How would I feel about the people who had given it to me? How would I tell my family? Would I be able to continue midwifery now that I was a risk to other people?

I hope this may help some of you who are in a similar position to myself to think over your feelings. All of us need to be realistic about the risks and be prepared to meet them as Christians.

*Catherine Lynch*

I AM CONCERNED about the glibness of some publications on caring for AIDS cases. Have these authors actually looked after terminal cases of 'slim'? Do they have any idea

of the volume of diarrhoea these people produce? They arrive at our health centre here in Karamoja, soaked in it – clothes, blankets, sheets, all wet through. They are too weak to bother going to a latrine, which few people have anyway.

They come here because their families abandon them. Karamoja is hot and dry during the day (this has the advantage that the sun quickly sterilises diarrhoea on open ground). But at night, if 'slim' sufferers sleep outside in a soaked sheet they become dangerously cold. We offer shelter and a welcome. The other patients don't want to go near them, despite the example of our staff.

We find most patients eagerly respond to the gospel and, not surprisingly, do not fear death. Heaven is clearly a lot better! However, their last few weeks are, physically, a miserable existence. To care properly for an AIDS case with classical 'slim' requires a lot of water, preferably hot, a lot of changes of clothes, plenty of sheets and preferably a 'cholera bed'. Usually none of that is available.

The reality is that love, prayer and an eagerness to share the good news of the gospel are here, but the amount of diarrhoea these poor people have, makes caring a real sacrifice of love.

*Dr Dick Stockley, Karamoja, Uganda*





## Doctors and medicine men

*A reply to the knotty problem of working in an area where the medical doctor and medicine man are often tried out in turn (Footsteps No.7)*

I AM A REGULAR READER of Footsteps and was interested to read the story about Anastasia who delivered a dead baby after chewing a root given to her by a medicine man.

This type of problem is usually common in places where primary health care is not very effective and where the importance of the traditional healers and medicine men is not recognised.

Until they are fully recognised and trained, unhealthy rivalry will be going on between them and the medical doctors. The traditional healers should be respected. We should try to learn from them and improve on their knowledge. Since they are part of the community, they often understand the needs of their people better than the doctors who may not come from that community.

Health workers must understand the beliefs, attitude and culture of the community they work with. People may not have any trust in western medicine, they may find that they have to waste a lot of time in waiting to be seen at a clinic or hospital, or they may be treated with little respect. None of this will be so with the traditional healers. We need to understand that they are part of the local resources to be learned from and used wisely.

*Mrs Kunle-Alarape O, Ibadan, Nigeria*

## Technical and scriptural

I HAVE RECENTLY BEGUN to receive your magazine, *Footsteps*. I want to thank you very much. I find the magazine interesting not only for its technical information on various subjects, but also for its rich scriptural touch.

*Bulus U Ali, Musi, Nigeria*



## Demonstration gardens

I SPENT SEVEN YEARS with the Malinke subsistence farmers in South Western Mali. I did nothing that they couldn't do with the resources they had. I had many small plots using different varieties and different methods such as alley cropping with leuceana or mulching with roof grass. I had many failures, but every time I had a success the farmers noticed. They would come to me and ask about that crop. What had I done to make that plot so much better than the one next to it?

The women would see that the varieties I was growing were different from theirs. They would ask for seed of those which grew best. Of eleven new varieties of cowpeas which I tried, eight were failures. The remaining three were very successful and in this way were given to 129 families.

I had two big assets. They knew I loved their children and them. They also knew that I would help them in any way I could.

Serving in Jesus love,

*Don Mansfield  
Development Resource Center  
1539 E Howard Street, Pasadena  
CA 91104, USA*

I HAVE USED TRIALS both in farmer's fields and on demonstration land. I believe firmly that there is a place for both. Normally I would not go into a new situation and start

arranging trials with farmers until I was certain that the trials would work in that particular situation. Many things can look wonderful when first tried. For example, here is a story about one village where I worked many years ago.

An extension worker had tried a new variety of sorghum in a farmer's field and had a very good result: much better than the traditional millet. The village people were very impressed and the following year planted more sorghum. In the third year most of the land was sorghum. Then the sorghum midge arrived and attacked the sorghum flowers. There was practically no grain to harvest. Rats and weevils, which do not bother millet, attacked what was left.

By encouraging people to plant most of their land with this new sorghum variety, the extension worker exposed the villagers to too much risk.

Result – the people were starving and did not want to try other alternative methods for a long, long time.

Demonstrations on farmers' land must only be done when you are completely sure that they will be effective. Choose the less successful, poorer farmers for such demonstrations. If they are successful, have an open day and let the farmer explain how it was done. Everyone in the village will know then, that if this particular farmer has been successful, they too will be able to do the same thing.

*P J Storey, Cumbria*



# Rabbits

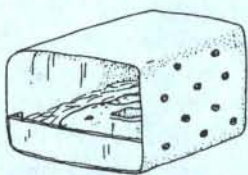
Rabbits are kept by small-scale producers in virtually every country of the world. When **well managed**, they are very productive, reproducing rapidly and producing good quality meat and fur. They are useful animals for individual farmers, village groups and schools.

Several useful books are available to provide helpful advice for anyone keeping rabbits. This article looks at some of the points that often cause problems for small-scale producers.

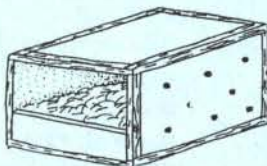
## Breeding

Follow these points to ensure successful breeding:

- Learn to sex young rabbits at the age of 8–10 weeks. It is normal to separate the sexes at this time and put them in different cages.
- Do not breed from the rabbits until they are fully grown – normally around 8 months old. Choose only healthy, large rabbits which have come from large litters for breeding. You only need one buck (adult male rabbit) for about ten females. Bucks should be changed every year to prevent inbreeding.
- Males will fight if they are kept together.
- When the females are ready for breeding, take them to the buck's cage in the early morning or evening. If the female is ready, mating should take place immediately. Remove her after mating, as they will fight if left together. Three weeks later, move the female into a separate cage with a nest box. She will give birth a month after mating. Do not disturb her for several days! If you need to check the young rabbits, rub your hands over the female before you handle them. She will not go near them if they smell of your hands.
- Young rabbits should leave the mother at 6–8 weeks of age. Leave the mother for another month before re-mating.



Kerosene tin nest box



Wooden nest box

## Handling

Rough handling causing stress, will reduce production, make the animals more susceptible to disease and can result in the loss of young rabbits – before or after birth. A very common mistake is to lift rabbits by their ears. This is very painful for them and can damage the backbone. Rabbits should be lifted by the skin behind the ears – the scruff. Support the rabbit by placing the other hand under the hindquarters.



Hold a rabbit by its scruff.



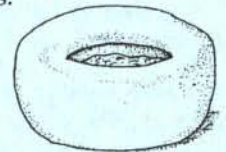
Quieten a rabbit by holding its ears and covering its eyes.

## Feeding

Rabbits like a variety of vegetable material. Try and include legume leaves. Food must be fresh – old food should be removed daily.

If possible, pregnant and growing rabbits will do better with some grains (concentrates) added to their diet.

Rabbits depend entirely on their owners for all their needs. They must be fed and given clean water at least twice a day. They cannot be left for days while owners attend funerals or weddings! Rabbit production takes time and effort. Projects fail if the owners do not realise this.

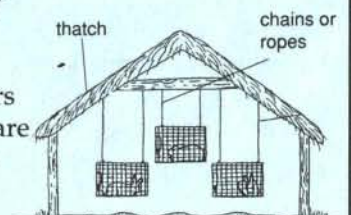
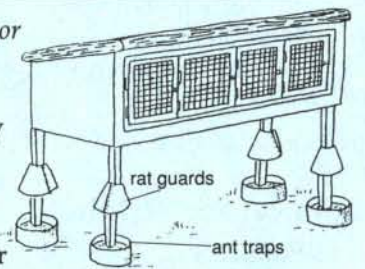


A heavy clay food trough not fastened to floor, but too heavy to be tipped over

## Housing

The correct housing for rabbits is very important. They can burrow, chew through wood and hop out! Housing must be strong enough to keep them in and also to keep out dogs and other predators. Cages must give enough room for the animals to hop about and stretch. They must also be well ventilated and easy to keep clean. Any strong readily available material can be adapted for use. Wire floors are easy to keep clean, but in areas which are cool at night rabbits may be more likely to catch pneumonia. Bamboo or wooden slatted floors may be better in these areas. Rabbit manure is excellent for gardens.

An outdoor cage



An indoor cage

Adapted from the book on rabbits by Denis Fielding – an excellent source of information on rabbit keeping. See page 12.



# Problems with poultry

by Mike Carter



*Simple night house for village poultry with rat guards*

YOU HAVE PROBABLY seen an 'intensive' poultry project: day-old chicks of a 'grade' or 'hybrid' type have been bought; an expensive poultry house has been built for them, perhaps with a corrugated tin roof; special feed is brought ready-mixed from mills.

Sometimes such poultry projects work well, but it is a sad fact that in many countries they can often be seen empty. The chickens are gone and money has been lost. The poultry may have belonged to a development project, to a village cooperative, to a church or school group or to an individual farmer. Whoever they belonged to, hopes have been disappointed.

Why do such projects so often fail? Intensive poultry-keeping is not the easy income-generating activity many people believe it to be. Advice may be given by people who know little about poultry-keeping. Sometimes people do not realise how much investment is needed. Things can go wrong. Amongst the most common problems are:

## Poor management

The management in intensive poultry-keeping must be very good. There must be strict hygiene control: e.g. vaccination against disease, foot dips at the door, disinfecting the house for new chickens. There must be enough space for each bird and sufficient waterers, feeders, nest boxes and perches. If day-old chicks are bought, they must be kept warm and fed a correct diet.

## Poor record-keeping

Production and money records are needed. Chickens not producing well (eggs or meat) must be culled (sold or killed) quickly.

## Wrong type of chicken

The chickens may have come originally from another country. They may only be able to produce well in a very different type of housing, or under a different management system. Under village conditions, local chickens are often the most reliable and profitable.

## Project started too large

Perhaps 200 layer chicks were bought before the skills and knowledge in intensive poultry-keeping were gained, or before it was certain the chicks would do well and the produce sell well.

## Inaccurate budgeting

The farmer or project members need to work out accurately, before beginning, exactly how much food growing chickens eat. Other costs – medicines, vaccines, equipment – must be added. With layers it will be six months before the first eggs are laid; in the meantime there will be no income.

## Feed supply problems

Perhaps feed supply or quality failed; there was no more cash to buy feed; there was no transport. Laying chickens will stop producing if feed quality changes or if they have to go without feed or water for just 24 hours. Chickens eat similar food to people, so if food is short, intensive poultry may be in competition with people. This inevitably will lead to supply problems.

INTENSIVE POULTRY-PRODUCTION with improved 'grade' birds can be very successful and can make a lot of money. But the risks are very high indeed and the cost of failure may be huge. In many parts of the world, ordinary village poultry production involves chickens scavenging for their food. They usually have no special house, but sleep perhaps in a shed or cookhouse. Few eggs are laid, many young birds die, or are killed; growth is slow. But this system involves little financial risk to the farmer. The local chickens are well adapted to local conditions and more resistant to disease. Too often, people believe that there is little point in improving village poultry. But village poultry production can be greatly improved without much risk of failure.

My advice to anyone considering intensive poultry production under village conditions would be to **improve village poultry production first**. The results may surprise you! The centre pages contain some suggestions; please write and add your own.



*A well-ventilated deep litter house*

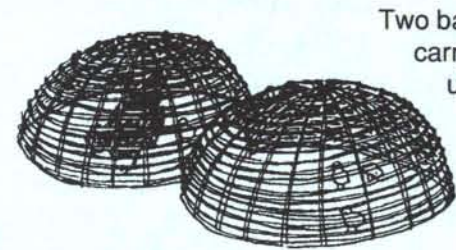
Mike Carter works for T-CORD,  
Bishop Burton Agricultural College.



# VILLAGE POULTRY PRODUCTION

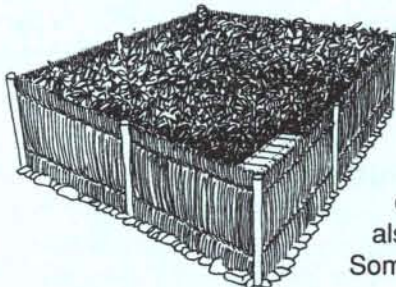
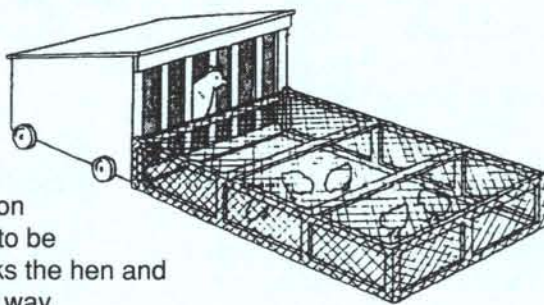
## Predators

The main predators were birds of prey (kites and eagles) who would kill chicks up to six weeks old as they scavenged with the mother hen.



Two baskets (used locally for carrying fish) were turned upside-down, and a passageway made between them. Only the chicks could pass between the baskets; the mother hen could not. This meant that extra protein-rich food could be given to the chicks.

This coop was built out of local materials. Like the baskets, it was easily movable. Again, extra food could be given to the chicks. Both of these methods gave good protection – **but** note that **all** food had to be provided during the six weeks the hen and chicks were enclosed in this way.



Make a small, fenced area and plant pigeon peas or a similar shrub to provide cover from predators. The birds of prey will not fly down through the branches. The pigeon pea also provides leaves and seeds for the chickens. Some extra feeding will be needed.

A farmers' discussion group in Kenya identified five main causes for low production with village chickens:

- predators killing young chicks as they scavenged for food
- disease epidemics
- low amount of food eaten while chickens scavenge
- poor, unproductive poultry breeds
- poor hatching of chicks.

Here are some of the solutions that were worked out and which proved successful. Adapt them to your own situations.

Notice that the Kenyan farmers did not think that building a special poultry house was one of the first priorities for improving village poultry-production. Remember, as soon as you house and enclose a chicken, it depends on you for all its feed and water. If you cannot provide the balanced diet needed, then it is better to allow them to scavenge.

Increased production of meat and eggs improves family nutrition and increases income.

## Improving local poultry breeds

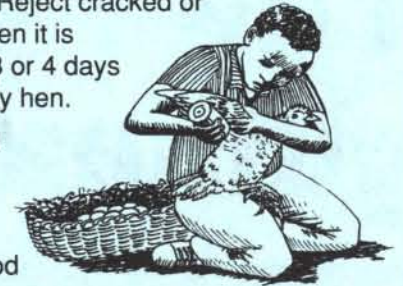
Cockerel exchange schemes have worked well in some areas. Cockerels of an 'improved' breed are reared by a project or Government centre. These can then be bought or exchanged by farmers so that they cross-breed with village hens. Exchanged cockerels should be exchanged with those of neighbouring farmers every year to avoid in-breeding. After four to five years the exchange programme should be repeated.



## Improving hatching of chicks

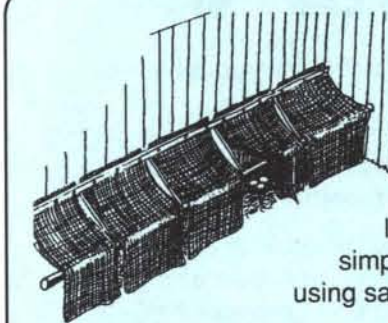
Carefully select eggs for hatching. Choose only well shaped, strong shelled and medium sized eggs. Reject cracked or dirty eggs. Write the date on the egg when it is collected and don't store for more than 3 or 4 days before starting incubation under a broody hen.

Dust the mother hen and the nest with a parasite-killing chemical (eg: *Sevin* or *Asuntol Powder*) to keep her free of parasite pests. Place the nest in a cool, dark and quiet place for the 21 day period needed for incubation.



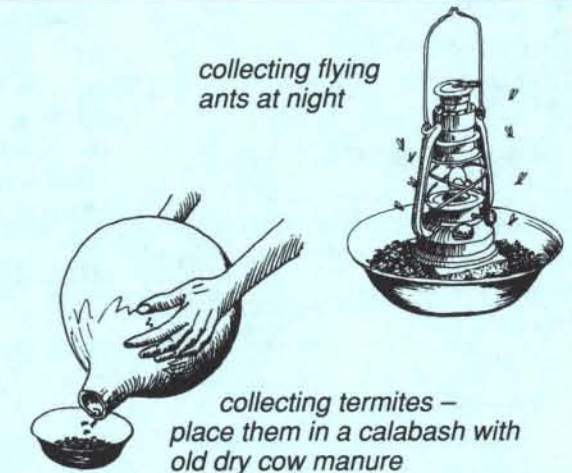
## Improving laying conditions

Encourage hens to lay their eggs **before** they start scavenging by not releasing them until 2-3 hours after sunrise and by providing an area for egg laying. Effective nest boxes can be made by simply building a frame along one side and using sacking.



## Extra feeding

Poultry were given extra food in the morning and also in the evening to attract them back into the night shelter. Protein-rich feeds are especially important. These could include trapped termites or flying ants, fish waste, snails, fermented grains used in brewing local beer, leaves and seeds (preferably cooked) of pigeon pea or Hyacinth bean (*Lablab niger*) and, if available, cereals such as maize or sorghum.



collecting flying ants at night

collecting termites – place them in a calabash with old dry cow manure

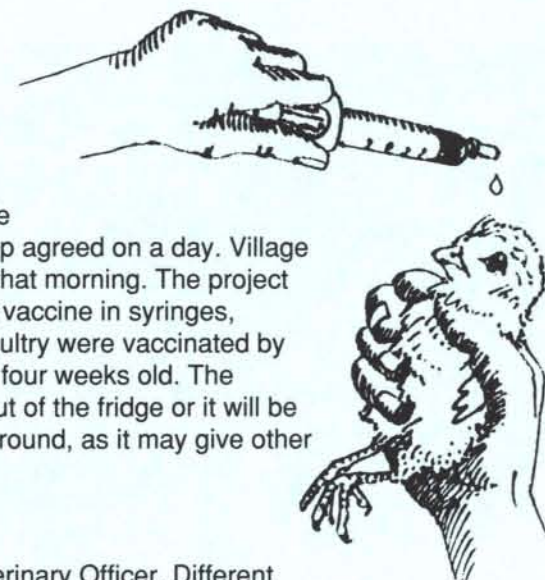
## Disease epidemics

Vaccinating poultry against Newcastle (Ranikhet) Disease was found to be a very simple and effective protection.

Vaccine was obtained from the District Veterinary Officer. It **must** be kept cool in a fridge. Each bottle was enough for 1,000 chickens. The farmers' group agreed on a day. Village poultry were not released from their night houses that morning. The project leader travelled quickly around the area giving out vaccine in syringes, **without needles**, to village farmer groups. The poultry were vaccinated by placing one drop in one eye of every chicken over four weeks old. The vaccine **must** be used within 3 hours of taking it out of the fridge or it will be useless. Destroy any left – do not throw it on the ground, as it may give other chickens the disease.

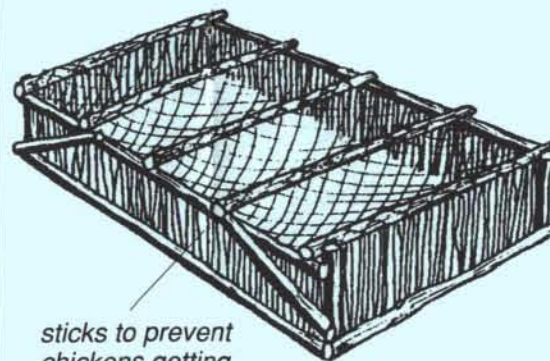
This was repeated every 3 months.

If you want to try this, first get advice from the Veterinary Officer. Different types of vaccine are available, some given in different ways. Some countries provide this service through the Government Extension Agents.

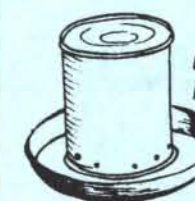


## Perches

Provide simple perches for night-time use. This will make it easy to collect the manure regularly.

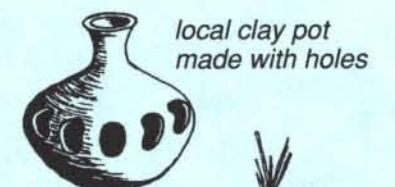


sticks to prevent chickens getting under perch

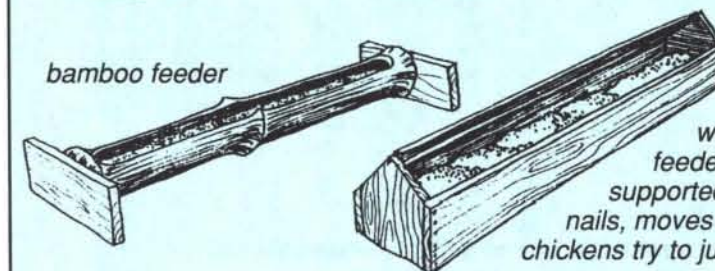


upturned tin with holes

These are some ideas for simple feeders and waterers.



local clay pot made with holes



bamboo feeder

wooden feeder – top bar supported by two nails, moves round if chickens try to jump on it





# The guinea pig



THE GUINEA PIG or cavy (cuy or cobayo) comes from the Andes in South America. Villagers in many parts of South America keep guinea pigs in their kitchens.

Guinea pigs have many good points:

- They are small animals that are herbivorous (live only on vegetables and green leaves).
- They are easy to raise
- They are timid and do not try to run off.
- The meat is tasty and high in protein.
- Because of their size (usually 0.5–1.5kgs) they can easily be eaten by a family in one meal.
- The fur is very good and can often be sold.

In the Andes, guinea pig is often served as a favourite dish. In Peru alone there are 22 million of them. They are also eaten by the highland

people of Bolivia, Colombia and Ecuador. Most people who raise guinea pigs do so for their own household consumption, or to exchange for other food, such as rice.

Researchers in Ecuador and Peru have been working on developing much larger breeds of guinea pigs which grow rapidly. These breeds are being slowly distributed in parts of South America. If you would like to obtain a large, improved male, try asking your agricultural extension officer for advice about where you could get one, or write to: Heifer Project, PO Box 808, Little Rock, AR 72203, USA for advice about a local source.

## Traditional production

Many people allow guinea pigs to run freely around the cooking hut. Small pens may be built of adobe (mud) bricks, often underneath the cooking stove, since guinea pigs like to keep warm. This system has some advantages:

- Guinea pigs do not climb so they are easy to keep in such pens.
- This system protects them from dogs, rats, foxes and cats which will all eat guinea pigs.

But there are also some disadvantages:

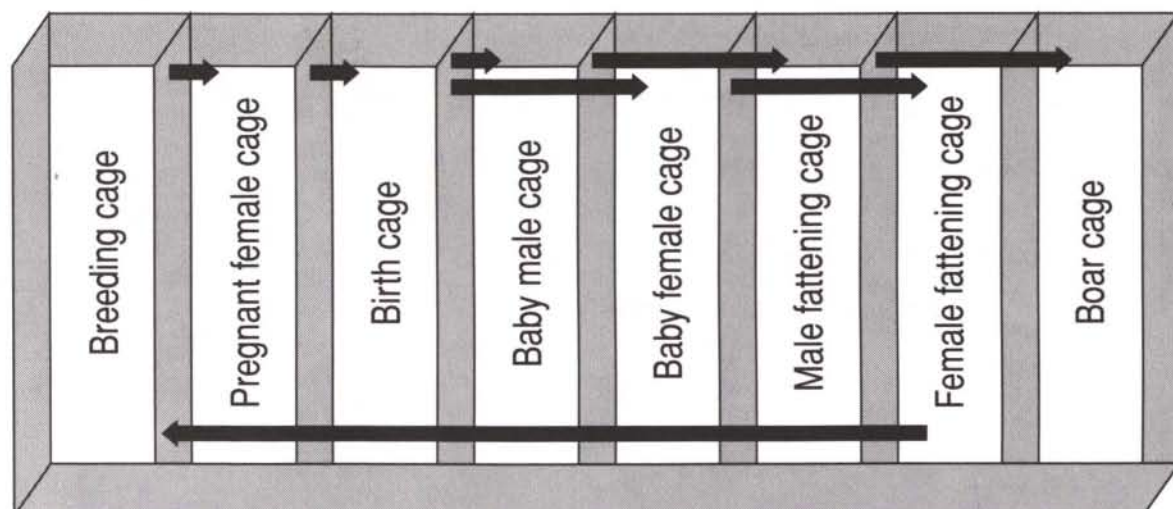
- Breeding cannot be planned and so the production of guinea pigs for meat will not be very high.
- Disease can also be a problem as such pens are not easy to clean.
- Pregnant guinea pigs are often picked for cooking because of their large size.

This simple system is used by many folk in the Andes. Production could be increased by encouraging people to feed the guinea pigs two or three times a day, and by teaching them how to recognise pregnant females.

## Improvements

If people are interested in changing their traditional system to achieve higher meat production, there are several points which can be followed:

- Guinea pigs can begin breeding at only a few weeks of age. However, it is much better to prevent breeding until females are three months old and males are four months old. Only large, healthy animals should be used for breeding.
- Select females which have larger litters for breeding (more than two babies). Plan to replace breeding females after six to eight litters.
- Plan to eat young guinea pigs when they are three to four months old.



### GETTING ORGANISED

...a system for rearing guinea pigs using a long cage divided into sections.



They grow rapidly up to this age. After this they will grow much more slowly.

- Keep a few large males (boars) for breeding. Use a different boar for breeding from each month. Replace the boars with new stock each year to prevent inbreeding.
- Name or number breeding males and females and keep simple notes, eg: date of breeding, date of giving birth, size of litter. Also record when animals die or are sold or eaten.
- Females are pregnant for two months. After giving birth they can be mated within a few hours, but are better left for one month before mating again.
- Provide a continuous and varied supply of fresh, green material for feeding. Guinea pigs also enjoy kitchen left-overs and split maize grains. They will not eat dirty food, so use some way of keeping their food off the ground – tie in bunches or use a feeding trough.

## Setting up a system

Here is a simple system for keeping guinea pigs which you could adapt, as needed, to your own situation. A long cage (or pen) is built and divided up as in the diagram on the left.

Every month move the animals as follows:

- Put the boar in the breeding pen back with the other boars and replace him with a different boar from the boar pen.
- The females who have given birth need to be moved into the breeding cage – but first place them in a bucket or box while you move all the other animals.
- Move all the other animals into the appropriate cage on the right, beginning by moving the babies into the fattening cages. If you do it in any other order you will end up by getting very confused!

This system should work very well using three males and fifteen females as breeding stock. Once well established, with breeding females producing three or four in a litter, at least 200 young guinea pigs should be produced for selling or eating each year.

Guinea pigs are less productive than rabbits, but they thrive on a herbaceous diet, are generally less likely to suffer disease and are easier to keep because they do not burrow or jump.

*Compiled from information from M V Julio Leon Zevallos, IDRC Reports and ECHO.*

*Guinea pigs kept the traditional way – under the kitchen stove.*

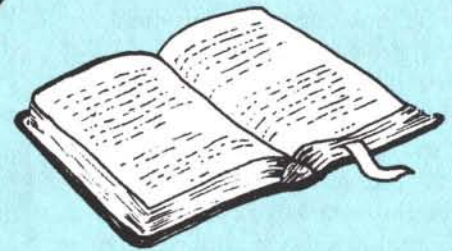


(Photo: R Charbonneau, IDRC Reports)

## BIBLE STUDY

### Our commitment to development: the parable of the talents

*by Dr Isaac Zokoue  
FATEB, Central African Republic*



THIS IS A FAMILIAR STORY, so we will not look at all the details, but there is much to learn about our attitude to development from this story.

#### Read Matthew 25:14-30

What is the master's attitude to his servants? Look in particular at verse 15. Does he allow his servants to share in the management of his property? How much does he ask of each of them? Why?

How do the first two servants react? Read verses 16–17. What is our reaction, in terms of development, with the little we may have to work with?

In verse 20 we read how each of these two servants made 100% profit. Each one realized the maximum. Do we do this with the resources we have?

What is the master's reaction in verses 21–23? Notice that he doesn't give instant rewards – he lets them enjoy the fruits of their labours on a permanent basis.

In verses 24–25, do you agree with the accusation of the third servant after considering the qualities we have just seen of the master? What do you think lies behind his reaction to the master?

Why does the third servant meet with such harsh judgement? Is there a place in society for those who unfairly enjoy the fruits of the labour of others?

The parable of the talents brings out several principles which are helpful in development work.

Development, even in the physical realm, is a Biblical principle. People are responsible for their environment. The idea of growth representing development is found through the entire Bible. Those who fail to share in the development effort when they have the ability to do so exclude themselves from society. It is not fair to live on the fruits of others' labour.

As Paul said, 'Whoever refuses to work is not allowed to eat.' Refusal to participate in the production effort for the good of oneself and that of others, goes against God's plan for mankind. Is this a problem in your community? How could you help to improve the situation?



## AGRICULTURE

### The Tropical Agriculturalist Series

published by CTA and Macmillan  
£4.99 from CTA (address below)

#### Rabbits

by Denis Fielding  
ISBN 0-333-52311-3 (106 pages)

A particularly useful book for anyone considering rabbit production or wanting to improve their knowledge. The book includes details of physiology, reproduction and breeding, housing and equipment, feeding, production, diseases and extension. It is very practical and simply presented. The diagrams are clear and helpful. It encourages a real understanding of the needs of rabbits and the importance of careful observation. Highly recommended. (See page 6.)

This is one of a CTA (Technical Centre for Agricultural and Rural Cooperation) series of low cost, practical books and field guides aimed at farmers, producers, extension officers, teachers, students and community development programmes. The books cover a wide variety of subjects and provide a useful resource. They are well illustrated and contain full and clear details of each subject.

The series is available in English and French.

NB: The French title of the series is *Le Technicien d'Agriculture Tropicale*. Write to:

G P Maisonneuve et Larose  
15 Rue Victor-Cousin  
75005 Paris  
France.

**Livestock** subjects covered include Goats, Pigs, Sheep, Poultry, Draught Animals and Rabbits.

Maize, Cassava, Cotton, Food Legumes, Storage of Food Grains and Seeds and Plantain Bananas are among the subjects covered in **Crop Husbandry**.

#### CTA Agrodoks

This is a series of simple booklets on various agricultural practices. There are over 20 of these *Agrodoks* as they are called. Subjects include: small

scale poultry production in the tropics, backyard rabbit farming, beekeeping in the tropics, and hatching eggs by a hen or in an incubator.

*Agrodoks* will be supplied free of charge to inhabitants of African countries, and the Caribbean and Pacific States. For others the cost is Dfl 7.50 each excluding postage.

They are available in English and French.

CTA also provide an information service for specific queries concerned with agriculture or development.

Write to CTA for information and details of the *Agrodoks*:

CTA  
P O Box 380  
6700 AJ Wageningen  
Netherlands.

#### Livestock Series

produced by the Christian Veterinary Mission

A series of very practical books on livestock raising under primitive conditions. The series includes pigs, rabbits, fish, goats and poultry. They contain useful and practical information.

Write for information to:

Christian Veterinary Mission  
19303 Fremont Avenue  
North Seattle  
Washington 98133  
USA.

#### Striga Poster

Following the article in the last *Footsteps*, readers may like to hear about a poster published for extension workers on the problem of Striga. It shows the stages of development, both underground and above ground and gives information on control.

The poster is available free of charge in French and English from:

G Salle  
Universite Pierre et Marie Curie  
Laboratoire  
2 Place Jussieu, Bat 2  
75252 Paris cedex 05  
France.

#### Exchange Newsletter

This is a good source of practical livestock ideas including small livestock. It is sent free to

organisations in the developing world with an official title (not to individuals). Write to:

Heifer Project International  
P O Box 808  
Little Rock  
AR 72203  
USA.

## HEALTH

### Care of the Critically Ill Patient in the Tropics and Subtropics

by David A K Walters et al

Published by Macmillan Education Ltd  
ISBN 0333 53799 8 Paperback £14.99  
ISBN 0333 53798 X Hardback £40.00

This is a nicely judged book; it does not assume great resources to be available to medical staff, but aims to help them do their best with what they have. For the severely ill patients who come to them, I particularly liked the sections on poisoning, on practical procedures and on drugs for critical care. I was sad that they seemed to assume that severe dehydration in children can only be treated by intravenous perfusion, when it has been shown that the nasogastric route is highly effective, easier to use and does not require expensive sterile fluids. The book is well and clearly illustrated and should be a useful addition to the libraries of remote hospitals.

### Practical Mother and Child Health in Developing Countries (4th Edition)

by G J Ebrahim

Published by Macmillan Education Ltd  
ISBN 0 333 55228 8 ELBS Edition £1.99

This is a revision of a standard text, aimed at community health nurses at the primary health centre. It clearly explains the need for emphasis to be given to maternal and child health work and how to set about putting things into practice. It would have been more interesting if the author had taken the opportunity of this new edition to review, with statistics, any changes (let's hope improvements!) that have occurred in maternal and child health in the 25 years since the first edition.

The above two books are reviewed by Dr David Pouncey.



## Community Health for Student Nurses

by Mary F Bradley

ELBS Edition (593 pages) £2.00  
ISBN 07020 1506 7

This informative book is directed at student nurses in developing countries. It is packed full of information and does not place too much emphasis on hospital situations. Each unit has key objectives and includes a test so that students can check their own learning.

It contains five sections: community health, environmental health, communicable diseases (very thorough and well set out), community health nursing, and health and society.

At such a low price for a wealth of information, this would be of great value to anyone involved in training

nurses and community health workers.

All these books should be available through large bookshops in your own country.

## The Caring Community – Strategies for Hope No.6

This, the sixth booklet in this useful series, describes how nine small Christian communities in low income, urban areas of Kampala are responding to the urgent needs of people with AIDS and their families. The case studies of these Christian groups show how it is possible to respond to ignorance, fear and prejudice with a vision of hope.

Small numbers of this very helpful booklet are available, free of charge, to groups in developing countries. It is printed in English and French. Please write, explaining your work to:

TALC  
P O Box 49  
St Albans  
Herts  
AL1 4AX  
UK.

## Learning about AIDS through a game!

ZIGZAIDS is an entertaining game designed for children aged 10–14 years. The game teaches them how AIDS is transmitted, treated and prevented. It comes with a guide for parents and teachers on how to use the game.

The ZIGZAIDS game is available in English, French, Spanish and Portuguese. It costs US\$12.00. Write to:

Salamandra – Consultoria Editorial S A  
AV Nilo Pecanha 155/510  
20020 Rio de Janeiro  
Brazil.

## Posters for encouraging group discussion...

Following the poster series in *Footsteps No.8*, readers may be interested to see some of the ideas which were adapted for use with the Oromo people in South Ethiopia.

(Photos sent in by Veronika Scherbaum)



◀ An artist at work

▶ Weaning



▲ Labour

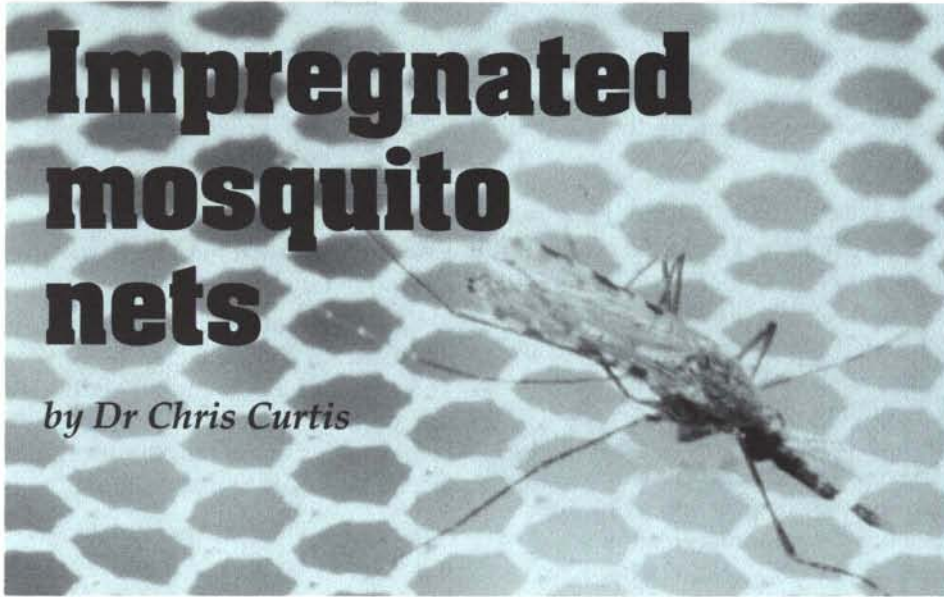
▶ Breastfeeding





# Impregnated mosquito nets

by Dr Chris Curtis



An *Anopheles* mosquito (which carries malaria) on a net: notice the spotted wings and 'head down' position which are different from other mosquitoes. (Photograph by ICI, Public Health)

MALARIA is caused by parasites (called *Plasmodium*) which are carried from the blood of one person to that of another by *Anopheles* mosquitoes (see above). This type of mosquito generally bites late at night, so bednets would be expected to be a good way of protecting against them. However, mosquitoes are very clever at finding holes or other ways into nets and they also bite arms or legs which rest against the net during the night.

## A safe insecticide

These problems can be prevented by treating the bednets. The nets are

soaked in a pyrethroid insecticide, so that every part of the net is saturated with a small amount of insecticide, which remains when the net dries. This treatment is called impregnation. These insecticides are safe for close contact with humans but quickly kill mosquitoes, or at least put them off feeding on blood. If most of the people in a village, boarding school or hospital are using impregnated nets, many mosquitoes are killed and it is made safer for people who get up in the night, or who do not use a net.

Impregnated nets are effective against nuisance mosquitoes (those which bite but do not necessarily carry malaria), bedbugs, headlice and some other annoying insects. This encourages people to use impregnated nets.

## Choosing a net

Bednets can be made of nylon, cotton, polyethylene fibre and other materials. Clean woven plastic sacks can also be unpicked, sown together and used to make 'fibrous curtains'. All of these can be impregnated, but if you are planning to buy nets, for people who do not already use them, strong nylon nets (made of approximately 100 denier fibre) are probably the best choice. If they are purchased in bulk from a factory, large savings can often be made, compared with the retail price in shops. Bednets are made in various sizes and you should measure the types of beds or sleeping mats used locally before ordering. Nets which

are the wrong size for the bed or mat are inconvenient, so people are less likely to use them or will not be so well protected by them.

## Treating the net

Impregnation is easily done. A pyrethroid insecticide is diluted to the right strength with water; each net is soaked in the mixture and wrung out, as with washing clothes. Though pyrethroids are not dangerous when diluted, they can be irritating to the skin and rubber gloves (or large plastic bags) should be worn for the soaking and wringing process. It would also be wise to wear goggles or spectacles to protect against possible splashes in the eye. After wringing out, the net is put to dry on a flat surface. If the nets are laid to dry on beds, the drips from the wet net help to reduce number of bed bugs present – a very useful side effect!

The table opposite gives the necessary details and the dilutions needed of the various chemicals. Please seek help if this table is difficult to understand or you do not know either what insecticides are available in your country, or how to obtain them.

## Maintenance

Vigorous washing removes some of the pyrethroid from netting. Therefore, it was arranged with villagers in Tanzania that they should wash their nets every six months and the next day bring them to a central point in the village where the pyrethroid would be available for treatment. This arrangement worked well. In some countries, mosquitoes and cases of malaria occur mainly in the rainy season, so it is only necessary to ensure that nets are impregnated just before the rains begin and then used carefully until after the rains end.

## Impressive results

In tropical and sub-tropical parts of Asia, malaria is still a major cause of



Hanging nets from poles attached to the beds in a Tanzanian village.





Mixing permethrin EC with water in preparation for net impregnation.

ill-health despite efforts to control mosquitoes by spraying houses with insecticide. In some places, where this spraying is not successful (eg: in Hainan Island, China and among tribal people in Assam, India), large reductions in malaria have resulted from using nets impregnated with deltamethrin. In Africa, malaria is a major cause of child deaths. A recent trial in The Gambia, where primary health-care staff impregnated villagers' own nets with permethrin, reduced the number of child deaths by 63%. The World Health Organization is planning to sponsor four large trials in different parts of Africa to see whether this remarkable result can be repeated under different conditions.

Once the nets and the pyrethroid have been obtained, this method of preventing malaria is simple to carry out and very effective.

- **Could you encourage your community to discuss how to use this treatment?**
- **What would be the cheapest way of making or obtaining nets in your area?**

Begin with the protection of young children and babies if there are not sufficient funds to protect everyone at first.

Let us know how you get on.

## Chemical dilutions

An emulsifiable concentrate (EC) of any of the following pyrethroids may be used:

Pyrethroid	permethrin	deltamethrin	lambda-cyhalothrin
<b>Trade names of EC</b>	<i>Peripel</i> <i>Imperator</i> <i>Eksmín</i>	<i>K-othrin</i> <i>Decis</i>	<i>Icon</i> <i>Karate</i>
<b>Concentration after adding water, for treating nets of...</b>			
<b>nylon</b>	1%	0.1%	0.05%
<b>cotton</b>	0.5%	0.05%	0.025%
<b>polyethylene</b>	2%	—	—

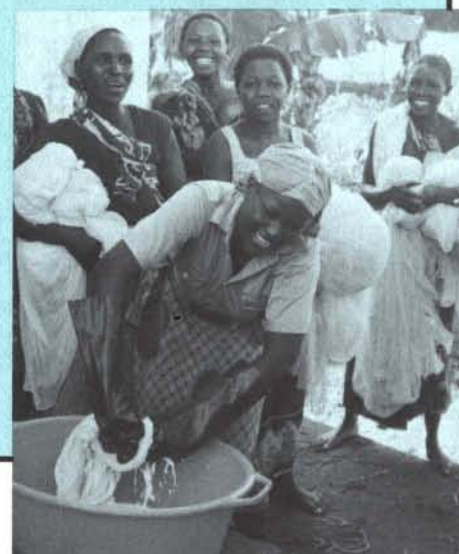
### Notes:

- The concentrations in the table are based on the facts that a square metre of nylon net retains about 20ml of liquid after dipping and wringing, cotton retains more and polyethylene less. Deposits of 200mg of permethrin, 20mg of deltamethrin or 10mg of lambda-cyhalothrin per square metre kill mosquitoes rapidly without irritation of human skin or noses.
- Polyethylene nets go on dripping for about half an hour and the drips should be collected in a bath for re-use. Deltamethrin and lambda-cyhalothrin are not recommended on polyethylene nets as there is reason to believe that they would cause skin irritation or sneezing.

### Working out the dilutions – a practical example

A village health worker, Solomon, obtained a can of *Peripel* (permethrin EC) from his District Medical Officer. The label said that it was a 20% EC. He worked out (checking with his friend Ahmed who is a teacher) that to get a 1% concentration for treating nylon nets, he should dilute one measure of *Peripel* with 19 measures of water (ie: put the *Peripel* in a total of 20 times its original volume). Some of the villagers had cotton nets and these would need half the above concentration – ie: one measure of *Peripel* in 39 measures of water. As a measure, Solomon used a clean jar which was then kept for this purpose and not used for food.

Six months later, when the nets were due for re-treatment, the District Medical Officer was able to get some *Icon* which was labelled 5% EC of lambda-cyhalothrin. Solomon worked out that he should mix one jar of *Icon* with 99 jars of water to get 0.05% for the nylon nets, and half a jar of *Icon* with 99½ jars of water to get 0.025% for the cotton nets. He estimated that 100 jars of liquid was enough to treat all the cotton nets which the villagers were likely to bring.



Villagers in Tanzania bring their nets after six months use and re-impregnate them.

Dr Chris Curtis works at the London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK.



# THE EDITOR'S SCRAPBOOK!

## TIPS FROM AROUND THE WORLD

MUSCOVY DUCKS are an excellent way of controlling flies. At a recent ceremony in Togo, a number of muscovy ducks were killed and prepared for cooking. An employee of the Heifer Project opened their crops, out of interest, to see what they had been eating. (The crop is an enlarged pouch in the throat of a bird where food is stored before being digested.) Each crop was filled with hundreds of flies!

PIGS can cause great damage to crops. In Papua New Guinea, they are usually tethered to prevent damage. In some areas, large, triangular collars of wood or bamboo are fitted round the pigs necks and tied firmly in place. Pigs that do get loose are then unable to get through fences.

FARMERS IN THE TRANSKEI, South Africa, traditionally lend farm animals to their neighbours and other family members. The borrower looks after the animals until they produce offspring. The animals are returned to the original owner and the borrower keeps some of the offspring, in return for looking after the animals. This system works well because it follows a traditional pattern that is well understood. The lenders increase their animals without needing to care or feed for them. The borrower gets animals without the need to buy them.

New breeds of ducks and geese were introduced to the area and distributed using exactly this pattern very successfully.

DIARRHOEA often affects young animals such as calves, goats and piglets. Medicines are expensive and not always available. Work in Indonesia has shown that young animals respond well to Oral Rehydration Therapy – just as young children do! Make up ORT in exactly the same way as for people and give it regularly with a clean soda bottle. Keep the sick animal clean and separate from other animals.

THE HEIFER CATTLE PROJECT in Uganda distributes improved cows on the agreement that the farmer promises to return the first-born female calf to the Project, so that another farmer can then benefit. The idea is scriptural – sharing benefits – and also builds up the framework of African community.

A FARMER EVANGELIST in Nigeria discovered he could save his crop-bound chickens by carefully cutting open the crop, using a new razor, taking out the blockage and sewing up the crop again.

THE SAME FARMER found he could hatch eggs by wrapping them in cotton and putting them in a warm corner of the hut. (This was in a very warm area of Nigeria.)

STEPHEN GERMAN from Zaire writes...

'If animals, such as goats, are causing a problem with damage to crops, try mixing some of their faeces (manure) with water. Then sprinkle onto the plants they are eating.'

A SUCCESSFUL RABBIT-BREEDING PROJECT in St Kitts has a rule that if a rabbit gets sick, it is immediately killed. They do not try to treat sick animals at all. In this way, diseases cannot spread – only the strong, healthy rabbits breed and no money is needed for medicines.

A FARMER IN NIGERIA found a useful idea for protecting his chicks from hawks (see pages 8 and 9). He dyed them with gentian violet (or potassium permanganate) – both available from large chemist shops or, possibly, health projects. The chemical does not harm the chicks and their bright purple colour scares away the hawks!

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