INDIGENOUS CHICKENS USER-FRIENDLY GUIDE FOR SMALL SCALE FARMERS
Designed to help small scale farmers to farm indigenous chickens productively and profitably

Acknowledgements:
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The text was edited by Dr Senelisiwe Ntele from the National Economic Development Department

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Phuti Chipfupa (Graphic & Content Editor)
Thabiso Skosana (Visual Artist)
Vusumzi Mtakwekwe (Illustrator)
Mr. Zweliphi Mbatha, an Extension Officer with the Department of Agriculture, is discussing chicken projects with Mr. Lebohang Moloi and Mrs. Mampho Moloi at their rural homestead. They have a few traditional/indigenous chickens but would like to start a bigger chicken venture.

Good day, friends. How are you?

We are very well, thanks, and you?

I'm also fine, thank you. You said you wanted to talk with me about your future farming plans - how are things developing?

Yes, we would like to start a small chicken project and wanted to get your advice on this.

I see you have some traditional chickens walking around here at your homestead. How many do you have?

We have 14 in total including the small ones.

How many of these are roosters (males)?

Four.
Yo, that's too many. You only need one or two roosters for every ten hens you have, otherwise they may fight among one another.

I understand - that's useful information. We will have to eat a couple of roosters in the near future.

Talking of that, how often do you actually eat one of your own chickens?

Mmmn, I'd say about once every three or four months...

...maybe more around Christmas time.

And eggs? Do you sometimes eat eggs?

No, we never do because we keep the eggs to make chicks for the next generation. We lose a lot to diseases and predators so we only just manage to keep our present flock size. Sometimes it even decreases. If we want eggs, we buy from the shops.

That's interesting. Eggs are a very important food especially for children and sick people but we'll talk more about this a bit later. Now let me tell you a bit more about chicken farming.

Yes, please, we are very keen to learn more.
It is important to know that, even though South Africans eat a lot of chickens, chickens farming needs to be properly managed particularly because chickens easily get sick.

There are a whole range of diseases that can affect them if the conditions are not managed.

We understand that. We and our neighbours have experienced these problems even with the few chickens we have.
THE DIFFERENT TYPES OF CHICKEN

OK then, let me tell you about the different kinds of chickens. The original chicken is called the Red Jungle Fowl. From these, the traditional or indigenous chickens that you keep then developed.

Now, over time some people used these original varieties to produce distinct breeds that had particular colour patterns or production types.

Yes, that’s right. Now, over time some people used these original varieties to produce distinct breeds that had particular colour patterns or production types. The names of some of these breeds are Rhode Island Red, White Leghorn, Black Australorp, Barred Plymouth Rock.

Correct, and they have a small body size. The others I mentioned are called dual-purpose breeds because they are big birds and so have quite a lot of meat but they also lay quite well. If you cross within these breeds, they “breed true”, that is, the offspring (chicks) look and produce more or less like their parents.

I was just coming to that. Some farmers wanted to specialise in chicken farming. Some preferred to sell only chicken meat while others wanted to only sell eggs. So the scientists crossed the indigenous chickens together with the other improved breeds over many years and they finally developed what are called hybrids. Simply put hybrids mean that they produce more eggs or meat than their parents. If you try to mate males and females of these hybrids, they do not “breed true”, that is, the offspring will be all different colours and of different production abilities.

Sho, so these chickens have been providing good food for people for a long time!

I’ve heard of the White Leghorn – they lay quite a lot of eggs.

People talk about hybrids. What are these?

Hau, it sounds very complicated but I think we get the picture. Please carry on.
OK, now let's look at the different chicken production systems. There are two main systems, that is, the extensive system and the intensive system. The extensive system is when the chickens are outside all the time except at night when they will sleep in a house if the farmer has gone to the trouble of building one. Otherwise they sleep in the family's house or just in the trees. The chickens find most of their food themselves. This how your household chickens live.

Is this the same as what people call the "free-range" system?

Not quite although it is similar. With the free-range system the hens are given a shed in which to shelter from the bad weather and in which to sleep at night as well as sufficient outside space in which they can forage, but the whole area is fenced in. Your village chickens are the true free-range ones in that they can wander around looking for food where they like without restrictions.

The commercial free-range system is mainly used to produce free-range eggs - the hens get some of their feed needs in the outside space but, in order to produce at maximum capacity, they also need to get expensive commercial feed. They usually use hybrid hens in this system.

Why are free-range eggs so expensive in the supermarkets?

Because they cost more to produce. In walking around the hens use energy and thus need more feed than those kept indoors at all times. They are also more susceptible to things like intestinal worms and other diseases.
And intensive, what does that mean?

With the intensive system the chickens are kept in a special house all the time. Of course, under these conditions all their needs, such as feed, ventilation, temperature, lighting, have to be supplied by the farmer.

Are there special chickens for each system?

Yes, usually hybrids are used for intensive commercial production, broilers (for meat!) and layers (for eggs). In commercial production the feed is the most expensive item in the production cycle and the hybrids have been bred to make the most efficient use of this feed. The indigenous chicken is the best for the rural extensive system.

It is hardly, is good at producing chicks without artificial means (such as incubators) and forages well for food. I don’t recommend farmers to introduce improved breeds into this system because they are not adapted and easily die and they change the system.

How so?
Well, for example, when a hen is ready to sit on its eggs we call that becoming "broody". This broodiness has been bred out of the improved breeds (so that they can lay more eggs) so if these breeds take over the extensive rural system, how will you produce chicks for future generations?

That's very interesting. We would like to learn more about both these systems of chicken production. Please tell us more about the extensive system first because it is the one that looks more practical for us at the moment.

THE EXTENSIVE SYSTEM

Very well then. You know that your existing system is what we call a low-input/low-output system. This means that it doesn't cost you much to keep your chickens. However, there are ways of improving the productivity of your traditional chickens that do not cost much or any money.

Right. One of the improvements is to build a cheap house (made out of poles, reeds and thatch, for instance) where your chickens can sleep at night. This protects them from bad weather, predators and even thieves.

It should be big enough so that you can go inside to clean and should also have space for nests so that the hens don't lay all over the place. Since we know that a lot of chicks are lost when they are still very young, we should try to give them some protection.
What do you mean? Keep them inside our home?

That would be fine if you have space, but it is better to provide the chicks and the mother with a small cage of some sort. A big inverted, open-weave basket would do.

While they are enclosed you would have to give them some feed. If you can afford it, a little chicken mash is the best — they don’t eat much while they are small. Of course, clean fresh drinking water is essential. You could let them out once a day in the afternoon so that the mother can teach them how to find their own feed.

We have a lot of problems with hawks taking small chicks. Is there anything we can do about this?

You can try to protect your chickens from birds of prey by tying bits of plastic bags to their wings or by tying old CDs on trees near your homestead.

The pieces of plastic bags flap around and the CD is shiny and reflects light and these things are off-putting for hawks.
Could we improve the feeding of the bigger birds as well?

Yes, definitely. You could grow things like millet, sorghum, sunflower and beans (cowpeas) for example. Earthworms, snails, termites, ticks, fly maggots and dried pumpkin seeds are all good forms of protein. And don’t forget to provide them with a little salt. Salt is an essential nutrient for all animals. You could sprinkle a little extra salt on the kitchen scraps you give them.

You know, those eggs that are left in the nest after the last chick has hatched are fine for chicks to eat as long as they are not smelly (rotten). Just make sure you boil them well and then chop them up finely, shells and all, and give them to your chicks. Other small farmers have reported that this works really well.

Now we should talk about the improved management of the eggs that are laid.

What do you mean by that?

Let me explain it this way. Your hens usually lay eggs where they like. They usually will lay one egg a day. Every time the hen gets on the nest she has made or found to lay another egg the previous eggs get heated up. And then they cool down when she leaves the nest.

So, by the time she has laid 12 or more eggs the embryos (baby chicks) in the first eggs may already be dead because of being heated and cooled so often. Also, your hens generally have a small body size and they sometimes lay more eggs than they can easily cover so again some chicks are lost before they even hatch. What I am recommending is that you collect the eggs every day.
Hau, but if you touch the eggs and take them away, the hen will stop laying!

That's not actually true. If you take all the eggs, the hen may leave the nest and look for another one. So, you can leave one or two eggs behind. This is the process: on the first day leave the egg laid that day but write a number 1 on it in pencil. On the second day write a 2 on the next egg and remove the first one. On the third day write 3 on the new egg and take number 2 away. And so on.

In this way the hen may actually lay more eggs than she would have if you didn't remove some eggs. If more than one hen lays in the same nest, just mark all the eggs laid on a particular day with the same number.

With this management technique there are also fewer eggs in the nests for the dogs to eat!

What should we do with the eggs we collect?

Store these eggs in a cool place in your house. You can eat or sell the older eggs or even boil some and feed them to your chicks.

When the hen is ready to sit on the eggs (we call this becoming broody - you know the ones that sit for long periods on the nest and are aggressive), you can take 10 or so of the freshest eggs you have collected and put them on the nest for the hen to sit on. In this way she should hatch out nearly all the eggs and your wastage is considerably reduced.

We're not so sure about this so maybe we'll test out your suggestion with just one or two hens. Now, some people say we should bring in improved breeds so that our chickens grow bigger and the hens lay more eggs. What do you think of this?
As I said earlier, I definitely do not like this intervention because it will negatively change your extensive system. Also it’s a waste because the improved breeds cost a lot but they die easily under your system.

What you can do to improve your genetics is what we call "selective breeding" within your system, that is, only keep the biggest, healthiest, best looking hens and roosters for breeding. Sell or eat the others. In this way, year by year, you may get heavier birds that also lay well.

In addition, look out for those hens that produce many chicks and are good mothers (rear a lot of these to become adults). Use these for breeding.

That is something really worth trying... Zweliphile, what about diseases? We have had some of our chickens getting sick and even dying.

Oh yes, diseases is the main problem that small farmers experience even with indigenous chickens.

The well-known ones that occur frequently are Newcastle Disease and Fowl Pox. Not to panic though because there are good vaccines that can be used to protect against such diseases.

How does one apply these vaccines?
With indigenous chickens it is best to catch each chicken and apply the vaccine individually (usually a drop in the eye or nostril or a prick in the wing web). They can also be given in the drinking water.

Remember it is important not to vaccinate if the chickens are already sick as the vaccination could make them worse. You probably will need to vaccinate three or four times a year. It is also very important to read the instructions that come with the vaccines and to make sure that the vaccine you buy has not already expired.

(check the date on the container). Please refer to the vaccination table at the end of this guide.

Thank you Zweliphile, that is very useful. You know, there are times when I have opened a chicken to eat it I have seen lots of worms in the intestine. Where do these come from?

Yes, this is a big problem with the extensive system because the chickens pick up worm eggs in the soil. The worms are animals and also need to eat so they take from the little food that the chickens pick up.

A heavy infestation causes the chickens to get weak and they may then easily get other diseases and die. These worms are called internal parasites. There are also external parasites such as fleas, lice and licks that like off chickens and usually also negatively affect their production.

Are there remedies for these?
There are quite cheap powders you can buy at agricultural supply shops to treat these parasites. I have heard that there are some plants that can be used to treat both internal and external parasites but I don't know specifically what these are.

Grated carrot on the food is said to help control internal worms. Tobacco or just wood ash placed in the holes that the chickens make to take dust baths help to control external parasites.

There are also other local remedies you can apply just to keep your chickens generally healthy. These include putting a little aloe juice, garlic, snuff or potassium permangenate (Condy's Crystals - those small crystals that you can buy at a pharmacy that turn the water pink).

Is it worth keeping records with our village system?

Yes, definitely. Even keeping a simple record sheet will help you understand better what your flock of chickens is doing and how well they are producing.

You know, if you just try a few of the improvements that I have suggested, with a flock of just 10 good breeding hens (and about two roosters), you could easily produce 80 to 100 fully grown chickens each year as well as surplus eggs.

This means your family could be eating a chicken every week as well as having healthy eggs to eat and still have some chickens and eggs to sell to cover your expenses and to help the family's income.

Sho, that is really impressive!

I am really learning a lot about extensive farming systems. In case we ever want to start a commercial farm, please can you tell us more about the intensive farming system?
THE INTENSIVE SYSTEM

Okay, let's look at all the factors to do with intensive chicken farming. In the first place, you would need suitable land, with sufficient water (and this is essential) on which to build chicken houses.

And then, of course, you will have to have considerable money for the buildings, equipment and for buying the first batches of broiler chicks and the feed and other inputs they will need.

It is also most important that you get suitable training.

Sho, we can see that funding might be a problem for us. With that kind of investment farmers needs to ensure that they are able to make good money out of it.

For sure. So, the very first thing to do is a proper feasibility study and market survey leading to a budget of income and expenses so that you can be sure that you will be able to make money from your investment.

You should use realistic information obtained in your particular area. In Dr. Ed Weidt's book "The Southern African Chicken Book" there are lists of suitable questions for this purpose.

We understand. Now, what kind of building structure would we need to have for this system?

It is important to have a well-designed house to protect your chickens. Since our hot weather is the main environmental problem in South Africa, the house must be well ventilated and built in such a way that the hot summer sun does not shine directly into the house especially in the afternoon.

If you have more than one chicken house, these should be placed well separated one from the other (at least 30 metres apart) so that if some disease occurs in one house, it will not necessarily spread to the others.

You will also need a store room to keep your feed and equipment. A small office space could be included in the store.
And equipment? Could we perhaps build our own equipment?

We are talking about equipment such as brooders (to keep young chicks warm) feeders and drinkers. Since a continuous supply of water is essential for chickens and, because, as I have said, commercial feed is so expensive and should not be wasted, it is better to buy well-designed equipment from companies that specialise in this.

They are usually made of plastic and are not that expensive.

Of course, using the correct high-quality feed for the particular type of chicken that you have is also very important.

Another factor is looking after young chicks. Unless this is done with care and skills built up with knowledge and experience, one can lose many birds at this early stage.

You mentioned that diseases can be a big problem. How would we go about controlling these diseases?

- Again, even with the intensive chicken productive system, the main thing to remember is that preventing a disease from happening is much cheaper than having to treat the disease once it's already among your chickens.
How do big farmers deal with diseases in this instance when chickens are kept in the special house all the time?

Well, the commercial farmers talk about "biosecurity". This is a word that covers all aspects of trying to prevent diseases. It includes things like vaccination, wearing clean overalls and boots when you work with your chickens, putting strong fences around the property where your chicken houses are, not allowing visitors onto your farm (especially not into the chicken houses), burying dead chickens in proper, deep pits and washing out, disinfecting and restern your houses thoroughly after each batch has been moved out and before a new batch is placed.

Please tell us a bit more about vaccination.

There are some diseases such as Newcastle Disease, Gumboro and Fowl Pox that occur frequently on chicken farms. There are good vaccines available to try to prevent these diseases. Vaccines can be applied in various ways.

The commonest and easiest is to put them in the drinking water, spray them over the birds or place a drop of vaccine in the eye (this is done more with small flocks).

Some vaccines need to be injected into the breast or thigh muscle but this is not usually done by small farmers. It is very important to read the instructions that come with the vaccines and to make sure that the vaccine you buy has not already expired.

Please look at the vaccination table at the end of this guide.
What about maintaining record sheets - how important is this?

Keeping proper records to see if you are farming your chickens profitably is really important for all farmers who want to make money from farming chickens, whether they are using the intensive or extensive system.

There are two types of basic records; that is, technical ones to record things like how much feed you give your chickens, your vaccination record, how many birds die, how many eggs laid, how many hatched and so forth. And then you must also keep financial records which are all the expenses and income related to your business.

And then you must also keep financial records which are all the expenses and income related to your business.

What kinds of records are we suppose to keep?

The market survey that you talked about, can it help us get more customers for our chickens?

Oh yes. Without assured markets there is no point in producing! That is why it is essential beforehand to do your market survey so that you have a good idea of how much and to whom you can sell. In practice you need to keep following up and getting firm orders.

For the extensive system you can grow your chickens for a period of about 15 to 20 weeks before they could be sold for meat. Be sure to produce good quality chickens otherwise it will be difficult for you to sell them and to have loyal customers.

If you are using the intensive farming system and can’t sell your broilers at the right time (about six weeks of age), you will already be losing money as after that time they grow very slowly but still eat a lot of feed.
Many thanks, Zwelethi, for all this information. We think we have taken it all in. We still have a few general questions. When we were talking about the intensive system I wanted to ask about how do hens that are in a house all the time with no roosters nearby produce eggs?

That is a good question. People often think that when there are no roosters present hens can’t lay eggs. This is not true. As you say, in intensive houses there are no roosters but hens lay eggs day after day.

Of course these eggs are not fertile and will never produce chicks. So with a roosters present, as with the extensive system and on commercial breeding farms, the hens will lay fertile eggs (though, for various reasons, not every egg will be fertilized).

For how long can we keep our chickens?

To get the best breeding and production results you should keep your hens and roosters for not longer than two years of age. Replace them then with the best young birds you have reared. Sometimes it is good to bring in “outside blood”. That is, swap or buy some good young males from more distant villages. This will prevent the bad effects of what is know as inbreeding.

How many times a year does a hen lay eggs and go broody?

Under your normal village conditions a hen should lay a clutch of eggs and sit on them about two to three times a year.
And how long does it take for the chicks to hatch out of the eggs?

Exactly 21 days from the time that the hen starts sitting on the eggs.

What if a farmer wants to produce chicken meat as well as eggs? Could she/he keep both broilers and layers?

No, it is not advisable to produce broilers and layers on the same property unless they are kept very far (at least 100 metres) from each other. They should ideally be done on separate properties. This is because they are very different kinds of production and they can easily transmit diseases to each other.

Wow, we are really learning!

Good. You should also always remember that your Departments of Agriculture, Veterinary Services and Rural Development as well as feed companies and those supplying chicks and other inputs have trained technicians who are happy to assist you. Please call on their services.

The Developing Poultry Farmers Organisation (DPFO) is part of the South African Poultry Association (SAPA). It is there specifically to help small chicken farmers. There are active branches in all nine provinces. You should contact your local branch and join (see details at the end of the guide).
Zweliphi, not having access to funds at this stage, we have decided to go with this option of improving the production of our home flock of chickens. This will give us good experience working properly with chicken farming and will give us time to expand our operations without major debts.

Friends, I fully agree. Make sure that you put into practice all that I have shared with you. Please make use of the services of extension officers as and when you need assistance as you continue in your operations.
EIGHTEEN MONTHS LATER

Zwelaphi is visiting the Moloi’s chicken farm a year and a half later. Applying the knowledge and skills they have acquired has enabled them to greatly improve their chicken flock management practices. Their indigenous chicken farming business is now booming.

My goodness, friends, your new venture seems to be going extremely well.

Yes, Zwelaphi, we worked very hard and also utilised the services of extension officers from the Department of Agriculture to gain more knowledge and assistance.

In fact, we have become so good at farming indigenous chickens that we now use our land optimally and have begun to also incorporate vegetable farming. We do this by periodically rotating the open areas where chickens roam around to farming vegetables. This is because the droppings of chicken become natural fertilizer for the soil which gives us a very good crop when we plant our veggies.
Not only that but we found that some people in the towns near us and even in the cities really like eating indigenous chicken meat and there is a huge demand. We have no problem selling our chickens regularly.

We are saving our money from the chicken and veggie sales and we’re planning to buy a bakkie soon. We even intend putting up another small house to expand our production capacity.

Thank you so much Zweliphile for all you have taught us. We really appreciate your help.

You’re very welcome, Mampho and Labogang. I wish you the best of luck for the future.
VACCINATION PROGRAMMES FOR SMALL RURAL CHICKEN FARMERS

Vaccines are available from agricultural supply shops. Please consult your local Veterinary Health Technician to assist you whenever necessary, especially with regard to choosing the most appropriate vaccine for a particular disease in your area.

The following are the basic vaccines and application methods for rural village and commercial chicken production.

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>AGE OF APPLICATION</th>
<th>METHOD OF ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle Disease (until a heat stable vaccine becomes available, use “Clone 30”)</td>
<td>From young chicks to adults, repeat every 3 to 4 months</td>
<td>One drop in the eye</td>
</tr>
<tr>
<td>Fowl Pox (if it’s a problem in your area)</td>
<td>About 8 weeks of age</td>
<td>Needle prick in the web of the wing</td>
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VACCINATION PROGRAMMES FOR COMMERCIAL BROILERS

Broiler chicks bought from reputable companies will have already had some vaccines applied in the hatchery before you receive them.

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>AGE OF APPLICATION</th>
<th>METHOD OF ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle Disease</td>
<td>Day 10 to 12</td>
<td>As a fine spray or in the drinking water</td>
</tr>
<tr>
<td>Gumboro Disease (Infectious Bursal Disease)</td>
<td>Day 14</td>
<td>In the drinking water</td>
</tr>
<tr>
<td>Newcastle Disease</td>
<td>Day 18</td>
<td>As a fine spray or in the drinking water</td>
</tr>
<tr>
<td>Gumboro Disease</td>
<td>Day 21</td>
<td>In the drinking water</td>
</tr>
</tbody>
</table>

VACCINATION PROGRAMMES FOR COMMERCIAL LAYERS

Point-of-lay pullets purchased from reputable producers will already have had all the necessary vaccinations when you receive them. No further vaccinations are usually required unless there are severe Newcastle Disease infestations in your area.
IMPORTANT RESOURCES
Dr. Ed Wethli’s book "The Southern African Chicken Book".

CONTACT DETAILS OF IMPORTANT DEPARTMENTS AND ORGANISATIONS

Developing Poultry Farmers Organisation (DPFO)
Telephone: 011 795 9920/5
Email: modise@sapoultry.co.za

South African Poultry Association (SAPA)
Telephone: 0861 POULTRY / 011 795 9920
Fax: 011 795 2590
Email: sapa@sapoultry.co.za

National Department of Agriculture, Forestry and Fisheries (DAFF)
Telephone: 012 319 6000
Email: Enquiries@daff.gov.za

CEDARA College of Agriculture (for training on indigenous farming)
Telephone: 033 355 9304
Fax: 033 355 9303
Email: college@dae.kznfl.gov.za

Mthombo Agri-Business Institute (for training on indigenous farming)
Telephone: 031 563 0074/ 082 512 3553
Fax: 086 565 2496
Email: info@mthombosa.co.za

Land Bank (for funding)
Telephone: 080 000 5259/ 012 686 0500
Email: info@landbank.co.za

Small Enterprise Finance Agency (SEFA) (for funding)
Telephone: 086 000 7332 (sefa)
Email: helpline@sefa.org.za

Small Business Development Agency (for training on business skills)
Telephone: 086 010 3703
Fax: 012 4411 2064
Email: info@sepa.org.za

Department of Trade and Industry (dti) Co-operatives Development Unit (for cooperative registration and Cooperative Incentive Scheme - CIS funding)
Telephone: 086 184 3384
Fax: 086 184 3888
Email: contactus@thedti.gov.za

Economic Development Department (EDD)
Telephone: 012 394 3650
Fax: 012 394 4650
Email: SNPtsele@economic.gov.za
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