

Improved Firewood Stove: Maendeleo Kisasa Jiko

The common way to cook is by using firewood in a three-stone cooking place. Because a lot of heat is lost on the sides, the three-stone system uses a lot of firewood and it takes a long time to cook food. There is also a lot of smoke which is bad for your health. The Maendeleo Kisasa Jiko is a simple stove that cooks food quicker, uses a **third** less firewood and makes much **less smoke** so it is better for your health!

How to make a Maendeleo Kisasa Jiko

You will need:

- A clay liner
- 3 wheelbarrow loads of anthill soil, murrum or a mixture of soft sub-soil, sand and ash
- 2 wheelbarrow loads of flat and round stones or you can use bricks
- 3 bucketfuls of water
- A handful of ballast



Clay liner



Foundation complete with liner placed

1. Level the floor
2. Mix soil/murrum and ash with a shovel adding some water as you do this
3. Make a foundation by laying wet stones on the marked area and ensure that they are level
4. Cover the stones with a layer of the murrum/soil with ash
5. Level the murrum and compact it by pressing with a panga or flat board
6. Stand the clay liner on the foundation with the liner door facing the kitchen door
7. The clay liner should be at least 15cm from the wall
8. Ensure that the door of the clay liner faces the door of the kitchen. This is important for fresh air to reach the jiko
9. Make sure that the stove is level by putting water in a pan or sufuria and checking that the water covers the bottom evenly. If not, move the liner until it is level
10. Place a layer of stones around the clay liner leaving the door clear and then put a layer of the wet murrum soil. Compact and level this layer
11. Continue making layers of stones and murrum soil and

- compacting each layer until it just reaches the top of the clay liner, leaving the pot rest free
12. Make a wood-rest area in front of the stove door to support the fuel wood
13. Finish shaping and smoothing the stove
14. Put the ballast at the point where the fire would be lit (firebox) and press it in
15. Let the stove dry for 7 days, then smooth on plaster of ash or cow dung. Allow the stove to dry for 3 more days.

Your stove is now ready for use!



Shamba Shape Up Series 1: Episode 5

George Kararu's Farm, - Ndeiya, Limuru

"This leaflet contains information on indigenous chickens (housing, feeding and diseases), potato production and energy efficient jiko stoves"

Increasing Productivity of Indigenous Chickens

George's chickens were not producing well. When productivity is low, chickens only lay between 8 and 15 eggs before becoming broody and they often get just 2-3 broods of chicks in a year. Only 20-30% of the chicks reach maturity. Good **housing**, **feeding** and **control of disease** can all improve the survival rate of chicks and chickens.

Housing

Good housing will protect chicks from the sun, rain, wind and other animals. The house does not have to cost a lot to make; a simple house can be built with off-cuts, sticks, mud, bricks, iron sheets or other locally available materials.

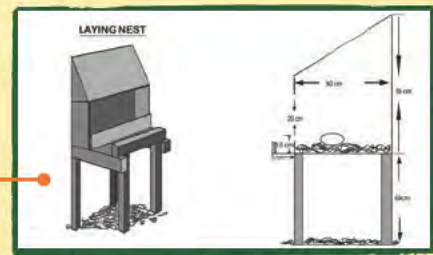
- Clean and disinfect the walls and floors using a good disinfectant like **Omnicide**
- Put wood shavings 6 inches deep on the floor. They absorb droppings and keep chickens warm
- There should be enough air coming in the house. Two sides should be open and covered in chicken wire (make sure the gaps in the wire are small to stop other wild birds coming in the house). The open sides should be covered with a curtain which is attached on the outside.



Complete chicken house

Laying Nests

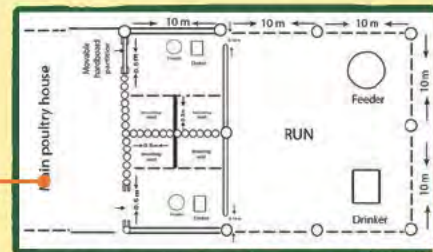
- One nest is needed for every 5 laying hens. The size of an individual nest should be 25cm wide, 30cm long and 35cm high
- The top should slope sharply downwards to stop hens sitting on the roof and making it dirty which can spread diseases
- Hens like to lay eggs in the dark so nests should be put where there is no sun light coming in the house.



Laying nests

Brooding Pen

- After hatching, the chicks and mother hen should remain in the brooding pen for the next 3 weeks. Nests should be 50cm wide, 30cm long and 35cm high
- The pen should have a chick run on the outside connected by a gap in the pen wall



Brooding pens

Rooster perches

- Perches are important for roosters to rest on at night. Roosters are less likely to get diseases if they rest on a perch than if they rest on the floor
- Perches should be movable so that you can move them to clean the house
- Perches should be rounded to stop the rooster's feet getting hurt



Movable perches

Produced by Mediae



Watch us on citizen television on
Saturday 1.30 - 2.00pm (English)
Sunday 1.30 - 2.00pm (Kiswahili)

For another leaflet or
more information sms 5606



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Supplementary Feeding

Extra (supplementary) feeding can increase the average quantity of eggs laid per brood by 100%. Many farmers do not offer any supplementary feeding to the chickens who then have to get all their feed from scavenging. Scavenging is good but extra feed is also needed. **UNGA** has a range of feeds for different chickens (for broilers, layers) and these quickly improve production.

Separate birds at feeding time

- Chicks below 6 weeks old should be kept away from other chickens and fed separately
- To avoid competition, feed the chicks in a separate shelter, feed the hens next and finally the cocks. This is because cocks are better at scavenging than the other birds and also because the cock might over eat and not leave enough feed for the rest of the flock.

When and how much to feed

- Supplementary feeding should be given in the morning and evening when the birds come back for the night
- The amount of extra feed given should be about 30% - 50% of birds daily needs. This is about 30g - 40g for chicks aged 4-6 weeks. Gradually reduce the amount of supplementary feeding until it is about 40% of birds daily needs.



Water

Clean water should be given in shady areas during the day at all times.

Parasites

Dudu dust should be used if there are parasites on your chickens. Dust under the wings of the chicken (make sure you wear protective clothing when dusting). Good dusts are **Sevin powder**, **Malathion dust** or **Actelic dust**. Apply every week until there are no parasites left.



Sevin Dudu Dust

Keeping chickens healthy

How to reduce diseases

1. Vaccinate the birds as suggested by the vet
2. Provide enough food and clean water, especially to small chicks
3. Clean houses regularly and disinfect the floor and walls
4. Change dry litter often
5. Separate chicks from adult birds (except from the mother hen)
6. Separate and treat sick birds. If medication is not available then kill the sick birds
7. Burn or bury killed birds (do not eat sick birds that have been killed as diseases can be passed to people).

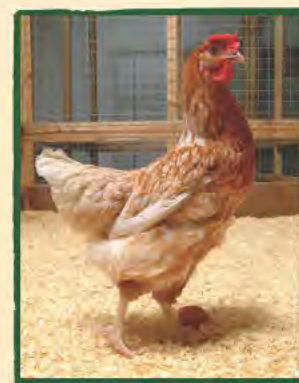
People hygiene

Good hygiene practice by people reduces the chances of chickens getting sick

Foot bath: A foot bath for people should be placed in the door way of all chicken houses

Dust coats: People should wear dust coats when going in chicken houses. Hang dust coats by the doorway and do not remove from chicken houses

Hand wash: Hand wash gel should be kept by the entrance of the chicken house. Wash your hands before going in the chicken house.



Healthy ✓	Sick ✗
Is alert	Looks tired
It has bright eyes and comb	It has dull eyes and comb
It is active (walking, running, standing and scratching)	It is always sitting or lying down
Eats and drinks lots	Eats and drinks less
It has smooth and neat feathers	It has ruffled and loose feathers
Its droppings are soft and compact	Droppings have blood in them or there is diarrhoea
It breathes quietly	It coughs, sneezes and breathes noisily
Normally lays eggs	It lays less eggs or stops laying eggs



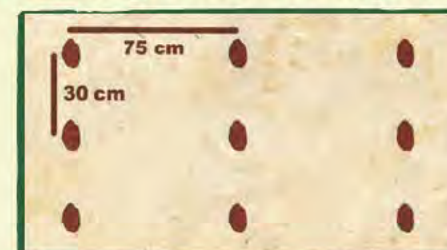
Viazi Power: A new method to increase potato production and income

Viazi Power is a new method for growing potatoes which gives potato plants lots of nutrients during all stages of their growth. More nutrients leads to improved production as compared to the traditional or common method of growing potatoes.

Common Method: Fertilisers are applied to the soil twice during the growing period (sometimes farmers apply only once at planting).

New Viazi Power method: The potato crop is given nutrients, both in the soil and as leaf feed, **throughout** the growing period.

Planting Process using Viazi Power Method



Recommended spacing



Potato seed with sprouts



Eco-T

1. Make furrows 8-10cm deep
2. Measure 75cm with a stick and make another furrow
3. Add manure in furrows, 2-4 tons per acre is needed
4. Mix 50kg of **DAP fertiliser** with 2.5kg of **Blackmajik**. (Blackmajik binds the fertiliser and helps plants get what they need from it). This is enough for 1 acre
5. Put potato seeds (tubers) in the furrows. Potato seeds should be the size of an egg and have 4-5 sprouts. Plant with sprouts facing upwards
6. Space them 30cms apart
7. In 20litres of water mix together:
 - 5 grams of **Eco-T** (this helps growth)
 - 10 ml of **Vitazyme** (this also helps plants grow, especially the roots)
 - 10 grams of **Turbo Seed** (this mixture contains phosphorous, potassium, zinc, copper and manganese which are needed for roots)
8. Using a knapsack sprayer, spray this mixture on the tubers and then cover the tubers with soil
9. For the Viazi Power method to work well, treatment is needed at **all stages** of growth using different fertilisers. For a full list of what is needed at every stage, contact **Lachlan (K) Ltd company** who are promoting this method. They can give you all the details.

Cost of new method

Although the cost of buying the nutrients and fertilisers for the new method is more (about 20,646 kshs) than the old method (about 15,830 kshs), the increase in production will more than make up for this. It is estimated that if done well, at least 30 extra bags per acre will be produced using this new method. 30 bags at 2,800 kshs each is 84,000 kshs extra.

Item	Old method	Cost of old method	Viazi Power	Cost of Viazi Power
Fertiliser	4 bags DAP at 3,000 kshs a bag	12,000 kshs	1 bag DAP 3,000 kshs Foliar feed 9,387 kshs	12,387 kshs
Fungicide	1.5kg fungicide at 1,053 kshs per kg	1,580 kshs	1.5kg fungicide + 1.5 litres of Codacide oil (at 953 kshs a litre = 1,430)	3,009 kshs
Spraying Mandays	9 x 250 kshs = 2,250	2,250 kshs	21 x 250 kshs = 5,250	5,250 kshs
Total		15,830 kshs		20,646 kshs

Weeding and Ridging

As potatoes grow, earth-up the soil to help water stay in the soil. Weeding should start after the potato plants have emerged. Weed gently to protect the tuber. After the plants have completely covered the space between the rows, no more weeding or ridging should be done to avoid damaging the stems.

Where to buy seeds

Potato seeds can be used from your farm if they are free from disease. Do not cut your potatoes to use as seeds. This can lead to diseases growing.

You can also buy good seeds from KARI and other suppliers.

KARI Tigoni Research Centre
Wireless telephone:
020-2022052
Email: kari.tigoni@yahoo.com

ADC Molo Potato Project
Tel: 051-721165
Email: info@adc.co.ke

Kisima Farm Ltd Timau
Tel: 0722528428

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