

Nothing to store due to lack of rain

After the huge rains during el Nino (1997/98), a farmer in Ikanga built a nice maize store (right); since then, it has not been used again. The problem is lack of water.

In the past few years, scientists have developed new improved maize varieties, which are drought tolerant; some of them are also resistant to pests and diseases and do well in soils with low nitrogen levels.

Pages 3 & 6 (Photo P. Nyagilo).



TOF moves office

The offices of *The Organic Farmer* and TOFRadio will move from Westlands/Nairobi to icipe, Duduville campus, situated off Thika road in Kasarani.

New address:

The Organic Farmer, P.O.Box, 30772-00100, Nairobi. See page 8

Dear farmers

The role played by research institutions in the country's agricultural development is often taken for granted or goes unappreciated. It is through research that devastating pests and diseases that could wipe out entire crops and livestock are identified and remedies found to contain them.

For the past 12 years, the country's wheat production has been threatened by devastating stem rust disease caused by a pathogen called UG99 that attacks all wheat varieties, leading to huge losses to farmers and consequently reducing Kenya's capacity to produce its own wheat.

It is therefore good news to learn that breeders at KARI Njoro, have already developed wheat varieties that are resistant to the stem rust caused by UG99. Research is also in progress to develop maize varieties resistant to the devastating Maize Lethal Necrosis Disease.

No doubt, scientific research is an expensive undertaking. To ensure our scientists continue with their good work, a lot of financial support is needed. The government should therefore allocate adequate funding to this important institution to enable it spur agricultural development through new technologies.

Sadly however, we have left this responsibility to donors as we allocate resources to less important undertakings that do not directly benefit the majority of our population.

Know more on maize disease

TOF | More than two years after the Maize Lethal Necrosis Disease (MLND) was first reported in Bomet county, the disease is still spreading to new maize growing areas in the country. The main reason for its spread is that very few farmers are willing to grow other crops in rotation with maize. Maize is the staple food for the majority of the country's population. It is not easy to convince farmers to change to other crops.

However, in areas where the disease wiped out the entire maize crop last year, farmers are now more willing to listen to advice from agricultural extension personnel. A spot check shows that most farmers in Bomet county have abandoned maize production and are now growing spring onions, which are fetching a good price in the

market compared to maize.

Awareness creation on disease needed

The major problem facing the farmers is lack of information on how to control the disease. Consequently, the

disease has spread to new areas such as Bungoma and Kakamega in Western Province and the coastal region areas of Wundanyi in Taita Taveta county. Areas that were not affected earlier in

Uasin Gishu, Trans-Nzoia, West Pokot maize belt are also reporting incidence of the disease. Although public sensitisation on the disease is urgently needed in the affected areas, the government is yet to release funds for awareness creation planned for this year.



Swine fever breaks out

The African Swine Fever (ASF) has broken out in Gaichanjiru area in Muranga County. Pig farmers in the entire region have been put on alert while an investigation team has been sent to the area to help control the disease and stop its spread to other pig keeping regions. Pig farmers are warned to be extra careful in pig management. They should ensure all biosecurity measures are put in place in their farms to protect their pigs. Page 5

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Retained placenta Fertilizer shortage

TOF - On average, the incidence of retained placenta in healthy cows is only 5 to 15 percent. When a higher incidence of afterbirth retention occurs in a dairy herd, the farmer should investigate the cause. A farmer should not remove placenta manually; It is always advisable to seek advice from a veterinarian to examine the animal about 30 days after calving.

TOF - Farmers across the country have had to go without the government subsidized fertilizer. The NCPB bank accounts have been frozen over a payment dispute with a supplier. The Board has been unable to import the commodity on time. Many small-scale farmers have delayed applying the fertilizers. This may affect the maize crop yields this season.

How to control Necrosis Lethal Maize Disease

Farmers can control the Lethal Necrosis Disease in maize if they take simple measures that can prevent it from spreading to new areas.

Peter Kamau | Two years since the Maize Lethal Necrosis Disease (MLND) was reported, the disease is still spreading to new areas that were not originally affected. The reason for this spread is due to the fact that many farmers have a strong attachment to maize as their main source of food; they are hesitant to grow other crops for a change even though there are many other crops that can be grown in place of maize.

The second reason for the spread of the disease is that most farmers are yet to understand how the disease is spread and how they can contain it. Since the disease is not soil-borne, it is easy to control if farmers can adopt a number of measures to prevent and control its spread to areas that are not affected.



These are some of the signs of the Maize Lethal Necrosis Disease (MLND)

Photos: KARI/NARL

Below are a few measures on how to identify the disease and ways to control it.

How to identify the disease

The MLND disease is caused by a combination of two viruses; the Maize Chlorotic Mottle Virus (MCMV) and the Sugarcane Mosaic Virus (ScMV). Since viruses can only survive on living plant material, the disease

cannot survive in the soil. The main mode of transmission of the disease is through insect pests, which transfer it from one plant to the other. Farmers can be able to identify the disease by looking for the following symptoms in their maize crop:

- When the maize grows to knee height, the upper leaves start yellowing and later dry up, turning brown in colour from the mid-rib towards the edge of the leaf (leaf margin).

- The stem and the nodes turn brown.
- In some cases, the maize plants produce many shoots (excessive tillering)
- At the beginning, it is only the upper leaves that appear brown in colour.
- As the maize matures, the cob shrinks and does not put any grains.
- In some cases the maize plant may appear stunted.

Crop rotation breaks the disease cycle

As research into the disease continues, scientists have discovered new facts about it and how farmers can control it. Below are important measures that farmers can take to eradicate the disease in their farms and also reduce its spread to new areas.

- The disease has no cure. So farmers should be wary of people promising to sell them chemicals that can control it.
- Crop rotation has been identified as one of the options that can considerably help reduce the incidence of the disease. But since farmers are not willing to adopt this control measure, they are advised to plant maize at the same time. This prevents the transfer of the disease from old plants to the young ones.

Use certified seeds

The situation in most growing

areas is that farmers plant maize at different times such that there is maize at different stages of growth; when this happens the disease is easily transmitted from the older crop to the younger maize, which leads to a continuous infection of maize and persistence of the disease in the affected areas and even its spread to new areas.

- Crop rotation or planting of alternative crops that are not affected by the disease such as beans, Irish potatoes, sweet potatoes, sorghum, peas, bananas etc for two or three seasons can help break the disease cycle and prevent its spread to new areas.
- Farmers are advised to use only certified maize seed. At the moment, all maize seed in the country is fortified with stronger pesticides, which can control the disease causing pests at the initial stages of growth. After-

wards, farmers are advised to continue spraying their maize with plant extracts or biopesticides to control pests in growing maize such as stemborers, thrips, aphids and maize beetles, which are the main vectors of the disease.

- Farmers are advised to inspect their crops on a daily basis for signs of the disease. If they notice any of the signs mentioned above, they should uproot the infected maize stalk and bury it to prevent the disease from spreading to the rest of the maize.

Feed for cattle

- Infected maize can be fed to animals except the maize that is rotten; farmers need to protect the animals from mycotoxins that can cause poisoning. Animals and people who consume animal products such as milk and meat

from infected animals may be affected by aflatoxin poisoning.

- Ensure that your maize field is clean and free of weeds that act as hosts to insect pests. The pests carry the disease-causing viruses and transfer the disease from plant to plant.
- Destroy all volunteer maize, weeds or crops in any field where you intend to plant maize, as they may harbour insect pests that can transfer the disease to your new maize crop.
- The disease-causing virus can only survive in living plant material. Dry maize stocks or composted material cannot transmit the disease and is therefore safe for animal feed. Farmers can also use the affected maize as silage as long as the rotten part of the maize is cut off and discarded or buried to prevent animals from eating it.

The Organic Farmer is an independent magazine for the East African farming community. It promotes organic farming and supports discussions on all aspects of sustainable development. It is published monthly by **icipe**. The reports in the **The Organic Farmer** do not necessarily reflect the views of **icipe**.



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Publisher African Insect Science for Food and Health (**icipe**), P.O. Box 30772, 00100 Nairobi, KENYA, +254 20 863 20 00; icipe@icipe.org; www.icipe.org

Editors Peter Baumgartner, Peter Kamau, +254 717 551 129

Layout In-A-Vision Systems (k), James Wathuge

Advisory Board **icipe**: Christian Borgemeister, Sunday Ekesi, Nguya Maniania; farmer from Wangige: Charles Kimani; KARI: Joseph Mureithi; ILRI: Henry Kiara

Sponsor Biovision, a Swiss-based foundation for the promotion of sustainable development. www.biovision.ch

Administrator Lucy W. Macharia, +254 20 251 92 33

Address *The Organic Farmer*, P.O. Box 14352, 00800 Nairobi, KENYA; +254 738 390 715; info@organickenya.org; www.theorganicfarmer.org



What is good for the Ukambani drylands?

There are very promising results in the development of drought tolerant and fast maturing maize varieties. But the semi-arid areas need more efforts in the supply of irrigation water.

Philomena Nyagilo | Driving the 50 km on the road from Kitui to Ikanga for the production of the Ukambani TOFRadio programme, we started to ask ourselves if it was necessary to visit a women group of Ikanga parish to talk about soil fertility and maize seed varieties. The sun was burning mercilessly on the red soil, the two rivers we passed were completely dry, and the small maize fields on both sides of the dusty road were brown. The real challenge of small-scale farmers here seems to be so obvious: Scarce and unreliable rainfall is the fate of the poverty stricken regions of Kitui, Machakos and Makeni.

Measures at three levels

As a rule of thumb, says a study of Anna Woldemariam and three other scientists, "it has been estimated that 25% of losses due to drought can be eliminated by genetic improvement of seeds for drought tolerance, and a further 25% by application of water improvement practices, leaving the remaining 50% that can only be met by irrigation." (see facts & figures, below)

Irrigation: It is unlikely that large-scale irrigation systems

facts & figures

There are some research papers which contain a lot of information about crops for semi-arid areas:

- Technologies for Enhancing the Productivity of Cereals, Pulses, Roots and Tubers in the Arid and Semi-arid Lands of Kenya, published by ReSAKSS-ECA, P.O.Box 30709, Nairobi, www.resakss.org
- Variety Characteristics and Production Guidelines of Traditional Food Crops, published by Kari Katumani research centre, P.O.Box 340, Machakos
- Maize technologies for climate adaptation and strengthening farmers' risk management strategies in vulnerable areas in Kenya by Hanna Woldemariam, April 2013, CIMMYT, International Maize and Wheat Improvement Center (www.cimmyt.org)



The Ikanga woman group talk to TOFRadio in Ukambani; on the right is Michael Kyenze of the Catholic Diocese of Kitui.

will be realized in Machakos, Makeni, and especially in Kitui in the near future, even though some projects have been implemented and others are planned. With regard to water harvesting facilities (dams, ponds, boreholes, wells etc.), semi-arid areas are, no doubt, neglected by the official agriculture politics, which usually concentrate on more productive zones.

Another limiting factor is that often the groundwater is salty, making the water unsuitable for irrigation, and the huge investments in irrigation infrastructure uneconomic.

Water conservation: There is a lack of knowledge about techniques like cover crops, inter-planting with trees (agroforestry) or shade nets, which reduce sun's heat and evaporation, and retain moisture in the soil. Composts and mulches not only improve soil fertility, but also increase rainwater infiltration and preservation. Extension services in these dry regions are lacking, as we pointed out in the May 2013 issue of TOF.

The water saving methods of zai pits and *tumbukiza* are quite well known, but there are some hurdles. "They need a lot of additional work", says Kitui farmer Josepha Mutuku. "I am aware that you can plant maize in *tumbukiza* holes, and with only one bucket of water per week it will survive after the rains have stopped. But the nearest place with water is four kilometres away." And the women from Itanga say that their men are not willing to plant using a method that requires carrying heavy water jerry cans so many times.

Drought tolerant seed: While pushing for the promotion of good farming practices, the use of drought tolerant varieties especially of maize might be a practicable way out of the

obstacles that hinder progress on the side of the farmers. On the supply side, improved seeds are quite often not available. Agrovet shopkeepers have to pay for the seeds in advance and do not store new varieties out of the fear that they will not sell them. "The seed supply systems should be more efficient to ensure access and availability of seed in timely fashion", Hanna Woldemariam and her colleagues write.

Sustainable agriculture

To challenge the threats of climate change especially in the fragile ecosystem of the semi-arid areas, a combination of various measures are needed. Improved maize varieties are promising; but farmers should not forget the benefits of drought tolerant "orphan" crops such as sorghum, cassava or sweet potatoes. More efforts in irrigation systems are as necessary as the change to conservation agriculture, reduced tillage, covering the soil with crop residues, mulches and cover crops, agroforestry, and of course crop rotation against increased disease pressure. But this can only be attained if extension services are strengthened and expanded.

Drought tolerant seeds.

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Workers of Kari Katumani dressing maize seeds; after drying for one hour, the seeds are then packaged.

Save money by making own pig feed

Feeds account for more than 80 % of pig rearing costs. Farmers who know how to make feeds can considerably cut down their costs.

Peter Kamau | Pigs require feeds with high protein and energy that enables them to grow well and attain the desired weight at the right time for the market. A pig requires feed with at least 18 % of Digestible Crude Protein (DCP) in order to grow well. A pig farmer who is able to maintain the correct feeding of their pigs stands a better chance of success in the pig rearing business. The following are the feed requirements of pigs at each stage of growth:

Piglets

Young pigs do not take much in terms of solid feed because they get all their nutritional needs from their mothers milk. Introduce starter feeds to piglets after one week so that they learn how to feed early. To ensure piglets get enough milk from suckling during the early stages of growth, farmers should give the sows adequate and balanced feed to ensure they produce adequate milk for the piglets at least 9kg sow and weaner per day divided three times a day if it has more than 10 piglets. At three weeks after farrowing (birth), the farmer should castrate all male piglets if they are meant for sale to pork processing companies such as Farmers Choice Ltd market and train them to eat solid feeds early.



The wooden box in the creep area prevents adult pigs from accessing feed meant for piglets (Photos: PK)

Suckling piglets should also have their sharp teeth cut, two to three days after farrowing to stop them from causing injury to their mother's teats while suckling.

Assuming a farmer has 10 piglets to feed, they should isolate a creep area (housing for young ones) where their mother cannot reach and put in 50g of feed per piglet per day to a maximum of 0.5kg per day per piglet by the time they are 8 weeks old. Allow the piglets free access to feed so that they grow fast. The piglets should always have access to their mother in case they need to suckle. They should also have access to clean water at all times.

Weaners

At 8 weeks, each piglet should be getting 600g of feed per day. If they finish the feed, keep on adding an extra 100g per piglet

weekly to a maximum of 1kg per day each by the 12th week. During the feeding process, the farmer should monitor weight gain to ensure that pigs are growing well, weigh the pigs weekly. If there is an increase in weight at this rate, it means that the pigs are growing well. Weaners should be given dry feed at all times to prevent scouring or diarrhoea. Give adequate clean water at all times.

Porkers

At 14 weeks, the pigs will require additional feed; the farmer can give 1.4kg of extra feed per pig per day (in addition, the farmer should continue giving the 50g of feed per pig per day). Divide the pig feed into three equal portions: A wet ration in the morning at 7 am (feed mixed with water), A dry feed at noon (feed with no water) and a final wet feed (feed mixed with water) at 4 pm in the afternoon. A well-fed, a porker pig should add an extra 300g of weight per day (remember it is important to weigh your pigs regularly and record their weight to monitor growth).

Baconers

At 22 weeks, the pigs (now called baconers) require a higher feed ration as they are about to attain the market weight of between 80-90kg. At this stage, the farmer should give them 2.5 – 2.75kg of feed per day. From 23 weeks, the feed should be increased to 3kg (1kg of wet feed in the morning, 1kg of dry feed at noon and 1kg of wet feed at 4pm). Well-managed pigs can attain up to 100kg in 6 to 7 months.

At this stage the farmers can

now do selection of the pigs to determine those that can go to the abattoir for slaughter, young female pigs (gilts) can be served and sold to interested farmers while others can be retained for breeding as sows. The boars (male pigs) can also be sold or retained for breeding purposes.

Sows

Sows need special attention when it comes to feeding. A sow's milk yield can be as high as 16-17 litres of milk per day; to produce this amount of milk, a sow has to be well fed. A sow with piglets that are suckling requires 9 kilogram's of feed every day or an amount of feed that is equal to 25 % of her body weight. The feeding should be divided into 3 rations 3 kg of wet feed in the morning, 3 kg of dry feed at noon and 3 kg of wet feed at 4pm). Like other pigs, sows should be given adequate and clean water at all times.

Gilts

A female that is not yet served (gilts) should be given at least 3kg of feed per day. The farmer can supplement this with any other available feed in addition to this ration to keep them in good shape in terms of health and reproduction.

Boars

Male pigs (boars) should not be given a lot of feed. If given more feed, they tend to put more weight and this compromises their fertility. A boar should be given between 1kg to 3kg of feed per day depending on age. Some farmers give less or even starve them in order to reduce fattening. Give them clean water at all times.

facts & figures

- A pig has a very thick skin, which means it cannot be able to sweat; this is one reason why pigs should have water at all times to keep them cool.
- A pig's stomach is monogastric like that of a human being, therefore it can eat all types of food that a human being can eat including cooked food and even meat.
- A sow produces 16-17 litres of milk per day to suckle her young ones (an average cow produces 8-10 litres of milk per day). A sow therefore requires high quality and adequate feed and water at all times to produce this amount of milk.
- Contrary to general belief among many people, a pig is a very clean animal, it requires

a special dung area where they can make their droppings, feeding and rest area that is dry and clean.

- When selecting sows for breeding, it is advisable to select those with 14 teats and above to be able to suckle all the piglets. The piglets are so disciplined that each will select its own teat and it cannot suckle any other teat throughout the lactation period.
- Farmers should keep one boar (male) for every 10 to 15 sows. A boar should only be allowed to serve 1 or 2 sows per week for maximum efficiency and conception- A boar releases ½ litre of semen in one serving (ejaculation) it therefore requires time to recover for the next serving.

Home-made pig feed formula

Feed formulation is not easy especially for small-scale farmers due to lack of raw materials and the technical know how on feed formulation. For farmers keeping a few pigs, we would advise that they buy feeds from reputable companies who are known to make quality feeds. However such farmers can reduce their feed costs considerably if they can formulate supplementary feeds eg sweet potato vines (*see box*).

However, for farmers who want to rear more pigs, say, between 500 to 1000 pigs, it makes economic sense to make their own feeds as long as they can get the right raw materials for feed formulation. Below we give farmers two methods they can use to make pig feed in order to reduce their feed costs:

Making silage from sweet potato vines

Sweet potato vines are a very nutritious pig feed if well prepared and preserved. Here is how to prepare them:

- Cut 60-100kg of sweet potato vines and spread them dry in the sun for about 30 minutes.
- Chop the vines into tiny pieces and mix them with 10 kg of maize germ or pig growers mash.
- Sprinkle ½ kg of mineral salt and mix thoroughly.
- Put the mixture into an airtight 250-litre plastic tank. Compress the vines firmly to remove any airspaces as you do when preparing silage.
- Add some little EM1 and some molasses solution to improve the quality of the silage.
- Cover the tank airtight. Let it stay for at least 3 weeks.
- Open the tank to check if the silage is ready- if the silage has a sweet smell and has turned yellow in colour, then it is ready for feeding.
- You can feed the sweet potato silage to pigs from four months of age, sows, gilts and boars at any time before or after feeding their usual daily rations.

Add vegetable and fruits

Pig farmers who incorporate sweet potato silage into the pig diet can cut their feed costs by up to 30 per cent. In addition the sweet potato tubers can be eaten or sold in the market, a kilogramme of sweet potato tuber retails for between Ksh



60 to Ksh 80. Farmers can also supplement their pig diet with fruits and vegetables such as *Sukumawiki* (kales), spinach, cabbages, lucerne, amaranth (*terere*), avocados, pawpaws, bananas. Food leftover from hotels (also called swill) can be fed to pigs but farmers have to be extra cautious because such

feed may be contaminated and can cause infection to pigs. All leftover food should be reboiled thoroughly to ensure all disease-causing organisms are destroyed.

How to prepare one bag of pig feed

- 48kg of maize germ
- 12kg of wheat pollard
- 12.5kg of soya cake
- 7.5kg of fishmeal
- 0.75kg of lime
- 1kg of bonemeal
- 125g of salt
- 150g of lysine
- 150g of feed premix
- 300g of zinc

This pig feed ration has a Digestible Crude Protein (DCP) content of 22.3 % and can be given to pigs at all stages of growth. Put all the ingredients in a feed mixer and mix thoroughly to ensure they are evenly distributed. In Nakuru, Nairobi and Thika, there are many feed raw material suppliers. Feed premix, lysine, bonemeal and lime are also available from selected agrovet shops in most towns. A major raw material supplier is Tarime Suppliers Tel. 0729 099 550, Nairobi.

Farmers, beware of swine fever

The African Swine Fever does not affect people but it can spread very fast and cause huge damage. There is an outbreak in Muranga.

The Organic Farmer | Before the pigs show any signs of the disease, they can pass it on to other pigs. The disease is incurable. Blood and other pig body secretions and excretions through the nose, saliva, tears, mucus, urine, faeces, semen and body tissues contain the virus and can pass it from one pig to the other.

Symptoms

The severity of the disease varies with the strain of the virus involved. Below are some of the symptoms associated with the virus:

- Infected pigs have a high fever, stay together and stop eating and may die suddenly.
- Pigs may have constipation followed by diarrhoea.
- The eyes of the infected pigs turn red (conjunctivitis)
- The skin of the infected pig has red spots and or purple discoloration of the ears, abdomen or inner thighs and tails.

Although the disease does not infect human beings, farmers should ensure all dead pigs are buried immediately. They should not be sold as meat.

Prevention

- All pigs in the affected areas or region should be quarantined and the pens cleaned thoroughly.
- Keep off visitors from your pig farm
- Persons who have come into contact with pigs in other areas should not be allowed near the pigs sheds.
- Use clean or disinfected cloths and shoes when visiting the pig pens.
- Vehicles entering the pig farms should pass through a strong disinfectant preferably caustic soda put in footbaths. Put fresh disinfectant daily.
- New pigs coming into the farm should be isolated for at least 30 days before they are introduced to the rest of the herd.
- Do not allow pigs to move freely into garbage dumps or to eat uncooked food leftovers or meat products. Control flies and ticks that may carry the virus into the pig sheds.

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Information has changed Monica and her group

TOF | Monica Khagoni openly admits that she became a professional farmer after she started reading *The Organic Farmer* magazine. "It has been an encouraging tool and it is a strong weapon for shaping the farmer's perception of farming and poverty alleviation through implementation of all the practices that are normally featured in the magazine," she says.

Indeed, it seems that Monica and her group read every issue of *TOF* very carefully. Whatever ventures she has engaged in, she has got the ideas from the *TOF* magazine.

Saved on fertilizer

"Compost making was the first idea we got from *TOF*, it was an eye opener for us," she says. "We learned how to make compost and discovered its value, we saved money since we stopped buying expensive chemical fertilizers. We now produce healthy food. All of a sudden we realized: Hey! we can do this things on our own! This was really encouraging," she adds.

Monica is full of praise for the magazine's coverage of animal production issues. She says that she and her group benefitted greatly from the information. "Whenever we read about dairy



Monica Khagoni sells produce from her group in the market.

goat keeping, special types of local chickens or rabbits, we discuss it and later try to practise what we have learnt," she says amid laughter.

"If you do not try new things, you miss a great opportunity to learn! And you remain poor!" To date, Monica has five goats from which she sells highly nutritious milk at a higher price compared to cow milk, which has improved her income; the goat droppings enrich her compost and she confidently enumerates the benefits of dairy goat milk.

The goat droppings is good material for making compost. Sometimes she sells young goats to her neighbours, which gives

her cash for paying school fees while leaving some money that she reinvests in the shamba. "*TOF* gives us tips on how to feed the animals and to fight diseases," she says.

Discovered chickens breed

A good example, for her are the improved chickens breed from KARI Naivasha, which *TOF* featured in its issue No. 85 of June 2012. "We came together as a group and made an order for 62 birds," Monica explains. "In the beginning, it was difficult because diseases threatened to wipe out the entire flock. But thanks to *TOF* field officer Alfred Amusibwa who gave us the *TOF*

module No. 20, which carries a lot of useful tips on how to keep chickens and the right methods of controlling diseases. Now we can sell eggs as well as chickens from this breed; the enterprise provides us with good money," she says.

Farmers inspired group

Stories in *TOF* about successful farmers and groups have also had a positive effect on fellow farmers, as Monica says: "These success stories from different parts of the country are of encouragement to us as a group - and I think for all other farmers." She gives an example of what she learnt about a passion fruit production from a farmers group in Nandi. "Our group decided to try passion fruit growing as well."

What Monica and her group like most is the combination of the magazine, the *TOF Radio* programme, which they listen to, and direct trainings by the *TOF* field worker in the region. Of course, they would like to get one *TOF* copy for each group member, but on the other hand, Monica concedes, "in sharing the copies we share the ideas as well, and this is good, since we exchange ideas on how to succeed," she concludes. Alfred Amusibwa

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New drought-tolerant seeds are available

Out of the 208 maize varieties registered in Kenya, 55 have drought tolerance in their properties (45 hybrids, 10 openly pollinated varieties). The last two decades have seen impressive progress in development of new varieties, with close cooperation between KARI and international research institutes and, to some extent, seed companies. The majority of newly released varieties are hybrids, which give higher yields. However, small-scale farmers, in Ukambani for instance, prefer open pollinated varieties as they can recycle the seed at least three times. The well-known Katumani Composite B has been well received by farmers.

The process from development until release of a new variety, including the certification by KEPHIS, needs some eight years. Another five to eight years are needed for adoption within the farming community. A good example are

some farmers in Ukambani. In a discussion, they liked a "new" variety called Duma 43. But: Duma 43 was released in 2004. The adoption rate is challenged by various factors, as mentioned in previous editions of *TOF*: Caution on the part of farmers with new varieties because of the fear of failure, lack of cash, seed availability especially in remote areas, and, above all, lack of information about improved seed varieties.

TOF does not have the space to publish a list of all the drought tolerant maize varieties.

However, this will be posted on our online platform www.theorganicfarmer.org. A good number of these varieties are also tolerant to diseases such as Grey Leaf Spot, Maize Streak Virus, Turcicum Leaf Blight, ear rot, rust etc; others can also do well in soils with low nitrogen content, and are resistant to stemborer attack.

Other drought tolerant maize varieties apart from Katumani Composite B and Duma 43 are: Duma 41, KDV1, KDV2, KDV4 DLC1, KDH4 SBR, KDH5 SBR, KDH6 SBR, KDH414-01 SBR,

KDH414-02 SBR, KDH414-03 SBR and DH02. Agroveter shopkeepers should be able to give you detailed information about the different varieties.

Interested farmers can send us an SMS to 0715 916 136 with the keyword maize list; we shall send them a photocopy of the compiled lists. The list contains 55 varieties with tolerance to important abiotic stresses (drought, heat, low nitrogen level in the soil) and biotic stresses (virus, diseases). Do not forget to give your postal address! P.N



Tonnes of seeds for maize, beans, green gram etc. are stored in Kari Katumani.



(Photos: P. Nyagilo)

My cows have a problem with retained placenta

I have a small dairy farm and I am following all the best practices in dairy farming. Mine is a zero-grazing lot with four mature dairy cows and another four growing heifers. Three of the cows calved down in 2011-2012 – all for the first time. All deliveries went well and there were no problems except for post partum (after birth) pneumonia. They were treated and all recovered well. Now all of them have calved down the second time. But

strangely, all three had problems of placenta retention. They get all the minerals they need: I feed them with 200 – 300g daily of Ungaphos® or Maclick Super® mineral mixture. I make my own dairy meal mix according to the best-known formulations with due additions of toxin binders, yeast, and cattle pre-mix. That all three showed the same problem makes me doubt if there is something wrong in my maintenance practice. Please advise. Thanks.

I hope you understand and appreciate that retained after-birth is usually defined as failure to expel the foetal membranes within 24 hours of giving birth. Under normal circumstances, expulsion takes place within 3 to 8 hours after delivery of the calf. The incidence of retained placenta in healthy dairy cows is 5 to 15%. The problem may be increased by abortion, difficult calving, milk fever, twin births, advancing age of the cow, premature birth, inflamed placenta and various nutritional disturbances.

With regard to the latter, note that deficiencies of selenium, vitamin A, copper and iodine increase the incidence of retained placenta. Therefore providing selenium prior to calving reduces the incidence of retained placenta.

Caused by overweight

The incidence of retained placenta is usually higher in overweight cows. In a normal calving, degeneration and loosening of the placenta begins during late pregnancy and at calving; changes in uterine pres-

sure, reduction in blood flow and physical flattening of the uterine caruncles (lining) during uterine contractions lead to final loosening and expulsion of the fetal membranes.

Cows which fail to drop the afterbirth within 36 hours are likely to retain it for 7 to 10 days. This is because substantial uterine contractions do not proceed beyond 36 hours after birth of the calf, and if the membranes have not been expelled by this time, their subsequent separation from the uterine wall can only occur as a result of the rotting of the afterbirth connections to the uterus.

Foul smell a sign of retained placenta

Their expulsion then depends on the speed of the normal shrinking of the uterus. It is normally easy to diagnose a cow with retained placenta by looking at the degenerated, discolored and unpleasant-smelling membranes hanging from the vulva more than 24 hours after calving, one can confirm a case of retained placenta. Occasionally, the retained membranes may remain



Placenta retention in dairy cows can be caused by many factors. (IN)

within the uterus and may not be readily apparent, but their presence is usually signaled by a foul-smelling discharge.

I would advise that if the cases are not complicated they would not require treatment. Further note that manual removal of retained fetal membranes in the cow is NOT recommended and is potentially harmful. Ideally stimulating uterine contractions by the use of drugs such as oxytocin or prostaglandins to expel the retained placenta is the most rational treatment.

Do not remove placenta manually

Should manual removal be decided upon, one may attempt to remove the placenta, if favorable circumstances are present, otherwise it is always advisable to seek attention of a veterinarian to examine the animal and decide the best course of action. In summary, first time calving cows are classified as growing

heifers but after the second calving they become mature milkers. Therefore, if your management and mineral feeding was perfect, check for the weight because it may be responsible for the placenta retention in your herd.

Sometimes, there is a genetic connection. Cows, which retain their placenta in the presence of a nutritionally balanced diet, should be considered for culling. I hope this is not the case with your herd. When an unusually high incidence of afterbirth retention occurs in a herd, then an investigation to determine the common cause should be instituted. All retention cases, irrespective of the method of treatment should be examined by a veterinarian, about 30 days after calving, and any signs of uterine infection treated by uterine infusion of antibiotics. For that matter, a veterinarian should have checked your cows 30 days after calving and instituted proper treatment.

Sunflower production

I would like to start growing sunflower. Please advice Muthemba, 0723 853 963, Kabete.

Sunflower is easy to grow and will do well in most climatic regions as it does not require a lot of rain to grow. Since we



cannot give you all the information you need on sunflower production here, please read TOF No. 95 of April 2013. You can obtain seeds from Simlaw seeds depot along Kijabe Street near the Globe Cinema roundabout in Nairobi. We will also send you additional information on how you can make animal feed using sunflower by products.

Isolate sick rabbits from the rest

Thanks for monthly TOF magazine. I am a rabbit farmer and I have noticed that my rabbits swell around the private parts and mouth parts that later develop symptoms like those of lumpy skin disease in cattle. What causes the disease and how can I treat it? Oliver Masungu, Wetete-Mutekesi youth group

The problem points to myxomatosis disease. The disease is caused by myxoma virus of the pox family. It is spread by direct contact of the sick rabbits with the healthy ones and also by insects such as ticks, mosquitoes, lice and fleas. The symptoms include discharge from the eyes and swelling around the



head, ears and genitals. Lumps and nodules may also develop on the body.

Prevention: Being a viral disease, there is no known treatment yet. However, vaccination against the disease from six weeks of age with regular boosters thereafter can prevent infection. It is also important to separate the sick animals from the healthy ones to avoid transmission of the disease.

Farmers need hope

Farmers appreciated our overview about water conserving farming methods in TOF June 2013. But they complained that we should have informed them more about drip irrigation systems (make, price, where to buy etc). That's is okay for us, we shall run an article about drip irrigation in one of the next issues.



Dog ticks different from cow ticks

In the May 2013 issue of *The Organic Farmer* Justus Wanyama asked what he could do because after spraying his dairy animals against ticks, the ticks were not dying. The answer we gave may have misled some readers as we have discovered from some of the following questions raised by farmers.

Ticks have developed resistance to all available acaricides. Those from which no resistance has been seen may not take long before they develop resistance. So in Wanyama's case, it could be that resistance is developing to the acaricide he is using.

Since he does not indicate which chemical he is using, it is difficult to tell if there is any resistance or not. He was advised to try synthetic pyrethroids (SP) acaricides. This is because these are the latest acaricides to be introduced into the market and there have not been any reports of resistance to this line of acaricides as yet.

But the problem could also be the way Mr Wanyama is using the acaricides. Is he using them according to the manufacturer's recommendation? Is he using adequate amounts of acaricide to spray? Is he spraying all the parts of the animal's body (if he is doing hand spray)? Only after he has ensured that he is doing all, can he then be sure that it is tick resistance.

Different ticks cause different diseases

He was also told that the ticks could be coming from his dogs. This was not correct information because the ticks that feed



Brown ear tick

on dogs are different from those that feed on cattle. The main ticks we find on cattle are the brown ear tick (*Rhipicephalus appendiculatus*). This is the tick that trans-

mits East Coast Fever (ECF). The other common tick in cattle is the blue tick (*Boophilus decoloratus*). This 1mm tick transmits red water (babesiosis) and gall sickness (Anaplasmosis). If one is living in drier parts of the country they may also find the 'bont' tick (amblyomma). This is the large colourful tick found on the udder or scrotum of cattle. It transmits heartwater in cattle, sheep and goats. None of these ticks feed on dogs. During the immature stages i.e. the larvae and the nymphs may infect other animals such as rats, birds and even dogs but the adults only feed on cattle.

Ticks may look similar

What Mr Wanyama may have seen is the dog tick (*Haemaphysalis leachi*) and mistaken it for the blue tick in cattle. He may also have seen the other common tick in dogs, the brown dog tick (*Rhipicephalus sanguineus*) and mistaken it for the brown ear tick in cattle. Outwardly to the untrained person, they may look similar but they are as different as a donkey is from a goat!

While it is good to spray dogs to kill ticks because they can transmit diseases to dogs (do not use the same chemicals you use for your cattle. Your dogs could die! This will not solve the problem of ticks in your cattle.

Understand the acaricides

Mr Wanyama should contact the people who manufacture the acaricide he is using to investigate how he is using the it or if there is resistance or not.

It is also important to mention that acaricides do not provide a long-term solution to ticks and tick-borne diseases because of problems such as tick resistance, high cost and poisoning of the environment. Farmers should aim for integrated pest control where they use vaccines against tick-borne diseases such as East Coast Fever (ECF), resistant breeds of animals, grazing management, curative drugs and acaricides.



Cow tick



Dog tick



farmers forum

0717 551 129 / 0738 390 715

Shredder for sale: A two-month old gasoline foliage shredder cum posho mill, it is Brazillian made machine Ref-TRF80G, 3.5hp engine, and has multiple uses in a medium farm. Nduati Githere, 0729 331 631.

Sheep for sale: I am a farmer who sells sheep for both rearing and meat. Contact Samuel 0721 674 352

Goats for sale: 3 goats, 5-month old dairy goat, male kids and 1 buck (male) for sale in Limuru. All are German Alpine. Contact Muthee Ndirangu.

Egg incubators for sale: We are selling 60-egg poultry incubators at Ksh 15,000. Call 0707 787 884 or email info@ecochicks.co.ke visit our site for more details Eggs Incubators Kenya

Exhibition: Aviana Kenya 2013 International Expo for poultry and livestock. 13th to 14th June 2013, at NAVNAT Hall in Mombasa town. Entry Is Free. Contact 0734 137 470 OR 0729 603 939. Email is info@avianaafrica.com www.avianaafrica.com Ric Martel

Bio fertilizer and biogas appliances for sale: Takamoto Biogas: Now selling bio fer-

tilizer and biogas appliances. Call 0738 689 788 or email info@takamotobiogas.com for more details!

Fresian for sale: A Fresian that is being milked and already served is up for sale. Call 0722 654 407

Fresian incalf heifer: Due next month on sale call 0722 264 758 Nakuru. Kinoti Kenya

Seedlings for sale. Eucalyptus and grevillea. Contact Capis Gumbo on the mobile number, 0710 559 214.

Chicks for sale: Chicks of various breeds are available. Just book on this mobile number; 0719 808 222

Kienyeji chicks wanted: I am Ken from Eldoret and I want to buy *Kienyeji* chicks. If you have, call me on 0723 434 726

Tractor for hire: Massey Ferguson tractor for hire; it comes with a plough, harrow, trailer and seed drill. If you need call Bob in Nyahururu on 0718 784 694.

Dairy goat wanted: I need to buy a dairy goat, which should be registered. Please communicate the price to me on 0722 555 203, Njuguna.



New offices for TOF and TOF Radio

The Organic Farmer magazine is shifting into new offices in icipe—African Insect Science for Food and Health based off

Thika Road in Kasarani. As from July 1 2013, Mrs. Caroline Kwamboka Nyakundi will take over as the Managing Editor.

Our contacts

The Organic Farmer, P.O.Box, 30772-00100, Nairobi

Phone numbers

TOF Administration: 020 863 21 86

TOF Editors/ TOFRadio: 020 863 21 87

The mobile phone numbers remain the same:

SMS: 0715 917 136, Calls: 0717 551 129, 0738 390 715