TOF - The UN Food and Agricultural Organisation (FAO) has warned of a new banana disease that is said to be spreading from Asia to Africa and the Middle East, with potential to also affect countries in Latin America.

Highly destructive
The TR4 race of the Panama disease (also called fusarium wilt) is destructive and poses a serious threat to production and export of bananas and even livelihoods for millions of farmers who rely on the crop for food. The disease is soil-borne and controlled by current farming practices such as crop rotation and use of fungicides. The only way to stop is to prevent it from spreading through movement of infected soil into and out of farms. Also vehicles getting in and out of the farms should be disinfected to prevent spread of the disease.

FAO issues alert on new banana disease

FAO advises farmers to prevent the disease using quarantines, use of disease-free planting material, and prevention of movement of infected soil into and out of farms. Also vehicles getting in and out of the farms should be disinfected to prevent spread of the disease.

Banana disease already in Mozambique

The disease has recently been reported in Mozambique and Jordan. It tends to infect the Cavendish banana varieties, which dominate the world banana trade.

Fusarium wilt is caused by the fungus known as *Fusarium oxysporum f. sp. cubense*.

The disease is soil-borne and the fungus can remain in the soil for decades. It cannot be controlled by current farming practices such as crop rotation and use of fungicides. The only way to stop is to prevent it from spreading through movement of diseased planting materials.

Preventive measures
FAO advises farmers to prevent the disease using quarantines, use of disease-free planting material, and prevention of movement of infected soil into and out of farms. Also vehicles getting in and out of the farms should be disinfected to prevent spread of the disease.

Diseases pose serious problems to crops planted this season. Most farmers will tend to look for quick solutions to the problem notably by buying and applying chemicals. As experienced farmers will tell you, some pests have developed resistance to some of the chemicals in the market. This is partly why chemical companies are forced to develop new chemicals every year to overcome the problem of pest resistance to chemical pesticides. Besides, the cost of the chemicals is so high that many farmers may not afford them.

One way farmers can control the problem of pests is to use environmentally friendly methods of farming such as the use of plant extracts. Many times in this magazine, we have explained the benefits of using plant extracts on crops. They do not cost much except a little labour used in their preparation. It is also possible to improve nutrient deficiency by using plants such as tithonia during preparation of the extracts.

Instead of buying chemicals farmers can also use biopesticides and fungicides that are now available in the market. In this issue we have featured some of the organic inputs farmers can buy and use to control various diseases and pests (page 4 and 5).

Poultry Keeping is becoming a popular farming activity in the country. But chickens are very susceptible to diseases, especially during the wet season. In the last one-month, we have received questions on various ailments affecting chickens.

Prevention is always the first line of defence against pests and diseases. Farmers need to vaccinate their chickens against some of the dangerous diseases such as Newcastle, coccidiosis, Mareks and gumboro.
Charolais: A good beef breed for farmers

The breed has a high production potential with good management and good feeding. It is recognized and valued by beef farmers because consumers prefer it due to its lean meat.

John Cheburei | Charolais is an exotic breed that originated from France, in the South-Eastern region of Charolles. Charolais is kept mainly for beef because of its size, large muscles and fast growth. The colour of the breed is white with pink on the muzzle and pale hooves, long body and sometimes a coarse fur. Currently there are Charolais bulls that are being bred for black and red colour.

Charolais has medium to large body frame, with short, broad head and heavily muscled hinds and loins. Adult bulls can weigh up to 1,000 kgs and cows up to 900 kgs.

In Kenya, Charolais was introduced for cross breeding with local breeds to achieve good growth and uniformity. There are, however, pure breeds and semen available at Agricultural Development Corporation (ADC), Kenya Animal Genetic Resources Centre (KAGRC) and big ranches that specialize in commercial beef.

**Advantages**

The breed is kept specifically for meat production. It has a high production potential especially if well managed and fed well. Farmers who keep this breed say it has good physical characteristics for people who prefer lean meat. They are easy to feed and bring to the required market weight before selling. Charolais bulls have a quiet temperament, and are easy to handle.

**Disadvantages**

The breed has experienced challenges in adapting in Kenya mainly because it easily gets tick borne diseases like East Coast Fever (ECF). Farmers are advised to dip their animals regularly to keep away ticks and to vaccinate them against ECF. Charolais cattle also do not tolerate heat well and thus are more suitable for cool areas with quality fodder throughout the year. Farmers who have reared this breed say the percentage of bone to meat in this breed is higher than most other breeds such as Hereford. This trait is transferred when crossbred.

**Cross breeding**

Crossbreeding is common in the cattle industry. When the right breeds are crossbred, the farmer produces a superior animal, which inherits many of the best traits from each breed. Trials conducted in Kenya indicate that Charolais-Boran, Charolais-Sahiwal, Charolais-Fleckvieh cross breeds show greatest vigour. Weaners range from 250-320 kgs live weight, which shows that Charolais has great value for farmers who wish to improve their local breeds for commercial beef production.

**Characteristics of Charolais breed**

- Bull temperament- Excellent.
- Natural conception rate – 86%.
- Artificial Insemination conception rate- 97%.
- Calving ease – unassisted births- 97%.
- Average calf birth rate weight- 42%.
- Growth rate to 550 kilograms (pasture fed) – 1.07kg per day.
- Charolais are good for growth and uniformity.
- They have superior natural liveweight gain for age.
- Tremendous muscling and conformity.
- Easy to manage in terms of temperament.

**Avoid the effects of inbreeding**

Breeding within small populations, such as a herd or flock, without introduction of new animals from outside, leads automatically to a certain amount of inbreeding. The decrease in fitness that results from such inbreeding is known as inbreeding depression. The cheapest way of making sure no inbreeding takes place is to:

- Keep close breeding records of all animals in the herd.
- Make sure parents do not breed with offspring.
- Siblings do not breed with each other.
- Use AI - carefully noting the name of the sire providing semen at each AI service next to the name of the cow in your diary, so that after some time you will have a record of the family tree of every individual.
- Make sure the same sire semen is not used on his offspring.
- Ask your AI provider to bring different origins semen over time.
Disease prevention important in chicken rearing

Chickens are very vulnerable to diseases. Farmers can, however, keep away diseases through proper feeding, housing, hygiene and regular vaccinations.

Peter Kamau | The wet season is here with us again and with an increased incidence of chicken diseases. Poultry farmers should therefore need to remain alert to guard against disease outbreaks. Some of the poultry diseases can wipe out an entire flock or reduce the chickens' production potential. The first line of defence against poultry diseases is prevention. Since farmers may not know the characteristics of each of the diseases that may affect their poultry flock, it is always important to ensure chicken are protected against the most common diseases mainly through vaccinations.

Apart from vaccination, it is important for farmers to know what causes most of the chickens diseases so that they can maintain their chickens' health. The main causes of diseases in chickens are:

- Microorganisms
- Parasites (both external and internal, like worms).
- Malnutrition (poor feeding)
- Injuries
- Chemicals (e.g. sodium chloride-salt poisoning).

Hygiene

Maintaining hygiene is one of the most important steps a farmer can take to prevent diseases in their poultry flocks. The poultry house should be kept clean at all times. Ensure that the chicken droppings are swept every day. If possible, apply a disinfectant regularly to kill any disease-causing germs or viruses.

Housing

A chicken house should be well ventilated to allow air circulation, but the house should not allow wind as this may affect the birds. Ensure there is adequate space in the house for all the birds to avoid overcrowding. The floor should preferably be cemented for easy washing and sweeping. It should also be lined with wood shavings to keep the birds warm and comfortable. If keeping layers, ensure nesting boxes are provided and built in a dark place where the hens are free from any disturbance. An ideal house should give each bird at least 2 square feet of space to move; overcrowded birds are prone to stress and even cannibalism. Well constructed chickens houses protect the birds from predators.

Signs of healthy chickens

- Healthy chickens remain alert and on guard.
- They have bright eyes and comb.
- They walk, run and scratch.
- They eat and drink continuously.
- They lay eggs as expected.
- They have normally smooth and neat feathers.

- Their droppings are soft and they breath quietly.

Signs of sick birds

- They look tired and lifeless.
- They have dull eyes and comb (crest).
- They tend to sit or lie down most of the time.
- They lay few or no eggs.
- Their feather look ruffled and loose.
- They have wet droppings with blood, worms and may diarrhoea.
- They may cough, sneeze and breathe noisily.

Disease management

In case of a disease outbreak poultry farmers should take the following measures:

- All sick birds should be isolated.
- Remove all dead birds, bury or burn them.
- Consult a veterinarian immediately who can identify the disease and give appropriate treatment.
- Vaccinate all birds as recommended against the most common diseases. Revaccination is also necessary to boost the chickens' immunity to diseases.

I paid dearly for not vaccinating my chickens

A few years ago I reared free-range chickens for both eggs and meat, which, I sold through the Green Dreams brand. I produced them in batches of 200 and 400 on my farm in Tigoni. Rearing them on free range required that I allow them out most of the days. It also meant I could not collect their manure for the slamba so I decided to rear them in the shamba itself.

With the help of my brother, we designed and built a mobile chicken housing unit made of panels that could be dismantled and moved in the field. The sole purpose of the housing unit was to protect the birds at night and to reduce heat loss (and thus weight loss due to the cold temperatures). We built a few units and had broilers and layers, including the Kenbro breed. The slamba was divided into several blocks covered in shade netting and it is these blocks that I then began to rotate the chickens.

I put them on free range

Every morning the birds would rush out of the housing into the open field protected from pests with wood shavings to keep the birds warm and comfortable. If keeping layers, ensure nesting boxes are provided and built in a dark place where the hens are free from any disturbance. An ideal house should give each bird at least 2 square feet of space to move; overcrowded birds are prone to stress and even cannibalism. Well constructed chickens houses protect the birds from predators.

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I did not vaccinate them

I was opposed to the stringent vaccination regime I was advised to follow and in my quest to produce organic meat and eggs I did manage to produce a few batches without vaccinations. I was told, however, that the first few batches would not have a problem but then, the bacterial load causing diseases that could affect them would build up in much the same way that pests and disease built up in crop production if rotation is not followed.

Finally disease struck

To avoid diseases I was sure to move the housing units between batches, giving their holding ground time to solarise and disinfect. But one day the worst

Vaccination programme for chickens

<table>
<thead>
<tr>
<th>Age</th>
<th>Vaccination</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st week</td>
<td>Marek's and Newcastle Disease</td>
<td>Intramuscular injection eye or nasal drops</td>
</tr>
<tr>
<td>2nd week</td>
<td>IDB (Gumboro)</td>
<td>In drinking water</td>
</tr>
<tr>
<td>3rd week</td>
<td>IBD (Gumboro) Newcastle</td>
<td>Eye or nasal drops or in drinking water</td>
</tr>
<tr>
<td>4th week</td>
<td>Deworming, Gumboro forte</td>
<td>In drinking water</td>
</tr>
<tr>
<td>5th week</td>
<td>Lasota and Gumboro</td>
<td>In drinking water</td>
</tr>
<tr>
<td>6-8th week</td>
<td>Fowl Typhoid</td>
<td>Injection</td>
</tr>
<tr>
<td>9th week</td>
<td>Deworming (Every 2-4 weeks)</td>
<td>In drinking water</td>
</tr>
<tr>
<td>8-10th week</td>
<td>Fowlpox</td>
<td>Wing stab</td>
</tr>
<tr>
<td>12-14th week</td>
<td>Fowl typhoid</td>
<td>Injection</td>
</tr>
<tr>
<td>16-18th week</td>
<td>Renew Newcastle vaccination</td>
<td>Optional (If disease is common)</td>
</tr>
</tbody>
</table>

Continued on page 6
### Environmental friendly organic products that farmers can use

**TOF**—Most farmers would like to buy organic fertilizers, soil conditioners, biopesticides, and fungicides to use in their farms in place of chemicals, but they do not know where to buy them. Many other farmers may not be able to distinguish between organic and chemical products in the market. A lot of chemical products are in the market due to aggressive marketing and promotions by agrochemical companies.

**Chemicals have serious side effects**
Some of these chemicals have many side effects on humans, animals, beneficial insects, the water we use from rivers and even the environment. If you read the labels in most of the chemical products, you will not tell you what side effects the chemicals are bound to have on the users. But many of the chemicals in the market that farmers are using to protect their crops against pests, diseases or weed control have serious long-term effect on human beings, animals, beneficial insects, soil microorganisms and the environment.

**Medical complications**
Most of the medical complications such as allergies, cancer, skin ailments and organ failure have been traced to the food we eat, much of which has been grown using chemicals. Farmers, therefore, need to be very careful on the food they produce. Crops grown using organic pesticides, fungicides and even fertilizers is healthy and do not pose any danger to consumers as they do not contain any chemical residues.

**Organic fertilizers good for soils**
Some of the chemicals used in crop protection today end up in water bodies where they kill marine life such as fish while chemical fertilizers washed down rivers are responsible for growth of noxious weeds that are difficult to control. Besides, chemical fertilizers are responsible for increased soil acidity and leaching, which is to blame for a decrease in crop yields in most farming areas in Kenya today. In this issue, we provide farmers with some of the organic products they can use to correct nutrient deficiencies in their soils, control pests and diseases while restoring the damage done by many years of chemical’s use.  

The Biovision Farmer Communication Outreach Programme, which is part of the Farmer Communication Programme has started stocking the Farmers Resource Centres with some of the organic products, which farmers can buy at subsidized prices.

### Resource centres with organic products

<table>
<thead>
<tr>
<th>Centre</th>
<th>Contact 1</th>
<th>Contact 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machakos Resource Centre</td>
<td>John Mutisya</td>
<td>0727 621 162</td>
</tr>
<tr>
<td>Gilgil Resource Centre</td>
<td>Nellie Wangeci</td>
<td>0700 360 100</td>
</tr>
<tr>
<td>Murunguru Resource Centre</td>
<td>Veronica Wangeci</td>
<td>0727 168 770</td>
</tr>
<tr>
<td>Kondola Enterprises Ltd.</td>
<td>Peter Chandi</td>
<td>0721 640 174</td>
</tr>
<tr>
<td>African Diatomite Industries</td>
<td>0733 546 491</td>
<td></td>
</tr>
<tr>
<td>Farmchem Ltd.</td>
<td>0735 712 090</td>
<td></td>
</tr>
<tr>
<td>KAA Livestock Services</td>
<td>0722 209 474</td>
<td></td>
</tr>
<tr>
<td>EM Technologies</td>
<td>0722 552 71</td>
<td></td>
</tr>
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<td>0722 552 71</td>
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</tr>
</tbody>
</table>

### Product matrix

<table>
<thead>
<tr>
<th>Product</th>
<th>Uses</th>
<th>Active ingredient</th>
<th>Target Pest/Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1</td>
<td>Growth Activator</td>
<td>Beneficial micro-organisms</td>
<td>Promotes healthy plant growth</td>
</tr>
<tr>
<td>BM</td>
<td>Growth Activator</td>
<td>Beneficial micro-organisms</td>
<td>Promotes healthy plant growth</td>
</tr>
<tr>
<td>Diatomite</td>
<td>Pest control</td>
<td>Tiny microscopic organisms that pierce and kill pests on contact</td>
<td>Mijingu Rock Phosphate</td>
</tr>
<tr>
<td>Mijingu Rock Phosphate</td>
<td>Organic Fertilizer</td>
<td>Mijingu fertilizer is rich in phosphates</td>
<td>Controls nematodes mites, other pests</td>
</tr>
<tr>
<td>Thuricide HP</td>
<td>Biopesticide</td>
<td>Bacillus Thuriqienies (Bt)</td>
<td>Controls, thrips, whiteflies, worms, caterpillars</td>
</tr>
<tr>
<td>Humax</td>
<td>Humic acid</td>
<td>Soil conditioner</td>
<td>Controls growth of noxious weeds</td>
</tr>
<tr>
<td>Cleanstart</td>
<td>Contains root guard, phosguard, humax and natural wet</td>
<td>Fungicide</td>
<td>A strong Fungicide that controls fusarium, scletoria, rhizoctonia, pithium etc.</td>
</tr>
<tr>
<td>Pyegar</td>
<td>Natural pyrethrum extracts</td>
<td>Biopesticide</td>
<td>A fast growing beneficial fungi that stops disease causing fungi from growing and kills nematode eggs and young nematodes. The compound lasts long in the soil. Juanco SPS Ltd.</td>
</tr>
<tr>
<td>Nimbecidine</td>
<td>Neem extract</td>
<td>Biopesticide</td>
<td>Controls most fungal diseases such as botrytis, fusarium, asperigus, Escherichia spp., Azotobacter spp.</td>
</tr>
<tr>
<td>GC-3</td>
<td>Garlic extract</td>
<td>Fungicide and biopesticide</td>
<td>Controls most fungal diseases such as botrytis, fusarium, asperigus, Escherichia spp., Azotobacter spp.</td>
</tr>
<tr>
<td>Rootguard</td>
<td>Fungicide and pesticide</td>
<td>Trichoderma, bacillus spp, Asperigus spp, Escherichia spp, Azotobacter spp.</td>
<td>Controls most fungal diseases such as botrytis, fusarium, asperigus, Escherichia spp., Azotobacter spp.</td>
</tr>
<tr>
<td>Synergizer</td>
<td>Foliar feed</td>
<td>Contains 8% nitrogen, 32% phosphorus and 4% potassium</td>
<td>Contains potassium salts and phosphorus which act as fungicides and fertilizer</td>
</tr>
<tr>
<td>Fosphite</td>
<td>Selected Fungicide and Fertilizer</td>
<td>Contains 8% nitrogen, 32% phosphorus and 4% potassium</td>
<td>Coats and manufactures healthy plant growth</td>
</tr>
<tr>
<td>Pyneem 20EC</td>
<td>Biological Pesticide</td>
<td>Pyrethrin, neem oil, inert ingredients</td>
<td>Controls and disrupts pest growth disruptive effect on pests</td>
</tr>
<tr>
<td>Pyerin 7.5EC</td>
<td>Biological pesticides</td>
<td>Pyrethrin and inert ingredients</td>
<td>Controls and disrupts pest growth disruptive effect on pests</td>
</tr>
<tr>
<td>PL Plus</td>
<td>Biological Nematicide</td>
<td>Contains Paracolemus lilacinious</td>
<td>Kills serious toxicity effect</td>
</tr>
<tr>
<td>TRICHOTECH® (WP)</td>
<td>Fungicide</td>
<td>Trichoderma harzianum</td>
<td>A nematicide for soil dis ease diseases</td>
</tr>
<tr>
<td>Twin-N</td>
<td>Nitrogen innocent</td>
<td>Has nitrogen fixing bacteria that meet the plants nitrogen needs</td>
<td>1 year and upwards for nitrogen uptake and supply</td>
</tr>
<tr>
<td>Vitazyme</td>
<td>Beneficial enzymes</td>
<td>A Biostimulant that helps improve soil nutrient uptake by plants</td>
<td>50 days and upwards for nitrogen uptake and supply</td>
</tr>
<tr>
<td>Black majik</td>
<td>Soil Conditioner</td>
<td>Humatech 10%, potassium 70% and ulmic Acids</td>
<td>Application of this product is beneficial for the production of black moss, which is a serious soil nutrient in Kenya today.</td>
</tr>
<tr>
<td>Earthlee</td>
<td>Soil conditioner</td>
<td>Humus (80%) and carbon</td>
<td>Application of this product is beneficial for the production of black moss, which is a serious soil nutrient in Kenya today.</td>
</tr>
<tr>
<td>Uptake 12</td>
<td>Soil conditioner</td>
<td>Concentrated potassium humate</td>
<td>Application of this product is beneficial for the production of black moss, which is a serious soil nutrient in Kenya today.</td>
</tr>
<tr>
<td>Achook®</td>
<td>Nematicide</td>
<td>Neem extract</td>
<td>Application of this product is beneficial for the production of black moss, which is a serious soil nutrient in Kenya today.</td>
</tr>
</tbody>
</table>
Environmental friendly organic products that farmers can use instead of chemicals

<table>
<thead>
<tr>
<th>Target Pest/ disease</th>
<th>Remarks</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy plant growth</td>
<td>Improves nutrient uptake, suppresses diseases</td>
<td>Peter Chandi 0733 546 491</td>
</tr>
<tr>
<td>Most pests such as weevils, aphids, mites can be used to grow maize, potatoes, beans matoes etc</td>
<td>Diatomite also contains. Micronutrients such as calcium, phosphorus and magnesium</td>
<td>African Diatomite Industries (ADL) Gilgil, 0722 277 120</td>
</tr>
<tr>
<td>Controls nematodes and other pests</td>
<td>Mijingu does not contain nitrogen. Spray foliar fertilizers rich in nitrogen three weeks after germination</td>
<td>Kondola Enterprises Ltd, Nakuru 0737 711 101, 0712 111 101</td>
</tr>
<tr>
<td>Controls powdery mildew and 11 species of fungi and pests</td>
<td>Does not harm beneficial insects. Pests cannot develop resistance</td>
<td>Farmchem Ltd, 020 552 71, 020 550 448</td>
</tr>
<tr>
<td>Controls most fungal diseases such as botrytis, mildew, leaf spot, fusarium, damping off, root rot and rust</td>
<td>Can be mixed with foliar feed and applied on crops</td>
<td>Juanco SPS Ltd 020 2088 793</td>
</tr>
<tr>
<td>Controls mildews, leaf spot, downy moulds, damping off, root rot and rust</td>
<td>Strong Fungicide that controls fusarium, late blight, rhizoctonia, pithium etc.</td>
<td>Juanco SPS Ltd. 020 2088 793</td>
</tr>
<tr>
<td>Controls most pests during growth phase of affected crops</td>
<td>Broad spectrum biological pesticide the kills and controls most insect pests</td>
<td>Juanco SPS Ltd 020 2088 793</td>
</tr>
<tr>
<td>Controls thrips, whiteflies, worms, caterpillars and mites</td>
<td>Non-Toxic to mammals, bees, fish and other microorganisms</td>
<td>Juanco SPS Ltd 020 2088 793</td>
</tr>
<tr>
<td>Nematode eggs and young nematodes</td>
<td>GC-3 has no serious toxicity effect</td>
<td>Juanco SPS Ltd. 020 2088 793</td>
</tr>
<tr>
<td>Fast growing beneficial fungi that stops disease causing fungi from growing and destroying crops</td>
<td>Synergizer should not be mixed with solutions containing calcium</td>
<td>Juanco SPS Ltd. 020 2088 793, 0722078 05/6</td>
</tr>
<tr>
<td>Seed treatment at 5ml for every one kilogramme of seed. Foliar spray at 20ml for every 20 litres of water.</td>
<td>Fosphite has a long lasting effect about 28 days. But it should not be mixed with copper-based fungicides. Allow 20 days before applying it to copper treated crops.</td>
<td>Juanco SPS Ltd. 020 2088 793</td>
</tr>
<tr>
<td>90g of black majik is mixed with 50 kg of fertilizer</td>
<td>Safe for mammals and soil micro-organisms</td>
<td>Juanco SPS Ltd. 020 2088 793</td>
</tr>
<tr>
<td>Regular use of Earthlee helps improve soil and crop quality</td>
<td>Pyerin is not poisonous to mammals and soil organisms but it can affect fish, bees and birds</td>
<td>Juanco SPS 020 2088 793</td>
</tr>
<tr>
<td>Apply at seeding stage and when transplanting</td>
<td>Synergizer should not be mixed with solutions containing calcium</td>
<td>Juanco SPS Ltd. 020 2088 793, 0722078 05/6</td>
</tr>
<tr>
<td>3-100 litres of uptake for every 2.5 acres of soil during growing season</td>
<td>The compound lasts long in the soil</td>
<td>Juanco SPS Ltd 020 2088 793</td>
</tr>
<tr>
<td>Does not harm beneficial insects. Pests cannot develop resistance</td>
<td>The compound lasts long in the soil</td>
<td>Juanco SPS Ltd 020 2088 793</td>
</tr>
<tr>
<td>Promotes rapid uptake of essential nutrients at all stages of plant growth. can be Mixed with all foliar sprays</td>
<td>Do not mix with any chemical as it might kill the microbes</td>
<td>Lachlan (K) Ltd 0722 209 474</td>
</tr>
<tr>
<td>Reduces acidity and revitalizes soil to make it work better</td>
<td>Promotes rapid uptake of essential nutrients at all stages of plant growth. can be Mixed with all foliar sprays</td>
<td>Lachlan (K) Ltd 0722 209 474</td>
</tr>
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Resource centres transforming farmers' lives

A visit to two resource centres shows that information and training provided is changing farmers from traditional methods of farming into modern agricultural methods that raise their yields and income.

Musdalafa Lyaga

Mr. Benson Muturi, the chairman and co-ordinator for Munyaka Agri-info and Resource Centre stands under a propagated avocado tree. A group of farmers sit in a circle under the tree facing him. In his hands is a handful of dry fodder and he is demonstrating to farmers how to tell if the feed is good for storage or nutritious for livestock. The extension practitioner is passing on knowledge that may seem simplistic to a bystander but to a farmer, this means the difference between raising low milk yielding cows or high yield cows that is poorly managed or a high yielding dairy cow that raises their income.

Farmers in need of information

Farmers in Kenya continue to face numerous challenges due to climate changes, unpredictable markets especially among the sophisticated urban consumers who form the bulk of the market, reducing water sources and emergence of new diseases. The need for information in order to deal with the dynamic agribusiness world is more evident now than ever before. Agricultural extension services from both governmental, non-governmental, community based organizations and profit making organizations play a crucial role in promoting agricultural innovation that help improve farmers’ lives and livelihoods. The Outreach project of Bio Vision Farmer Communication Programme has rural based resource centres spread all over the country where farmers can access appropriate and timely information on ecologically sustainable agriculture. The centres are managed by trained and para-professional field extension agents. In addition FCP works with partner organizations who benefit from getting FCP products for use in reaching out to farmers such as TOF magazine and infonet CDs.

Mr. Benson Muturi, who is also the co-ordinator of Ikirunya Community Based Organization, is one such beneficiary. His centre receives TOF magazine which he distributes to the members of his CBO. The member groups of the CBO also get trainings from field officers from Murungaru Resource Centre. About 100 kilometres in the plains of Kajiado County is the Faraja Latiae Farmers Resource Centre. Latiae is a Maasai word for good neighbourhood. At the centre we meet 24-year old Naisenya Oloishana who has walked for more than 30 kilometres to the resource centre.

Information changed me

“I am thirsty for information because I know what lack of information can do to a farmer,” says Naisenya. Naisenya says that three years ago, her family was in deep financial problems. Her husband had sold over 30 acres of their Isinya home and invested in local cow breeds without investing in other agricultural sectors as a diversification measure. Three years down the line, they had lost the animals to drought and Newcastle disease. After surviving on handouts from neighbours, Oloishana decided to join a women’s Self-Help Group, which eventually led her to the doors of Faraja Latiae. At the Centre, she received training on both crop and animal management and has since then been able to get back on her feet.

New tool for information

Between day 1 and week 40, layers require 10 vaccinations, between day 1 and week 18, kienyeji chickens require 8 vaccinations and between day 1 and 6 weeks broilers require 4 vaccinations! That is a lot of information to remember, especially if you are rearing flocks of chickens! Somehow I managed but the experience led me to develop the latest tool on the iCow platform specifically designed to make poultry rearing less risky for farmers across the country.

Service helpful

According to Mr. Peter Muthee the Director of Faraja Latiae, the war on poverty can only be won by ensuring farmers have adequate information that enables them to produce adequate food without harming the environment.

“We as extension practitioners play a pivotal role in fostering development by disseminating information on innovations and technology, equipping farmers with skills, knowledge, farm inputs and even providing market linkages for the benefit of smallholder farmers to improve their livelihoods”, remarks Muthee. Faraja Resource Centre is also a beneficiary of FCP, having received TOF magazine, infonet CDs and carrying out joint trainings with Outreach staff.

Information on vaccinations important

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New tool for information

The new tool is a series of chicken calendars, for kienyeji, layers and broiler chickens. By simply registering a flock on the Chicken Calendar for each breed of chickens, iCow will send SMS vaccination reminders according to the flock type and age and will also send information on best practices, diseases, and more. The vaccination information will come one or two days in advance giving farmers enough time to purchase the vaccine and administer the vaccination on time. It’s so easy and so useful I am using it on my own chickens I recently started rearing again on a smaller scale for family consumption.

I have built a small net enclosure using cheap water pipes and shade netting to allow them to free range and protect them from dogs and birds of prey. This also helps restrict them from spoiling my small vegetable garden. Su Kahumbu

For more on iCow simply dial *285# and have a browse through our menu of products designed to reduce every day risks we face in farming. Su Kahumbu
How can I control root knot nematodes in my banana plantation?

There are four major nematode species that affect bananas in Kenya namely Lesion nematodes (Pratylenchus goodeyi), burrowing nematode (Radopholus similis), spiral nematode (Helicotylenchus multicinctus) and root knot nematodes (Meloidogyne incognita).

Adult nematodes are tiny worms (less than 1 mm long), which are not visible to the naked eye. They feed on the root and banana corms (the swollen part of the banana pseudostem at the base of the plant).

Nematodes feed on the root and the corm. They lay their eggs in the same region (around the root and the stem) where they take up to 30 days to mature. Infested suckers spread the pests especially during transplanting. Nematodes can also move from one plant to the other.

How to control nematodes

Crop rotation: One way farmers can control nematodes is through practicing crop rotation. Plant plants like sweet potatoes, which are not hosts for nematodes for at least 11/2 years to give the disease time to clear. After this period bananas can then be planted.

Intercropping: Mixing bananas in the same field with other crops such legumes (beans, soya, garden peas and ground-nuts) helps to reduce nematodes and weevils.

Resistant varieties: There are a number of banana varieties that are genetically resistant to or tolerant to nematodes and weevils. Farmers can enquire from extension personnel or banana growers in their region on varieties that are not prone to damage by these pests.

Never use paraffin to control pests in your crops

Can I use paraffin oil to apply on crops affected by aphids? If so, how long will it take for the smell to disappear from the vegetables?

The use of synthetic products or chemicals is not allowed in organic farming. Organic farming is a holistic system that uses natural methods to produce healthy crops in a healthy environment. The use of products such as paraffin on food meant for human consumption is not allowed.

Making plant extracts

Aphids can be controlled using plant extracts, which you can easily prepare on the farm as follows:

Get 4 kg of different plants that have different insecticidal and nutritional benefits to the plants such as stinging nettle, neem, African marigold, Sodom’s apple, tithonia, garlic, chili, pyrethrum or lantana camara.

Effective Microorganisms

Apart from it being used in compost making, what are the other functions of EM?

The acronym EM stands for Effective Microorganisms. EM is a solution that contains beneficial bacteria which when applied to crops acts as a growth activator. It makes the crops develop immunity against most of the diseases that are caused by bacteria and other fungi in the soil. EM has the added benefit of ensuring that the crops are able to take up most of the nutrients that are applied to the crops or those already in the soil. Farmers with small pieces of land can maintain soil fertility and reduce frequency of crop rotations if they continuously use EM in plant extracts while reducing pests pressure during the crop growth phases.

Preparation: Mix molasses and EM1 (these can be bought in any agro-veterinary shop). Add 5 litres of water. Dissolve bar soap into the solution. Chop up the plants into small pieces and put in a bucket. Fill the bucket with water to the brim and close completely to stop air from escaping. Let the mixture remain closed for 14 days. Filter the solution after the 14 days (use a piece of cloth to filter if using a knapsack to spray the pieces from blocking the nozzles). Dilute it at the ratio of 1 litre of FPE to 100 litres of water.

Spraying: Organic plant extracts do not work in the same way as chemicals hence ensure you spray your crop up to three times a week. Do not wait until you see the aphids or any other pests to start spraying- do it continuously as a preventive measure. The plant extract will ensure your crop is protected from pests while remaining healthy as they have adequate nutrients.

The difference between rock phosphate and lime

Can I apply both rock phosphate and lime in my shamba at the same time?

Rock phosphate

The aim of using lime is to help reduce soil acidity in the soil. But Rock phosphate is a fertilizer that contains a lot of phosphorus and calcium alongside many other micronutrients that are good for the soil. Rock phosphate does not contain nitrogen these can be supplemented by use of foliar sprays that contain nitrogen in order to balance the nutrients for the crops. However rock phosphate has the ability to reduce soil acidity, so it can be used for both purposes of reducing soil acidity and also as a fertilizer. Farmers using rock phosphate are also advised to add humic acid found in humates such as Earthlee®, Humax® or Black majik® (see page 4 and 5) at the rate of 500g for every bag of rock phosphate. This is due to the fact that rock phosphate is a slow release fertilizer which can take up to five years in the soil to break down completely to release nutrients for use by crops.
Chemicals which prevent Striga, the intercropped plant, release the larvae do not mature. Therefore, the eggs do not hatch and the larvae die. Farmers who were trained by staff from icipe, Mbta. “I decided to try the technology after seeing the drastic increase in yield in my neighbouring farmers’ fields.”

Push-pull technology improves food security for farmers

Mustralafa Lyago | The rainy season has been with us for quite a while now. This is clear from the lush green vegetation in the farms. A woman walks around her small piece of land admiring the newly germinating maize seedlings. From the smile on her face it is clear that she is happy with the progress the new maize plantation is making.

“When my husband passed away in 1999 and left me with three children, I was so devastated,” says Agnes Maureen Ambubi, who has increasingly become the face of Push–Pull farming system in Vihiga County. “After the death of my husband, I came to settle in this plot which my husband inherited from his parents in 2002 but it could hardly produce enough food to feed my family and we were almost reduced to begging,” says the charming mother of three, who is now raising an orphan and a granddaughter.

Trained by icipe

Vihiga County is one of the most densely populated areas in Kenya. Food production has been especially hard hit by the culture of land sub-division to sons, which reduces arable land immensely.

Agnes first learnt of the push-pull technology from her neighbours who were trained by staff from icipe, Mbta. “I decided to try the technology after seeing the drastic increase in yield in my neighbouring farmers’ fields.”

Mr. David Fritz who is the Head of Communication and Campaigns with Biovision-Founda- tion for Ecological Development is considering featuring her in a film documentary, which seeks to explain the impact of Push-Pull among small-scale farmers to the Swiss community. Agnes has come a long way to reap the benefits of the push-pull technology.

Late in the year 2002, she started a conventional push-pull plot. For the next 3 years she was amazed at the steady improvement in maize yields and improved soil fertility. After adopting the push-pull technology, Agnes’ yield increased from 35kg to 90kg of maize on her first harvest. This has since increased to 4 bags of maize every season, which has significantly improved her life and that of her family.

Educated her children

With the money from sale of maize, Agnes has educated her children. Her firstborn daughter already graduated from college while her second born daughter is a beauty and hair instructor. Her third born child, a son, is an electrical engineer in Nairobi. She has also been constructed a house for family and ventured into both poultry and dairy farming.

“We have enough food throughout the year and I even sell the surplus dairy and poultry products. The push-pull technology has lifted me from poverty.”

Communication promotes adoption of push-pull technology

Hudson Shiraku Were | Push-Pull was developed by Dr. Zeyeur Khan of icipe Mbta in collaboration with partners. The farming system has environmental and economical benefits for farmers.

Benefits

Desmodium acts as a cover crop that retains soil moisture and enhances soil fertility by fixing nitrogen. The desmodium, Napier grass or Brachiaria grass are a great source of animal fodder and have been proven to boost milk production when given to dairy cows.

The desmodium roots, as the intercropped plant, release chemicals which prevent Striga weeds from attaching to the cereal weeds. At the same time the desmodium repels stem borers or drives them away (Push) from the main cereal crop like the maize. The stem borers are then attracted to lay eggs in grasses like the Napier grass (Pull), which are used as the trap plant around the cereal crop. After the stem borers lay their eggs on the Napier grass, it does not support their development hence most of the larvae do not mature.

Working with scientists

Farmers, scientists, media organizations, governmental and non-governmental organizations concerned with issues of food security are working together to create awareness on Push-Pull technology. Many farmers from East Africa have adopted the technology.

Besides the adoption of the push-pull technology, the farmers also relay the challenges that they face to the scientists, which informs future research.

To help increase donor understanding, it has also been crucial to capture success stories and positive outcomes from push-pull farming systems.

Awareness creation

The Organic Farmer magazine and radio programmes help farmers understand and adopt the Push-Pull technology. TOFRadio is producing programme in which farmers will be interviewed on the benefits of the Push-Pull technology.

Different channels used in communication

To reach out to the young farmers TOF website (www.theorganicfarmermagazine.org) publishes and generates debates on the Push Pull technology among farmer networks. The video production unit will also be producing short films on the success stories of farmers who have benefited from the push-pull technology which will be uploaded on The Organic Farmer website and Youtube. These videos will also be used for demonstration by the field officers.