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FRONT COVER

If you neglect to pick an artichoke at budding stage it turns into a beautiful mauve flower, not unlike an oversize Scotch Thistle.

COMMENT, by Pete Bower e epoch of mai



bscured in the newspapers after New Year by the furore over racist utterances on social media by people who were clearly suffering bouts of brainfart was the announcement by scientists of the Anthropocene Epoch, or the epoch of man.

This, they tell us, started in the middle of the 20th Century when Russia, the US and others started fiddling around with atom bombs, and when industry started to invent modern materials such as plastics and carbon fibre, and use metals such as titanium and aluminium in manufacturing.

An epoch is measured by future generations by examining samples of sedimentary deposits laid down over the years. In the case of the Anthropocene Epoch, future analysts will notice the sediments being laid down now will contain high levels of radioactive isotopes, and high levels of carbon associated with the burning of fossil fuels, manufacture of plastics, use of chemicals etc.

Whether the announcement of the Anthropocene Epoch is a good thing or a bad thing is open for discussion. One thing is for certain however: it's a pretty solid observation on what happens to a planet when you stock it with seven billion inventive people hellbent on consuming as much of its resources as they can.

Something else happened over the holiday period which is potentially related to the Anthropocene Epoch, namely the COP21 meeting in Paris at which the world's governments (South Africa included) pledged to reduce carbon emissions.

Whether most of the signatories to the COP21 resolution actually believe their countries will meet those targets is another matter. In South Africa, for example, the cost of fitting out Eskom's existing coal-fired power stations with the kit necessary to reduce their emission levels is prohibitively expensive so it's unlikely we will ever meet our COP21 obligations.

Regardless of how cynical signatories to COP21 were, the conference achieved one notable thing, namely an increasing awareness among ordinary citizens of the need to do SOMETHING to slow down global warming etc. And the reality is that much of what needs to be done will have to be done at an individual or household level. At an individual level, of course, is one's right to vote. At any election, voters should (and, we believe, will) start to support candidates or parties that espouse green-ness in the most vigorous way. From the parties' and candidates' side, winners will be those who develop and announce the best-thought-out green policies, and not merely a lot of vague platitudes and hot air.

Candidates who, for example, push through the laws necessary to enable households to sell their surplus solar-generated electricity back into the grid (as happens in Germany and elsewhere) will get our vote. For only when that sort of initiative happens will it become truly enticing for ordinary households to invest in solar panels, batteries and inverters, the costs of which will drop dramatically as a result.

But there's another observation which the green lobby often overlooks. It's no use talking about "cutting down" on the use of fossil fuels etc when, firstly, more than half of the world's population lives below the breadline in horrible poverty and secondly we're adding humans to the population at an exponential rate. People naturally want to consume more, not less, as they rise out of the poverty trap by dint of their own hard work or because they are lifted out by some social intervention. And a growing population, meaning more mouths to feed, will mean more, not less consumption of foodstuffs, fuel, electricity etc.

So, rather, we need to look for ways to CHANGE our behaviour. Obviously that means living as unwastefully as possible, switching off lights when one leaves the room, not wasting food by cooking too much, fixing dripping taps, etc. But it also means looking for new ways of doing things and new ways of thinking. From seemingly obvious little behavioural changes such as fixing broken appliances rather than replacing them, looking at the use of renewable energy such as wind and solar, growing one's own food, using recycled inputs such as home-made compost and filtered grey water, redesigning one's garden to include more edible species and water-wise indigenous plants, setting up barter and sharing networks with one's neighbours, consciously seeking to cut down on the food-miles travelled by bought produce, ie, only buying foods that are locally in-season, and so on, to major lifestyle changes using techniques and machinery that might not yet even have been dreamed of.

Think of the cellphone and the change it has wrought to life on earth. That's small compared to the sort of fundamental shift we need to turn climate change around.







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Weak borehole prompts a reservoir

 $^{\prime}$ IR ~ I, like most other maplotters, have taken a great deal of strain with respect to borehole water supply, to the point that my house and all cottages are fed from municipal water. Currently I can only pump about 1 000 litres per day from my shallow borehole, with the result that my veggie garden is a barren wasteland! It's ludicrous to try to sustain veggies from municipal water what with its punitive price. What I have done,

however,on my 1ha plot, is to investigate the possibility of creating a large reservoir (180 000 litres) to harness rainwater from the rooves of my cottages. Thus far, it is proving to be quite sustainable for the following reasons: I dug down 1m into the earth as an exploration. What I found (in my neck of the woods) was that the topsoil was about 300mm deep, followed by another 300mm of sandy fine clay/top/subsoil, and then the last 400mm was a mixture of clayey subsoil with an amount of decomposed Ouklip.

□ I discarded the topsoil for later use and tested the mid soil. This ground proved to be very useful (after sieving) to form the basis of plaster sand, (which I have subsequently

and shorten as necessary.

be included.

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used to replaster wall areas). The bottom layer has worked out just fine as a "building mix" (after coarse sieving) and furthermore it is well-suited to making bricks. My point is thus: On 1ha, it is well worthwhile checking out the possibility of creating a rain water reservoir that can ensure year round supply of uncontaminated eco-friendly water for garden and veggies. My project is to create a 15m long by 6m wide and 2 m deep reservoir (1 m down

and 1m above ground). In my particular case I am blessed with having the aggregate and all that I need to do is supply cement and then waterproof, topping the dam with a 100% shadecloth.

MAILBAG

Further to this, one could look at buying fingerlings and raising Tilapia or even getting into the game of raising Koi. The opportunities are only limited to one's own imagination and fiscal restraints. **Giles Newby-Fraser**

Midrand.





NEWS The drought as we know it now

he worst drought in 55 years. The worst drought in 112 years. The worst drought in living memory. That's how the current season's disaster is being variously described by weathermen, farmers and economists.

The problem of this year's drought is exacerbated by the fact that it follows on a couple of years of below-average rains, meaning groundwater and stored water reserves are depleted.

As the summer progresses dire predictions are becoming sad fact:

❑ Vast swathes of what should be productive maize lands in the Free State and Northwest Province have simply been left untilled and unplanted because what little rain that has fallen came too late for a successful crop. The drought will hit you in the pocket. Africa will need to import six million tons of maize to cover the shortfall not to mention

□ The wheatlands of the Cape have been left largely untouched for a similar reason.

Towns and villages throughout the central parts of the country have been left without water as a result of their dams and rivers drying up completely.

Livestock of all descriptions are dying of hunger and thirst, or are being slaughtered because there is no fodder or grazing for them to eat.

☐ The economic effects of a lack of a crop, and the lack of fodder and water, on farmers, already traditionally among the most indebted individuals in the economy, are dire. ☐ The economic effects on

farmworkers is, likewise, dire, particularly on those who rely

on overtime work, such as tractor drivers during planting season.

The economic effects on manufacturers and suppliers of agricultural machinery are dire because farmers hit by drought have neither the need nor the money to replace machinery if they can't or won't plant.

□ The economic effects on consumers, particularly those at the lower end of the income scale, will be dire as shortages of staples such as mealie meal and bread occur, or are overcome using expensive imports. Some economists estimate that food price inflation will run at up to 25% this year.

A much-reduced maize

harvest will mean that South

million tons of maize to cover the shortfall, not to mention other grains such as wheat. While procuring this quantity of maize on world markets is not a problem if one is prepared to pay the international price, actually getting it to the ports and thence to the mills is a logistical nightmare for which South Africa's infrastructure is ill-equipped. We are, after all, generally a maize exporting country and our port facilities are thus geared to handle shipments headed outwards. The equipment required to load a ship with grain is not the same as that required to unload a ship.

Plus, while six million tons of additional cargo will generate additional revenue for the port authority, stevedores and

Continued on page 8



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NEWS

From page 6

railway infrastructure, it will require no fewer than 120 voyages by bulk carriers of about 50 000 DWT (tons of carrying capacity) to deliver the stuff to South African ports. Assuming each ship takes five days to discharge at a rate of 10 000 tons a day, that will equate to 600 port days or 600 days during which ships will be alongside the wharves of South African harbours discharging nothing other than grain.

In some cases that is going to lead to congestion at South African harbours.

Then, once one has lifted the cargo off the ship one needs something to transport it in, namely railway wagons. Hundreds and hundreds of railway wagons (At between 50 and 60 tons capacity per wagon the railways will require between 100 000 and 120 000 wagon-trips to carry the imports inland!) Wagons which must be brought to the

Importing 6 million tons of maize will strain SA's port and rail infrastructure

harbour, shunted into position, and slowly moved out of the way as they are filled. To protect the cargo from rain is also important so if the wagon being used is an open one it must be covered with a tarpaulin, a tedious, labour-intensive task. There is some debate among transport experts as to whether Transnet has sufficient serviceable rolling stock, and even tarpaulins, available. Oh, and don't think that the drought conveniently stops at the Limpopo River and that other countries in the region are unaffected. Zimbabwe, too, is in the grip of the drought and its looming maize shortage is being put at a further two million tons this year.

One positive of the drought has been the way in which ordinary citizens have banded

together to donate water, fodder and food to less fortunate countrymen in the totally stricken areas, and how some transport companies have donated freely of their vehicles' and drivers' time to deliver the donations. For Gauteng's smallholders the drought and extreme yearend temperatures will mean that there will be shortages of quality fodder this year, coupled with high prices of all feed, for all species (many of the hard feeds containing yellow maize, among other grains.)

Many smallholders have, therefore, begun selling off surplus animals, even consigning some of their breeding stock to the abattoir. There has also been a considerable increase in interest in processes that can be applied domestically to store rainwater runoff and reuse grey water. Because of the lack of rain smallholders, like their commercial farmer counterparts, have not needed their grass cutting and lawncare equipment much this summer. This has affected sellers and repairers of such machines, many of whom are reporting dismal summer sales figures.

Ironically, the market for second-hand machines also appears smaller this season, with owners hanging on to their old machines rather than selling them and upgrading to something new. Economists predict that the food shortages, coupled with the consumption of more expensive imports, the latter coupled with a weakening exchange rate, will lead to higher prices across the board for foodstuffs. Sociologists, in turn, are predicting the possibility of violent protests Continued on page 10







Barry: 083 679 1317 aviary@mweb.co.za Adelle: 083 427 7101 sales@meshforbirds.co.za Leon: 074 604 2024

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NEWS Herbarium will identify plants, weeds

ot a plant in your field or a weed in your garden that you can't identify? The National Herbarium in Pretoria offers a plant identification service. Plants that can be identified include all flowering plants, ferns, cycads, cultivated and

From page 8

and food riots as these prices and shortages kick in, and already by mid-January there



exotic weeds, as well as mosses and liverworts. The herbarium will identify all indigenous and alien invasive plants, along with some cultivated plants, provided that the plant specimen received is of good enough quality to enable the study of

sional violence among

residents in rural villages

more commonly used in

animal feed. This will prove

especially unpopular with

consumers of maize meal.

the remainder of the summer,

weathermen are expecting

more rain that we "enjoyed"

But what of the future? O In the short term, ie over

the flowers and/or fruit, and other diagnostic features. Fungi and algae cannot be identified by Sanbi. Plants should be pressed and dried and must be accompanied with a label containing detailed information on the collection locality and plant

description (height, flower colour etc).

The aim is to provide accurate identification and provide taxonomically correct scientific names. A handling fee is charged for this service. But before contacting the Continued on page 12

were press reports of occaduring the first half of the season (It's not that there's NO rain in a drought. It's just that affected by water outages. there's LESS rain than normal...) This, of course, will In the case of maize meal, be of no use to most sowed shortages of white maize may crop farmers for whom it will mean that meal has to be made from yellow maize,

be too late for germination and successful growth. For pasture farmers, however, it might enable them to harvest a decent cutting which would, in a normal season,

Continued on page 12



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hou die reg voor d te beperk. Sekere voorraad is e doeleindes. Foute en weglatings uitgesluit (E. & O. E.)

NEWS

From page 10 being their second cut. In the medium term, ie through the winter to the next rainy season, the rains that will fall now will replenish partially ground water sources

Global warming might make for a permanent El Nino effect an El Nino (which brings drought to southern Afric and elsewhere in the

and fill dams and rivers, but there will still be a shortage next year. And, of course,



there will be feed shortages, and higher food prices, especially of red meat later in the year as there won't be the throughput of slaughter animals to satisfy demand. In the long term, the weather pattern depends on the extent of global warming and the El Nino/La Nina cycle.

Weather scientists are pretty sure they can predict when



an El Nino (which brings drought to southern Africa and elsewhere in the southern hemisphere) will occur, and when the cycle will change to the opposite, the La Nina effect.

What they are less sure of is the intensity of the effect and therefore the intensity of the drought or above-average rainfall that we can expect. What they are also beginning to factor in to the calculation is the degree to which global warming affects the El Nino (which is nothing more than the effect that happens as a result of higher-than-normal ocean temperatures in the central Pacific Ocean). With global warming raising temperatures generally (2015 was the hottest year ever recorded in many parts of the world) scientists are now taking the view that ocean temperatures will be affected, which if that includes the central Pacific will mean an increase in the number, and possibly also intensity of, El Nino years, which will mean that the current pattern of drought and dry years in southern Africa could become the norm.

PLANT ID

herbarium, check the I-spot website (www.ispotnature-.org/communities/southernafrica). You may find images of your plant there. You can also upload your images of plants and animals there for the I-spot community to identify. Using I-Spot is free of charge.

Identifications by the herbarium from photos will not be done, unless accompanied by a physical specimen.

The National Herbarium is located in the Pretoria National Botanical Garden, 2 Cussonia Avenue, Brummeria. For Taxonomic & botanical enquiries call 012 843-5000. **Revet - Authorised Retailer of**





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TECHNOLOGY Nature-based apps for your phone

For tech-savvy smallholders there are a number of apps which one can download onto one's cellphone, to help with identification of various species while one is out in the veld, a more convenient option than lugging around textbooks on the subjects of one's interest. The apps vary in price and are available in the Apple and Google Play app stores. Sasol is well known for supporting the spread of information about our flora and fauna. This is extended to apps as well. In the Sasol Young Explorer

series there is one for frogs and another for mammals.



Sasol eBirds of Southern Africa, the well-known birding app for the region, has just been updated with the addition of more than 2 800 photographs to the app. Another bird app is Newman's Birds of Southern Africa, which also has detailed descriptions, distribution maps and species status for all 975 species, as well as more than 800 bird calls of different types (song, duet, alarm, mating calls and group calls). The dynamic search filter helps you identify birds based on GPS location, region, size and colour. The Sasol First Field Guide mobile app series provides fascinating insight into the diverse fauna and flora of southern Africa. Ideal for budding and amateur naturalists, the apps are packed with up-to-date

species descriptions, fullcolour photographs, videos, animal calls and distribution maps, all aimed at quick and accurate identification of a species.

Also included are intriguing facts about about each species and its conservation status, as well as links to useful websites. Separate English and Afrikaans apps are available.

A useful app is *Snakebite First Aid in Southern Africa*. This handy guide helps you identify the most dangerous and venomous snakes in southern Africa, and gives you the correct and most important first aid treatments to implement in the event of snakebite.

There are multiple highquality photos of 23 very dangerous snakes, at different

Continued on page 16



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ith permission ~ finally ~ granted by the Dept of Environment Affairs & Fisheries for the importation of commercial stocks of Nile tilapia (*Oreochromis niloticus*) and the development of a cost-effective, scaleable, totally self-contained fish production unit named Farminabox, veteran

BANG-A-LERT Bang-A

Muldersdrift fish farmer David Fincham and business partner William Kelly have put in place the last pieces of the puzzle to make small-scale aquaculture a viable reality throughout sub-Saharan Africa.

Farminabox is easy to transport, easy to erect, stock

\PPS

From page 14 and succinct information about their habits, habitats, and key identification markers.

A handy emergency numbers list allows you to dial out directly from the app so that you can get help quickly. The obvious companion app is eSnakes of Southern Africa, which is an interactive version of Johan Marais' A Complete Guide to the Snakes of Southern Africa. It covers all and run, and can be configured to suit the needs and budget of the individual farmer.

In its larger iterations the concept comprises a circular 10 000 litre tank fashioned from plastic-coated fabric. This is held in shape by a simple framework of plastic water pipe, and plumbed into a dual filter comprising two rigid cylindrical tanks filled with biological filter media, the primary (smaller) tank to remove solid waste and a secondary tank where bio-remediation of the water takes place through the

Continued on page 18

151 snakes indigenous to Southern Africa.

The Gauteng Smallholder has published information on eTrees of Southern Africa, the definitive tree identification app by renowned botanist Braam van Wyk and the late Piet van Wyk. However, the app has been updated with the addition of about 50 species and 2 750 photographs (many of these are of full trees), which can be zoomed in on tablet devices. Of general use is *Wildlife* of *Southern Africa*, featuring more than 2 500 species most likely to be encountered, with more than 1 600 images to assist with identification.

Categories covered are lower invertebrates, spiders and other arachnids, insects, freshwater fishes, frogs, reptiles, birds, mammals, grasses, sedges, ferns and fungi, wild flowers and trees.





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AQUACULTURE

From page 16

interaction with aerobic bacteria attached to the freefloating filter media. For easy transport all of this, including air pumps, water circulating pumps, thermometer, etc, is packed into the smaller tank, which is packed in turn into the larger tank like a Russian doll.

A newly developed system FarmInABox Pro does away with the rigid tanks, instead incorporating the filters as stitched-in chambers in the side of the main tank. And in a further simplification to reduce transport costs to the bone, thismakes the package



Plastic filter media. The dark ones are coated with aerobic bacteria

even smaller and lighter by omitting any plastic water pipe, the buyer being expected to find this easilysourced, cheap and easilyworked material at his suppliers.

In this way, Farminabox can be couriered anywhere around the country at minimal cost, and more importantly air- or roadfreighted to buyers throughout Africa, where tilapia farming is becoming big business, says Fincham. The system can be used for any stage of the fish-growing process, from hatching fry to producing fingerlings to growing out table-ready fish, the only differences being in stocking levels, feeding and management techniques. Nile tilapia grow best in water at a temperature of 27-29°C so, in Gauteng at least, fish farming takes place most effectively under cover,

typically in a greenhouse. A standard 30m greenhouse can hold fourteen 10 000 litre tanks and their



Fincham lifts the lid off a Farminabox filter

associated filters. Depending on how the farmer wishes to use them this is sufficient to produce as much as 20 tons of saleable fish per year (buying in fingerlings from a hatchery for each batch, rather than producing one's own fry). But, says Fincham, the beauty of the Farminabox system is that a smaller producer, such as a smallholder, could have only one tank, sufficient to keep his family supplied with fish, with enough over to sell to more than cover the cost of the enterprise. Fincham

points out that tilapia is becoming more popular among South African consumers and restaurant goers, not least as it compares very favourably in price with more traditional, but now harder to source, whitefish species such as kingklip, sole and kabeljou.

He adds that the more value one is prepared to add to one's catch, ie by way of filletting, smoking or otherwise working the fish, the more revenue one can expect.

Continued on page 20





AQUACULTURE

From page 14

But why use an imported species such as Nile tilapia when we have our own tilapia species, *O mossambicus*, swimming in our streams and rivers, more commonly known as blue kurper? Simple, says Fincham: Commercially bred *O niloticus* (and there are red and black varieties) have been genetically selected for good feed conversion, fast growth and hardiness, in much the same way that commercial broiler chickens have been developed for their speed of growth. Thus, they reach a harvestable size much quicker than *O mossambicus*. Fincham, who has been passionate about the development of a tilapia farming industry in southern Africa for many years, says not enough is being done by the South African government to assist farmers to establish aquaculture enterprises, neither by way of active support in the form of grants and aid, nor by way of training and education nor, indeed, by way of simplifying some of the onerous statutory requirements such as the myriad permits and permis-

Red Oreochromis niloticus frv

transported Farminabox system is ideal. Nevertheless, his company maintains a full tilapia production unit in Muldersdrift, capable of supplying fingerlings and fish of various sizes at all times, as well as training and support to aspirant fish farmers. For more information: David Fincham Aquaculture, tel 082 048-3382 visit the website

www.tilapiafarming.co.za



sions required for larger commercial operations. Much of their work, therefore, comes from countries north of South Africa, for which the compact, easily-

proved erator and ining 082 5610 443 - Hugo (Transport & Plant) TOWER CRANE 082 7444 191 - Maryna (Storage) email: u-go@vodamail.co.za WATER TANKER fax: 086 505 4237 **Call us for:** Demolition TLBs Road Construction ·Clearing of Plots SMOOTH TIPPER Site Clearing DRUM TRUCKS Factory Removals ROLL FR ·Civil Contracts **TELEHANDLEI** Tree Felling Tree Transplants Machine & Container Moving Preparation of Horse Arenas, Sports Fields, etc. UNDERGROUND ARTICULATED FRONT END LOADER DUMP EXCAVATOR TRUCK ARA 133.2 Fully Licensed GRADERS DOUBLE-AXLE HORSE with 35 ton CRANE & Hangarage 3-AXLE LOWBED TRAILER Flying lessons microlight ~helicopter aeroplane SKID Call Hugo 082 5610 443 FRONT END BULLDOZER LOADER FORKLIFT LOADER

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POULTRY Keeping quail: An alternative to chickens

auteng is home to two indigenous quails. The Common quail (*Coturnix coturnix*) occurs in grassy habitats, including in cultivated fields, so many smallholders will have them on their lands. The Harlequin quail (*Coturnix delegorguei*) is also found in grasslands, open savannahs and fields.

However there is a growing market for quail products, in the form of whole dressed birds and quail eggs, especially among upmarket restaurants and growers keeping quails commercially for the purpose of profitable eggs and meat production tend to use domesticated Japanese quail or Jumbo quail, firstly because one cannot keep indigenous birds without a permit and secondly because Japanese quails are favoured for commercial quail production because they are good egg producers and have more meat.

Why should smallholders consider farming quail as a means of adding to their income?

Quails are a smaller sized bird, so the feeding costs are comparatively lower than chickens or other poultry;
 Quails are hardy and prone to fewer disease;
 Quails grow very fast and gain maturity faster than any other poultry;

 They start laying eggs within six to seven weeks of age, thus providing a quick return on investment;
 It takes 16 to 18 days to



Quail chicks

hatch their eggs.

Meat and eggs of quail are delicious and nutritious. So quail are a great source of food and nutrition.
 Quail farming needs small capital, and labour cost is very low.

Quail meat contains less fat. So, it is suitable for high blood pressure patients.
 The eggs are low in cholesterol and can be cooked in the same way as chicken eggs;

Quails lay 250 - 300 eggs in their first year, which can either be sold or hatched. This means consistent profits almost all year round.

 Quail eggs also provide an excellent source of feed for snake and reptile breeders and pet shops.
 Their food to meat or eggs converting efficiency is satisfactory;
 You can raise six to

seven quails in the same

place that is required for one chicken – this number would require 0,9m²;





Adult male and female Japanese Quail



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Quail housing

From page 21 Market demand for quails is on the rise. That's because their meat and eggs are beneficial and are used in the treatment of various diseases: diabetes, obesity, tuberculosis, kidney and liver diseases, hypertension and more. Their meat is low in fat, but high in protein and essential nutrients;

Quail feathers are much sought after by the angling community as they are used in lures;

Quail meat and eggs are being successfully exported. Quails are small birds - an



adult weighs between 150 to 200 grams and an egg weighs around seven to 15 grams. Housing needs to be wellventilated to ensure a constant flow of air. Temperatures should be between 28-32°C. Quails can be kept in a shed or in a cage. You can raise 50 quails in a cage measuring 120 cm length, 60 cm width and 25 cm height. The birds need access to clean water and the cage must be cleaned regularly.

If you choose to use wood products as litter, make sure it is wood shavings and not sawdust, as this dust can

> cause respiratory problems in your birds. Care must be taken not to allow the litter to get wet. This causes the litter to smell which

attracts flies,

To page 24





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-

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POULTRY

From page 22

bacteria develops and ammonia forms. The fumes affect the birds' lungs and sinuses.

In terms of feeding, there is no specific quail feed available, so chicken food is used - layer pellets, chick crumbs or mash. An adult quail consumes about 20 to

imple Trrigation olutions <u>Suppliers of:</u> Borehole Pumps Booster Pumps Submersible Pumps Irrigation Systems Paul 082 306 0584 Delmari 079 373 1958 simpleirrigation@gmail.com 25g of food daily. The feed can be supplemented by greens. Greens are an excellent source of additional nutrients and can reduce your feed bill, too. Freshly cut lawn grass and fresh leafy vegetable trimmings can be given. Wild grass, especially when seeded, is readily accepted as a feed supplement by both chicks and adult birds. For maximum egg production, 16 hours of lighting is required daily inside the quail house. Chicks need an artificial heat and temperature management system for 14 to 21 days from their hatching. Part of your initial outlay will also include an incubator, as domesticated quails do not sit on their eggs. This also means that a reliable power supply is of the utmost importance. There are products available that act as alarms when the power supply to the incubator is interrupted. Eggs will start hatching after

16 days. The chicks are then kept in a brooder for three to four weeks, where they are kept warm by lights. Once they are fully fledged (the feathers and wing muscles are sufficiently developed for flight), they are moved to the permanent cage. If you are going to start a quail farming enterprise you will need to draw up a proper business plan. And work according to the plan. A good quail farming business plan should include almost everything related to this business such as your production purpose, products you want to produce, housing, feeding, breeding, health care, packaging and marketing.

Your focus can be on egg production, meat production or on breeding for the live bird market. Entrepreneurs have also made businesses out of selling pickled eggs. While quail meat and eggs are popular all over the world, they are still considered a delicacy in South Africa, so your marketing needs to acknowledge that. It's up to you to convince your customers of the value of all the products. For breeding stock contact ARC-Animal Production Institute in Irene, Tel: 012 672-9293 or e-mail Shais@arc.agric.za.





BEEKEEPING Fancy keeping bees? Here's how to start

elcome to the wonderful world of the honeybee, and the most fascinating occupation and branch of farming named beekeeping. This is a farming system that starts in the back yard, and extends far beyond just keeping bees, but also into the vast, beautiful flora of our

The first in a series of articles by Eastern Highveld Beekeepers Association chairman Peter Clark aimed at encouraging Gauteng's smallholders to keep bees on their plots

country, and into the pollination of many crops. The beekeeper has all these features at his front door to enjoy. He becomes a friend of every farmer he meets and is



Beekeeper's essential kit: Clockwise from top left: Combined veil and hat, smoker, bee scoop made from an old milk bottle, rubberised gloves, bee brush and hive tool all lying on a white zip-front overall.

the most sought after person when he has to remove troublesome bee swarms from rooves. eaves, holes in trees, or manholes. etc. In cases where he offers a free pollination service for a

bee site he is "baie welkom." So love your bees, and you will develop a passion for these creatures that will carry you well into your dotage. Beekeeping is successful and most enjoyable when one, with some knowledge of the bees, can work with confidence and determination that can only be obtained when working with a beekeeper. It is this "hands on" learning that is not attainable from books or classroom lectures. The craft is capital intensive and requires a costly outlay to build up a successful business. However it is an undertaking where one can start small and grow at one's own pace. Most beekeepers started small,

some folk remained as hobbyists and others have developed over the years and operate 300 hives and others even more than 3 000 hives. Mostly beekeeping work is outdoors, often late into the night and early morning. One must be healthy and fit and not suffer from back ailments. One becomes attuned to the demands and needs of the bees and to discipline oneself to these situations, spells great Continued on page 28







Animal Reproduction Consultation

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PALIFENCE WELD-FREE PALISADE PATENT PENDING

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All sections are thoroughly cleaned prior to being treated with Redox primer. Thereafter, fencing is spray painted with quick drying enamel according to the customers colour requirements.



BEEKEEPING

From page 25

success in all directions. Good planning ahead is essential. Goals must be set and adhered to as one needs to know what will be happening a year ahead and in every month as the seasons progress.

One learns to observe the various plants and trees that flower throughout the year and when the different crops are ready for pollination and when the honey flows occur. Therefore one has to keep proper records of the times and locations of those honey flows to be on time at the right time. To meet these requirements the bees have to be kept up to strength at all times.

Unfortunately for newcomers, established beekeepers are loners because they have succeeded at great cost, hard work, time and money to obtain good sites for their apiaries. They are very reluctant to disclose their sites, honey yields and details of their operations that are all secret to their success. Nevertheless, the bee industry is a R50 billion industry that is the heart of many other related undertakings that employs thousands of people.

But for the beekeeper there are many aspects of opera-



Langstroth hive comprising one brood chamber and one honey chamber ("super") and showing its frames, queen excluder and inner roof.

tions that fall into his everyday life.

Production of honey, wax and propolis

Pollination of crops trees and flowers,
 Commercial pollination

contracts, and,

Removal of swarms and development of swarms for the pollinating contractors. There can be a number of reasons why one desires to keep bees.

Beekeepers say:

Give it a go" or,

• "bees have always

fascinated me" or "It's part of my university thesis for my master's degree" or,

bees and I wish to continue where he left off" or, "I wish to have our own honey for our family" or, "I need a financial supplement to cover the costs of running our plot," and numerous other reasons. So let's start at the very beginning, by buying the book Beekeeping in South Africa to read just for a general knowledge at first. Commonly called the "blue book", it is the best work available and can be obtained from shops dealing

in beekeeping equipment. Bookshops do not stock it (but it is available online). Next, join a beekeeper's association, of which there are three in Gauteng. The Eastern Highveld Beekeeper's Association, commonly called "Easterns" serves the eastern Highveld, while the Southern Beekeepers' Association serves Iohannesburg, the West Rand and the

Continued on page 30





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POLLINATION Vital for survival, but not just a bee thing

Vou can thank a pollinator for one in every three bites of food that you eat. Thirty five percent of our crops rely on insects, birds or animals to pollinate them.

What is pollination? When bees and other creatures move around flowers, they take pollen, which forms on the male part of the flowers, the anthers, and move it to the pistils, or female parts of the flowers. If the pollen lands in the right spot, it moves down through the pistils, to the eggs, which are inside the flower.

Pollination is also brought about by wind and water. Pollination comes before

BEEKEEPING

From page 28

south and the Northern Boeekeeperes Association serves Pretoria and surrounds. There are a further six associations scattered around the rest of South Africa. Most associations meet monthly, and cover various topics for all comers and some provide courses for beginners. At the meetings one meets other beekeepers who could guide and assist one as a beginner. Purchase good quality kit fertilization, and fertilization results directly in the plant producing seeds and fruits. Seeds, of course, are the means by which plants manage to disperse to new sites.

They are also a means by which a plant species can survive in a dormant phase,

which should include boots, overalls, veil, gloves, smoker, hive tool and bee brush, all obtainable from beekeeper's shops.

Home-made equipment and clothing not specifically designed for beekeeping is a recipe for disaster.

Consult a beekeeper or someone at the monthly meeting to advise you on the correct size of overall (at least one size too big because you need to wear a further layer during times of drought or other stress.

Seeds and fruits are also food for many people and animals, and include all the grains that we consume.

We tend to think that honeybees are the only pollinators. While honeybees

or two of thick clothing

to your skin).

underneath to prevent the

With the best kit at hand,

properly alone, including

fitting the veil so that it is snug

to one's shoulders (preventing

different fuels for your smoker

Continued on page 31

and how to light the smoker

the ingress of bees to one's

face ... a most scary thing).

Teach yourself about the

teach yourself to dress

bees' stings from penetrating

Continued on page 31





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POLLINATION

From page 28

of crops, there are many other insects, birds and small mammals that do a similar job.

Leafcutter and carpenter bees, for example, are pollinators of lucerne plants, while the carpenter bees pollinate the rooibos tea plant. These other bees are involved in pollinating a number of different fruits and vegetables.

South Africa has the largest population worldwide of pollen wasps. These wasps feed their larvae on pollen and nectar like bees, and not on insects and arachnids like other wasps. They also pollinate the rooibos plant, along with some nut trees and subtropical fruits such as granadillas, avocadoes, litchis, papaya and mangoes. Certain long-tongued flies (Nemestrinidae, Tabanidae, Bombyliidae), one of which is the horse fly, are effective pollinators. Some of them specialise in flowers that form part of the cut flower industry. Others pollinate subtropical fruits, and nuts. Surprisingly, rodents also act as pollinators, although they tend to work more in the

floral kingdom than in pollinating fruit or vegetable flowers. Plants have adapted to bring this about by producing blossoms close to the ground, are dull coloured and produce a yeasty scent during the evening, timed in tune with the nocturnal activities of rodents. And not only rats and mice, but even Cape grey mongooses and large-spotted genets have been captured in photos with pollen all over their faces. Another smaller South African mammal with a taste for nectar is the Cape Rock sengi (Elephantulus edwardii) – a member of the elephant shrew family. Bats are also pollinators-the baobab tree, which provides shelter and food for an abundance of animals, is bat pollinated. And if you have the large agave cacti on your plot you will also need bats to pollinate them. To attract these flying mammals flowering plants have evolved a musty or rotten perfume.

Some plant species have evolved acoustic features in their flowers that make the echo of the bat's ultrasonic call more conspicuous to Continued on page 32

BEEKEEPING

From page 30

and keep it operating for a fair duration of time. This is your only weapon to confront and pacify the bees. With these basics in hand it is time to obtain the beehive and the bees. A Langstroth beehive (the kind most commonly used in South Africa) is a wooden structure comprising a brood chamber, a shallow honey chamber known as a super (both chambers are fitted with frames), and an attached floor and a lid, the latter commonly covered with an old aluminium printing plate for protection.

At the outset it is best to purchase assembled equip-

ment. There are two sources to obtain a beehive. One is to purchase an assembled hive from a beekeeper's shop, the other is to purchase a good quality used hive from someone advertising hives for sale. Often these previously occupied hives are offered at new equipment prices and are a better buy for a beginner than a brand new hive that has never seen bees. The used assembled brood chamber, floor and lid can be set out on a flat roof and will readily attract a swarm of bees long before a brand new hive. Setting out catch boxes is a special

Continued on page 32

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POLLINATION

From page 31 to their bat pollinators. Bats service many plants used for medicinal, cultural and economic purposes. Some beetles also play a pollinating role, often of plants with bright red, orange or yellow odourless flowers. Many beetle species eat pollen, so the plants they visit



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must produce ample amounts of pollen to make sure that there is enough left to pollinate the flower after the beetles are finished eating. Moth and butterfly pollination is relatively common in the summer rainfall region. They also help with some subtropical fruits.

Ants pollinate some nut flowers, while calliphorid flies and ladybirds contribute to onion pollination. Bird pollination is well known

in Africa, with sunbirds, sugarbirds and several other bird species visiting flowers

BEEKEEPINO

From page 31 subject one learns from the beekeeper's association meetings.

Perhaps you have a swarm to remove from a container or workshop cupboard, dog's kennel or old tyre lying in the yard? Such a first removal is best guided by an experienced beekeeper to assist



Bat pollinating aloe regularly.

In terms of crops honeybees are responsible for pollinating sunflowers, nut tree flowers, berries, citrus, subtropical and deciduous fruits, melons and watermelons, vegetables including pumpkin, most of the squashes, cauliflower, broccoli, Brussels sprouts,



Bee on pumpkin flower onion, carrots and cabbage. On a larger scale, crop farmers need beekeepers to bring honeybee hives to their farms for the few weeks the crop is in flower to provide the high density of bees needed for good pollination. Honeybees are highly mobile

Continued on page 27

one. All removals are different but the basics must be shown by a beekeeper or discussed at the association before attempting.

With your first swarm housed you are now drawn one into the fascinating craft of keeping bees and ensuring the health and future of these vitally important and fascinating insects.

By Peter Clark (tel 011 362-2904), author of the book *Tales of an African Beekeeper* and chairman for 2016 of the Eastern Highveld beekeeper's Association, assisted by secretary Mike Alter (tel 011 965-6040).





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POLLINATORS

From page 32 and visit many different flowers of the same species over a fairly wide area as they feed. The indigenous South African honeybees are therefore vital to South Africa's food productivity and can be managed at the scale needed for our intensive large-scale crops.

habitat and forage resources, pests, diseases and inappropriate agro-chemical regimes that misuse pesticides or herbicides in the agricultural environment.

Conservation of pollinators is essential for food security and conservation of biodiversity in general. The loss in

biodiversity and the adverse



Monkey beetle to contemplate.

Humans are finally realising that pollination is a service nature provides that we have tended to take for granted, and that we often do little to encourage until we start to lose it. Pollination is a vital link in natural communities. connecting plants and animals in key and essential ways. For when all else fails, for example when natural pollinators have been wiped out by pesticides or pollution, human intervention becomes necessary ~ as Chinese farmers have found to their chagrin. There, vast numbers of field workers are to be found at pollination time working slowly through orchards armed with little



Calliphorid fly feather dusters, pollinating flowers by hand. The wealth of types of pollinators \sim from butterflies to bees to birds and bats and the wealth of variety within flowering plants have stimulated each other's evolution, leading to a remarkable diversity and often beautiful adaptations between flowers and pollinators.

Pollination is a service that is key to agriculture and the demand for pollinators grows as the need for agricultural productivity increases. Pollinators have real commercial value, although this is not always appreciated.

Continued on page 35



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POLLINATORS

From page 34

Unfortunately, modern industrial-scale monoculture in larger and larger fields and landscapes means the removal of habitats that pollinators may need. When pollinators become increasingly rare in an ecosystem, other species will usually fulfil a similar role, even if less optimally. Thus the losses may be subtle and unnoticed at first, making any early warning system for pollinator loss quite complex. When losses start to take effect, reduced seed set is the first result. Then follows increased inbreeding within a crop or population \sim again, an effect not readily apparent to non-specialists.

The primary threats to pollinators are alteration of their habitat, leading to loss of breeding sites and food resources, and the wide use of pesticides on crops in ways that kill beneficial insects as well as crop pests.

As current habitat and forage resources dwindle, landowners need to protect and maintain existing pollinatorfriendly vegetation and plant more pollinator-friendly plants (as long as they are appropriate to the specific localities to prevent hybridisation or invasions).

Soil fertility can complement the needs of pollinators in and around farm fields. A healthy, nutrient-rich soil that contains organic matter is good for crops and allows certain types of pollinators to complete their life cycles. Flowers of crops, on the other hand, provide nectar and pollen that is necessary for pollinators to survive. The following practices will protect pollinators and improve the soil's fertility and structure:

Minimal tillage of soil.
Crop rotation with legumes.



Butterflies on lavendar

No burning.

□ Planting of cover crops such as legumes on unplanted lands will provide nitrogen to the soil and nectar and pollen to pollinators.

□ Intercropping (the growing of two or more crops closely together) will create diverse farming systems.

□ Planting of trees in and around fields will mimic the natural environment and allow beneficial insects to multiply.

Leaving areas of a smallholding uncultivated will provide the necessary habitat for pollinators to thrive. For example carpenter bees depend on logs for their nests, honeybees may build nests in



Sunbird on aloe

tree cavities or termite mounds, while mason bees use clay and leaf cutter bees use leaves.

A strip of uncultivated land around a smallholder field can also act as a windbreak which helps to reduce soil erosion. The removal of invasive weeds before they go to seed will ensure that they do not invade natural areas. Natural areas are important safe havens for pollinators and ensure that other ecosystem services continue. Not only do natural enemies of crop pests benefit from these areas, but they also serve as carbon sinks that reduce greenhouse gases.



ENERGY SAVING Fix your cistern to save power

ou may be able to save electricity by making an alteration to your toilet cistern. Sounds impossible? OK, there are a few observations first, but here's how. It presupposes your house water supply is fed, like many smallholders' houses are, via a pressure pump. And that your toilet cistern is fitted with an old-fashioned floating ball valve.

Here's the theory. When you flush your toilet and the cistern starts to refill, the pressure switch on your

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Modern energy-saving cistern valve. When water flows over the rim of the outer cup (A) it causes the inner cup (B) to float, in turn exerting an upward force on the cut-off lever (C)

driven by an electric induction motor, and an induction motor uses up to three times its rated power as it starts up. (If you have a back-up

generator you'll have noticed how it takes strain for a second or two when your pump comes on. That's the extra power it's supplying to the motor.) Now while the flow of water into the cistern fitted with a ball-valve is guite fast to begin with, as the cistern fills the ball-float slowly squeezes down on the washer in the valve, gradually cutting off the flow of the water, until eventually it ceases to flow altogether.

In this situation there may be two or three times when the pressure in your piping is sufficient for your pressure switch to tell the pump to switch off, only to have the pressure gradually drop, and switch on again, as the last few litres enters the cistern. So if you could reduce the number of times your pump switches off and on again to compensate for the slowly dropping pressure, you would save the power surge required each time by the motor, and thus save electricity.

And you can do that simply by replacing your ball-valve mechanism by a more modern cup-valve. This mechanism effectively has two cups, one inside the other. The outer one is the right way up while the smaller inner one is upside down, its Continued on page 38



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IN THE GARDEN Now's the time for garden diseases

ate summer is, particularly with this year's erratic rainfall and extreme heat, prime time for diseases in your vegetable garden.

However, as experienced smallholders know, prevention is better than cure and you need to think holistically in managing your veggie patch.

Diseases arise when there are three components present: a susceptible host plant, a pathogen capable of causing disease and an environment conducive to disease. Part of your holistic management involves your regular attention to the garden. Walk through the garden, particularly at this time of the year, to identify problems, so that swift counteractive measures can catch the problem before it has a chance to spread. An integrated approach

also combines alternative control methods that help minimises the use of chemicals, thereby reducing health, environmental and economic risks.

In terms of the plants, choose vegetables according to the season and location, as crops grown in an unfavourable season or incorrect location are more vulnerable to diseases.

the flow of the water.

at full pressure and soon

reaches the lip of the outer

cup, which is inverted and

thus filled with air, thus starts

rapidly to float and as it floats

upwards its lever quickly seals

the washer in the valve,

cup, pouring into it. The inner

Try to ensure that your seed and seedlings are disease free when planting them. Use disease-resistant cultivars that are tolerant of existing soil or site conditions.

Plant diseases are caused by fungi, bacteria and viruses, and most garden diseases are caused by fungi, which are parasitic plants that can attack all parts of the plant. Although very small, they can sometimes be visible. Some fungi only attack one variety of plant, while others can attack a wide range of vegetables. Fungal spores are very tiny bodies what are easily distributed by wind, water, insects and other agencies such as clothes. Symptoms of fungal infection are the appearance of, for example, a powdery sub-

Continued on page 41

SAVING NERGY From page 36

cutting off the flow instanta-"base" (ie, its roof) attached neously. to a lever which switches off Thus your pump switches on only once, at the start of the As the water fills, it comes in filling cycle, switching off

immediately the pressure in the system increases as the flow is cut off. The height of the cup mechanism can be adjusted up or down, so you can control how much water

you'd like to use each flush, meaning you don't need to have bricks or water-filled bottles in your cistern to reduce the volume used. □ In exactly the same way, the same saving in electricity will also happen if you fix dripping taps or leaky pipework in your plumbing, not to mention the water saving you will enjoy.



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IN THE GARDE

From page 38

stance on and under the leaves, rotten patches or spots on the leaves, fruits and stems and wilting caused by root rot

Bacteria are microscopic single-celled organisms producing diseases that take on many forms. Most bacterial diseases attack the vascular system of the plants. When a plant is infected by a bacterial disease the whole plant and the plant residues must be removed carefully, including the roots, and then destroyed.

Viruses are infectious agents

infections are only identified by the symptoms they produce on the plant. Common symptoms are mottling, stunting, crinkling and other distortions of foliage. The

majority of viruses are spread by pests. It is therefore very important to control pests on vegetables.

Your local nursery will be able to sell you a number of sprays and powders to counteract the various diseases. Take care to follow the instructions carefully and be sure that you wait the required length of time before harvesting the produce for consumption. However, chemical solutions to the problem often have

bees, birds or bats. So you might prefer to develop a programme of spraying with ingredients that are less toxic to the general environment. The following can be used in rotation. Bicarbonate of soda is nontoxic, readily available and inexpensive. It can be effective against powdery mildew and somewhat useful against black spot. Add one tablespoon of bicarbonate of

soda to three litres of water. When the bicarb has dissolved, add $\frac{1}{4}$ to $\frac{1}{2}$ teaspoon of dishwashing liquid. Shake well. The dishwashing liquid acts as a wetting agent, ensuring the bicarb spray sticks to the plant. You can also buy proprietary liquid wetting agent at your local garden store.

Be aware though that if you Continued on page 42



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IN THE GARDEN

From page 41

repeatedly spray leaves with bicarbonate, it will eventually reach the soil below, where it can accumulate and lead to slower plant growth. It is best to rotate it with other remedies.

Garlic and onion sprays have antibiotic and antifungal properties and will suppress a number of plant diseases, such as mildew, rusts, fruit rots, blights and, to some extent. black spot. Roughly cut a full pod (including the skins) of garlic and four onions. Place in a container and add a tablespoon of crushed, dried or fresh chilli or chilli seeds, or one teaspoon of chilli powder. Pour three litres of boiling water over the material, close the container and allow it to stand for one day. Strain and keep the fluid. Add two tablespoons cooking oil and two teaspoons liquid soap, and mix well. (Note that too much oil will be harmful to the plants) Mix one cup of this mixture with five cups of water. Spray weekly (make up fresh every week). Compost tea is not so much a fungicide as a strategy of biofilm or bio-shield. It works like nature does, with beneficial microbes out-competing undesirable microbes. Mix one part finished compost with six parts of water; let the mixture soak for a week. Filter off solids with cheesecloth or a very fine sieve. Dilute liquid until it has a tea-like colour.

Some organic experts recommend frugal use of apple cider vinegar for leaf spot, mildew and scab. Mix three tablespoons of cider vinegar (5% acidity) with three litres water



Anthracnose on ripe tomato

and spray in the morning on infested plants.

As diseases and severity vary with location, you will have to experiment to find the most effective combination. Further preventative measures involve your cultivation practices:

 Keep plants healthy through proper watering, mulching and fertilising.
Practice crop rotation to prevent build-up of diseases and apply companion planting.

Brassica crops (cabbage, cauliflower, kale, Brussels sprouts, broccoli, etc) can be



Mosaic disease

used for bio-fumigation, which is the use of biologically active rotation and cover crops for suppression of soilborne diseases such as fusarium wilt, verticillium wilt, nematodes and bacterial wilt. Most brassica crops are cool weather crops and can be planted during winter. Plant the brassica crop and let it grow until maturity, harvest the mature crop, leaving behind the outer leaves, stems and roots. Dry the plant matter in the sun for two weeks (or longer depending on the weather). Then incorporate the dried plant material into the soil at a depth of about 30 cm, as green manure. Allow at least

10 days before any crop is planted as the plant rests might harm the follow-up crop.

Create a well-balanced soil, with good overall texture and drainage characteristics and good organic matter content in order to have a healthy Continued on page 44 turning your garden into a paradise

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WETLANDS Taking steps to preserve a resource

orld Wetlands Day is celebrated every year on 2 February. This day marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. Since 1997, the Ramsar Secretariat provides outreach materials to help raise public awareness about the importance and value of wetlands. Wetlands for our Future: Sustainable Livelihoods is the theme for World Wetlands Day in 2016. This theme is selected to demonstrate the vital role of wetlands for the future of humanity and specifically their relevance towards achieving the new Sustainable Development Goals. The South African National

Water Act, No 36 of 1998, defines a wetland as "land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil".

In the past wetlands were seen as valueless wastelands that needed to be drained or converted to more useful land use purposes. However, wetland ecosystems provide a range of ecological and social services which benefit people and the economy at large. It has been estimated that originally more than 10% of South Africa was covered by wetlands, however this figure decreases significantly every year owing to unsustainable land-use practices. It is estimated that more than 50% of South Africa's wetlands have been destroyed through drainage of wetlands for crops and pastures, poorly managed burning regimes, overgrazing, disturbances to wetland soils,

Continued on page 45

PLANT DISEASE

From page 35 balance of soil organisms, from earthworms to bacterial and fungal microorganisms, that cycle nutrients.

□ Use the correct spacing between plants within a row as well as between rows. For example, if the spacing is too narrow, the canopy remains wet for longer, keeping in moisture and thus making conditions more favourable for diseases that develop under conditions of high humidity.

□ Remove infected plants from the growing area (eg, plants infected with a virus disease).

Sanitation is a good preventative strategy, so

remove all plant debris directly after harvesting, and clean implements and equipment well using a household bleach. Conduct weed control, as weeds compete with food crops for nutrients, water, sunlight and space. Some might also harbour diseases.



From page 44

, vegetation clearing as well as industrial and urban development (including mining activities).

According to bioregional plans for both the Ekurhuleni and the West Rand district municipalities 83 to 97% of the wetland ecosystem types in these areas are threatened. Working for Wetlands (WfWetlands) is a government programme managed by the South African National Biodiversity Institute (Sanbi). In responding to the challenge of stemming the loss of wetlands and maintaining and enhancing the benefits they provide, government has recognised that, in order to be truly effective, strategies for wetland conservation need to include a combination of proactive measures for maintaining healthy wetlands, together with interventions for rehabilitating those that have been degraded. These

objectives are realised through the WfWetlands Programme.

The other objective of the WfWetlands Programme is poverty reduction through job creation and skills development

In the first 14 years of its existence, Working for Wetlands invested more than R724 million in the rehabilitation of 906 wetlands, thereby improving or securing the health of more than 70 000 hectares of wetland area. In the process, the programme provided 18 463 employment opportunities, with almost three million person days worked to date. In line with the emphasis of the Extended Public Works Programme (EPWP) on training, Working for Wetlands provided 193 780 days of training in both vocational and life skills. Teams are made up of a minimum of 60% women, 20% youth and 1% people

with disabilities.

In Gauteng the rehabilitation of at least two wetlands is currently being undertaken. The Sohkulumi Wetland near Bronkhorstspruit has suffered severe degradation due to a variety of factors, one of which is overgrazing. Gauteng's Dept of Agriculture & Rural Development (GDARD) worked with the community and was able to

WETLANDS

institute a rotational grazing fencing project. WfWetlands is also implementing various measures to rehabilitate the wetlands.

Another important area is that of the Klip River wetlands south of Johannesburg, which has been badly damaged by human activities such as mining, agriculture and urban development.





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Fanie

083 391 9867

afdak vir karavaan en/of voertuie. Bosveld tuin – boomryk, boorgat pomphuis, 3 vertrek arbeiders woning (geen elektrisiteit), 8 weikampe toegespan met Bonnox, Boerbokdraad met aangeplante en natuurlike weiding, 1,8m nuut gespande buite omheining (Bonnox boerbokdraad), 2 standhoudende boorgate, 8 perdestalle met aangrensende saalkamer (direk onder dupleks slaapkamer), 3 geboude honde hokke met 1,8m draad heining, 8 onderdak kraal slaapgeriewe. R2 950 000 onderhandelbaar. Kontak Frans 082 788-9543 of epos Mariaan.Linde-@midcity.co.za.

Heidelberg: 14Ha vacant agricultural land. Consists of 7 consolidated small holdings. Situated between Heidelberg and Nigel. R1 400 000 negotiable. Contact David 072 621-5404.

Pta East - Grootfontein: Secure spacious, 2 bedr garden cottage with carport. Suitable for a couple. R4 750 pm W&L excl. Dep req. Available immed. Contact 072 023 2270/082 570-3207

Zesfontein Benoni - 1 bedroom flat with carport to rent. Available Immediately. No pets. R3 500 per month & deposit. Water & lights excluded. Please contact Tys on 083 285-5378.

Lanseria: House for rent. Four bedroom plus study. 2 bathrooms. Pool. DSTV. Double garage. Excellent security. Large garden. Can be furnished. Totally refurbished. Available 1st Jan. Stabling could be arranged. Contact: Jill 082 490-9707.

3 slaapkamer huis met sitkamer, eetkamer, kombuis, badkamer en toilet. Prepaid meter, sterk boorgat, toegerus, motorhuis, afdak, twee buite geboue. Eiendom gelee te Balmoral, Mpumalanga, 1Ha groot. Prys R420 000 Kontak 076 046-5681.



Fruit Trees Olive, peach, nectarine, plum, almond, apricot, walnut, prune, pomegranate, pecan nut, apple, cherry pear, fig, quince, mulberry, lemon and grape vines. Shade Trees Vrugtebome quality pure frozen mince Olyf, perske, kaal perskes, pruim, amandel, appelkoos, okkerneut, pruimedant, granaat, druiwe, pekanneut, DELIVERED TO YOUR DOOR Inimum Order for Home Deliveries: 1 case = 16kg 072 838-0552 ronaldc@polka.co.za appel, kersie, peer, vy, kweper, moerbei en suurlemoen. Skadubome Vereeniging w 084 506 51



DIARY

ATTENTION CRAFT MARKETS, CLUBS ETC: If you would like details of your events included in the Diary, please fax or email your information to the Editor. For noncommercial enterprises this service is FREE

NOTE: FARMERS' & CRAFT MARKETS. For a listing of REGULARLY HELD markets and fairs please see the separate section on page 51. Only markets that are held infrequently are now listed in this calendar section.

Every Sunday

Cattle drive with City Slickers breakfast, Diamond X Cowboy Ranch, near Cullinan. Call Rudan on 082 410-3180 horses@diamondxranch.co.za, www.diamondx.co.za., R400 per person.

Mnandi Methodist Church, 09:00, Mnandi Centre, cnr Tulip and Short Streets, Jen 012 651-5509, Gail 072 477-0708, A small community who worship together. We have a Youth and Children's church.

Premier Mine Presbyterian Church, Lower Oak Ave, Cullinan. Garden of Remembrance (Columbarium), 079 060-9990 or 012 734-1640, Worship and Sunday school. Holy Communion for all on the 1st Sunday of every month.

Every Monday

SPARES

422-3521

Alcoholics Anonymous. 'Courage to Change' Group meeting, 19:30, Benoni Agricultural Holdings, Marcus 082 042-

IMPLEMENTS &

2012 Kubota BX25 4x4 TLB. Excellent

working condition. Very light on fuel. Has

x kits for new backhoe buckets. Original

rear tractor arms and top link included.

worked 2 043 hrs. Includes 2 spare rims, 3

Classified Adverts TRACTORS,

VEHICLES & SPARES

Travelight trailer, licensed with new tyres and spare. R8 000. Contact Jean 011 964-1071

EMPLOYMENT OFFERED/WANTED

Foreman for smallholding in Pta West with a pet shop. Duties include overseeing plot workers and managing pet shop. Must be bilingual (Eng/Afr). Accommodation (flat) on site included suitable for couple with no children. Work vehicle (bakkie) provided. Salary neg R5 000 pm as well as accom,

7730. Warren 082 335-0049. Glen 072 239-3024. If you want to drink - that's your problem! If you want to stop - that's our problem! No fees; no dues; just concerned fellowship

2016

February

1: Last Quarter 2: World Wetlands Day 7: Country Fair at Uncle Tim's Centre, 40 High Road, Brentwood Park, Contact 011 967-1816 8. New Moon 14: Antiques & Crafts at Uncle Tim's Centre, 40 High Road, Brentwood Park, Contact 011 967-1816. 15: First Quarter 16-18: Artificial Insemination for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480, Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 19: Pregnancy Awareness for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480, Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 22. Full Moon 28 - 29: Sale Day at Midfeeds, 63 Karee

Road, Blue Hills, Kyalami. 07:30-17:00.15%

off dog and cat food, toys and accessories.

10% off shop items. For info contact Leandrie 011 468-1824.

March

- 1: Last Quarter 6: Country Fair at Uncle Tim's Centre, 40 High Road, Brentwood Park. Contact 011 967-1816 9: Lunar Eclipse 9: New Moon 13: Antiques & Crafts at Uncle Tim's Centre,
- 40 High Road, Brentwood Park. Contact
- 011 967-1816. 15: First Ouarter
- 19-25: National Water Week
- 20: Equinox
- 22: World Water Day
- 23: Full Moon
- 23: World Meteorological Day 31: Last Quarter

April

7: New Moon 9-10: Walkerville Agricultural Show, 09:00 till late. Contact Pauline 072 146-9176 or email show@walkervillesa.co.za 11-13: Artificial Insemination for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480,

Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 14: Pregnancy Awareness for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480, Norman

082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 15: Calf Rearing course. Rothman

Livestock Training Services, Irene. Call

lights & water. Call Mohammed 082 379-1555

30 something year old white female with 10+ years secretarial experience working in the ÚK. Typing, admin, call centre, switchboard, data entry, reception, office work, part or full time. Other offers will be considered: Cashier, au pair, cleaning etc. Contact Kelly on 079 989-6910 or email kevershe7@gmail.com.



Andy 082 770-0480, Norman 082 547 7949 or Di 082 772-1208. www.rltsafrica.com. 14: First Quarter 22: Earth Day 22: Full Moon 30: Last Quarter

May

1: The 20th Annual Tour de Walkerville. Contact Helen 082 553 7700 or go to www.walkervillesa.co.za. 6: New Moon

7: Mother's Day Country Market at Groenvoer, 410 Olifantsfontein Road, Midrand. Contact Cathy on 011 314-1211. 13: First Quarter 16-18: Artificial Insemination for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480, Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 17-20: Nampo Harvest Day agricultural exhibition, Bothaville. Call 086 004-7246 19: Pregnancy Awareness for Cattle course. Rothman Livestock Training Services, Irene. Call Andy 082 770-0480, Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 20: Calf Rearing course. Rothman Livestock Training Services, Irene, Call Andy 082 770-0480, Norman 082 547-7949 or Di 082 772-1208. www.rltsafrica.com. 21. Full Moon

29: Last Quarter

June

5: World Environment Day

- 5. New Moon
- 8: World Oceans Day
- 12: First Ouarter
- 17: World Desertification Day
- 20: Full Moon



Vleissentraal Ermelo 017 819 1106 www.vleissentraal.co.za

Owners manuals and spare key. R155 000 vat included. Contact - Andrew, 082-334-8552, Groblersdal 2 skaar ploeg, R5 000, 14 skaar offset trek dis R7 000. 280 liter betonmenger met 8,8 Robin motor R8 000. Kontak James 076

ESTOCK S Auctions: Bronkhorstspruit - Every Tuesday

Gys Taute 083 253 6906

Belfast: Wednesdays - Ermelo: Thursdays - Standerton: Fridays

Delmas - 2nd & 4th Thursday Johan Taute 073 204 7646

SSEV



50 www.sasmallholder.co.za

Regular Gauteng Farmers' Food Markets

NOTE: This is a listing ONLY of markets held to a regular weekly or monthly schedule. Markets held less frequently are listed in the DIARY section of the magazine and we urge readers to check each month for dates and events of interest. We would like this list of food markets to be as comprehensive as possible. If you know of farmers' food markets that are not listed here, please email us the contact details of the organisers, and details of the market. Only FOOD markets are included. Similarly, if you know of markets in this list that have CLOSED please inform us so that we can delete incorrect or outdated information.

Similarly, if you know of markets in this list that have CLOSED please inform us so that we can delete incorrect or outdated information. We invite you to tell us of your experiences when visiting these markets so that we can better inform our readers. Were they as advertised? Was the produce on sale plentiful, well-priced, well-presented and fresh? Email your comments to gautengsmallholder@gmail.com

DAY	WHAT	WHEN	WHERE	WHO TO CONTACT	WHAT TO EXPECT			
	Thursday							
Every Thursday	Bryanston Organic & Natural Market	09:00 to 15:00	Culross Road (off Main Road), Bryanston.	Konrad or Glenda 011 706-3671 or glenda@bryanstonorganicmarket.co.za	Quality hand crafted goods, unique art and fresh organic and naturally grown produce			
	Friday							
1st Friday	The Shed Night Market	18:00 to 22:00	109 Malcolm Road, Randvaal	Felicity 073 232-0017 or 081 011-9456	Food & craft market.			
	Saturday							
Every Saturday	Wholefood Country Market	09:00 to 14:00	Sawasdee Exotic Nursery, cnr Main & Zinnia Roads, Kyalami	Robyn 083 311-4768 wholefoodmarket@gmail.com	Variety of organic & homemade foods.			
Every Saturday	The Shed Food & Craft Market	08:00 to 15:00	109 Malcolm Road, Randvaal	Felicity 073 232-0017 or 081 011-9456	Food & craft market.			
Every Saturday	Pretoria Boeremark	05:30 to 09:30	Pioneer Open Air Museum, Silverton.	012 804-8031 or 082 416-3900 blinsga@lantic.net	Fresh produce and traditional bazaar treats like jaffles, kaiings with pap and boerewors rolls.			
Every Saturday	Bryanston Organic & Natural Market	09:00 to 15:00	Culross Road (off Main Road), Bryanston	Konrad or Glenda on 011 706-3671 glenda@bryanstonorganicmarket.co.za	Quality hand crafted goods, unique art and fresh organic and naturally grown produce			
Every Saturday	The Hazel Food Market	08:00 to 14:00	Greenlyn Village Centre, cor Thomas Edison & Mackenzie Sts, Menlo Park, Pta	Rietha 083 554-5636. www.hazelfoodmarket.co.za	Fresh produce straight from the producer. Coffee, eats on sale .			
Every Saturday	Walkerville Farmers Market	09:00 to 15:00	112 Main Road (R82), Walkerville.	079 076-7680 info@wfmarket.co.za	Organic produce and Crafter's Market. www.wfmarket.co.za.			
Every Saturday	Bosheuvel Fresh Produce	09:00 to 15:00	54 Glory Road, Muldersdrift	Mitch 082 553-2846	Meats and vegetables, delicacies, honey, cheese, brewery, crafter's market and children's entertainment.			
Every Saturday	Jozi Real Food Market	08:30 to 13:00	Pirates Sports Club, Braeside Avenue, Greenside	083 532 2992 whitespace@mweb.co.za	Arts & crafts, music & entertainment, inspired cuisine organic vegetables & coffee, pet products			
1st Saturday	The Green Market	09:00 to 12:00	Pretoria Botanical Gardens 2 Cussonia Avenue, Brummeria, Pretoria	Melissa 083 562-5249	Products ranging from solar equipment to organic food			
1st Saturday	Victus Christi Arts & Crafts Market	08:00 to 14:00	24b Miles Sharp Street, Rynfield, Benoni	Schalk 082 561-9409 info@victuschristi.org.za	Arts & crafts, fine art, food, fresh meat & produce and home industry			
2nd Saturday	Brakpan Boeremark	09:00 to 14:00	cnr van der Walt and Dirk van der Hoff Brakpan	Marius 011 744-2322 082 904-8852	Over 50 stalls. Food, arts, crafts, etc.			
Last Saturday	Rynoue Plaas Mark/ Rynoue Country Market	07:00 to 14:00	Cnr Moloto Road (R573) and Protea Road Opposite Roodeplaat Spar	Bruce 083 442-2552 Sue 082 891-7546 waydack@worldonline.co.za	Fresh vegetables, fruit in season, preserves, flower and plants, homemade food and cakes, arts and crafts.			
Last Saturday	Fresh2U Farmers Market	08:00 to 14:00	Corner Main Street and High Street Modderfontein (behind 33 High Street)	Jane 083 376 5567 Chantelle 082 338 7818 wardek@iafrica.com	Over 50 stalls. Fresh produce, home made goods, plants, food and more.			
Last Saturday	Fresh Produce Market	08:00 to 13:00	Lakeside Mall Boathouse	Alma 079 940-0201 realfood4realpeople@gmail.com	Local fresh produce direct to the public			
Sunday								
Every Sunday	Fourways Farmers Market	10:00 to 15:00	Corner Montecasino Boulevard and William Nicol Drive, Fourways	011 465 0827 www.ffmarket.co.za	Get your groceriesIn the garden!			
Every Sunday	Jozi Real Food Market	09:00 to 14:00	Northcliff Country Club, Fir Avenue, Northcliff	083 532 2992 whitespace@mweb.co.za	Arts & crafts, music & entertainment, inspired cuisine organic vegetables & coffee, pet productsy			
Last Sunday	Aloe Valley Food, Arts & Craft Market	10:00 to 14:00	48, R511 Doornrandjies	012 669-3043 info@serendiptiycafe.co.za www.serendipitycafe.co.za	Community market to promote local business			





BY HAND: 370 da Costa Dr, Bredell, Kempton Park

F

Conditions:

- 1. Only private advertisements for used or second-hand items accepted. COMMERCIAL and BUSINESS advertisers should refer to our rates on page 1, and those selling PRODUCE, PLANT'S or LIVESTOCK OF ANY DESCRIPTION should refer to the SuperSmalls coupon above.
- 2. Only ONE insertion per application, and one category per coupon.
- 3. No DEALERS or AGENTS or COMPANIES permitted in the free classified section ...
- 4. No ANIMALS (including HORSES), PETS or POULTRY permitted as free classifieds
- 5. No WANTED ads will be accepted as free classifieds.
- 6. No SERVICES will be accepted as free classifieds.
- 7. Classified advertisements may only be submitted for three consecutive editions.
- 8. The Publisher reserves the right to edit or omit advertisements at his discretion.
- 9. It is the Advertiser's responsibility to ensure we have received the advert.

	USE THE COUPON BELOW FOR FREE CLASSIFIE	DADS	
SPACE, PLEASE			
PER			
CAPITALS)			
òċ			
WORD (BLOCK			
		Send your Classified advertisements to us: BY FAX: 086 602-3882 BY SMS: 074 854-0197 ONLY BY POST: Box 14648, Bredell 1623 BY EMAIL: gautengsmallholder@gmail.com BY HAND: 370 da Costa Dr, Bredell, Kempton Park	
1	Tel:		
DI	EADLINE for submission: 15th of the month prior		
51	FOR ENQUIRIES TEL 011 979-5088		

Our epic road trip around SA

n early December, for reasons that are not germane to this story, my wife and I embarked on a road trip around the country. Our journey of eleven days took us nearly 4 000km through the centre of the country, down the Garden Route to Cape Town, up the West Coast and around the top of the Cedarberg , and back eastwards to Gauteng through the Hantam Karoo.

The trip was planned with a number of goals in mind. Firstly, we wanted to revisit places we hadn't been to for decades. Secondly we wanted to reconnect with friends now living in far-flung places. And thirdly we both sensed a deep need to get out of this madhouse we call home, namely Gauteng, for after a long and stressful year, we were both going a bit stir-crazy. And I can confirm that there is nothing like a long, open road through the vastness of the Eastern Cape or the Karoo to instil a sense of wonderment at this immense, empty country, as well as a bit of perspective and balance.

For if, as you drive between towns such as Calvinia and Carnarvon, you turn your head from side to side, you will see treeless plains of scrubland, with nary a house or settlement in sight, stretching probably 100km from one distant horizon in the north to the other in the south. You will realise that, apart from the odd bird of prey or occasional small flock of sheep or ostrich you are truly alone. And, should you stop your car on a windless day the only sound you will hear will be the sound of your own breathing, the crunch of your shoes on the dry, stony ground, and the occasional click and ping as your car's engine cools down. And if you stop long enough a strange thing will happen. The silence will be replaced by a roaring in your ears as your mind tries to process this strange, new environment. A visit to the Karoo is good for you and frankly is the cheapest form of therapy a South African city-dweller can get. But there was much more to our trip than the therapy afforded by the vastness of the Karoo. We were able to see first-hand, for example, just how devastating the current drought is. The mealie fields of the Free State, which should be knee-high in green mealie plants, are barren, unworked and brown, the wind sending up spirals of red dust into the searing blue sky.

Dry river beds, empty dams and windmills circling uselessly in the hot, dry wind. It's bleak and the rural communities are going to face terrible

It's bleak and the rural communities are going to face terrible hardships this year. The same cannot be said for the cities and towns we passed through. The beachfronts of both Port Elizabeth and Cape Town are magnificent and Sea Point, having descended into a den of drugs and vice around the turn of the century, has reinvented itself as an elegant, racy place to be. There has also, of course, been a resurgence on the platteland in recent decades, as townies have moved to the country in search of a quieter life. In many cases this has resulted in derelict old houses being painstakingly restored and refurnished, often in period style,

and even the most poxy little dorp now boasts clean and neat B&Bs, restaurants, shops, craft markets and the like.

And the emergence of good B&Bs is a great help in opening up a sort of local tourist industry because one would need one's head read to stay in the old-style flea-pit Masonic or Royal Hotel that one finds in most South African dorps.

But in some cases B&Bs need to up their game. Specifiers of electrical and plumbing fittings for hotels and guest houses seem to take a perverse delight

in using the most obscure, technically advanced designs possible, which require either the help of a child to get working, or an advanced degree in mechanical engineering. One tap I encountered looked like an X-box controller. Took me ten minutes to work out how to get the water to flow, and another ten to adjust the temperature.

And you can't convert the voorkamer of a quaint Boer War era house into a guest house bedroom simply by installing a shower, basin and bog behind a curtain. While a shower with a curtain is one thing, a bog behind a curtain is quite another, considering the deeply personal sounds, and the resultant miasma, that accompany one's use of that facility. Luckily we're a long-married couple comfortable in our respective skins, not a pair of honeymooners still pretending that neither ever farts. We encountered three establishments on our trip where the ablutions were "concealed" behind curtains or louvres. In one establishment the proprietor blithely told us that his design philosophy was "less is more". No, pal. Less is less. Fullstop.



Ranger 2.2 XL Super Cab R269 900* SAVE R54 000



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