

SOUTH AFRICAN SMALLHOLDER

JUNE 2022
EVERYTHING A SMALL FARMER NEEDS



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Growing water chestnuts
How to farm in tunnels
Climate-smart pigs
...and much more!

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- Be careful as it reacts to water and splatters - see pic 3 below.



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- Beware of the gas it creates. Work in ventilated space only.
- Wear Protective Clothing such as goggles, mask and gloves.
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1 Dirty Drain



2 Correct Adding



3 Reaction



4 Grime Buster



5 Water Rinse



6 Detergent Wash



7 Voila! Clean.

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How do we beat the mess?

As we batten down the hatches and light warming fires against the winter's chill one can't avoid wondering, as one stares at the glowing embers, just how much more of this bureaucratic nonsense and ineptitude must we endure?

And what sort of future awaits us when, finally, the current political leadership collapses and is replaced. Just how bright and shiny, and fit for purpose, will the next incumbents of high office be?

For that the current regime is on the way out can no longer be in doubt. But a daunting task awaits whoever or whatever replaces it. Consider:

❑ South Africa's road network is a mess. Potholes litter our urban and rural roads in such numbers that they begin to resemble patches of a World War 1 battlefield. Vehicles are frequently written off, and people are killed and maimed, losing control of their cars on these stretches.

Farmers complain that their produce is damaged and rendered worthless being jiggled about and bumped when delivered to market.

❑ South Africa's rail network is a mess. In a process that started even before the current government took power in 1994, South Africa's railways ~ once a shining example to the world railway industry ~ have been reduced, rationalised and stripped of rails, sleepers, cabling, signalling and, now even stations. The number of operational lines in the whole of the country can be counted on two hands, and even they are subject to frequent breakdowns. And yet the government seems hell-bent on allowing Chinese interests to finance, build and operate a standard gauge high-speed line between Johannesburg and Durban. This, after Transnet's disastrous Gupta-inspired buying spree of more than 1 000 Chinese-built locomotives was aborted, with railway engineers citing a litany of issues with those that were delivered.

❑ South Africa's water infrastructure is a mess. Rivers through urban areas have deteriorated into little more than waste removal channels, so much solid rubbish ends up in them. Or open sewers, given the volumes of chemical and industrial waste, raw excrement and related matter that flows into them. Given that much of South Africa's water for human consumption is derived from dams, which are fed by these rivers, one must seriously wonder whether South Africa's water treatment plants are up to the task of filtering and sterilising what we drink sufficiently so that the stuff doesn't make us ill. We all know the answer. In some towns the water comes out of taps stinky and brown, if any comes out at all. And one can go on: Health, Home Affairs, Police, Defence Force, Education. The "new" SA Airways (when is that deal going to be finalised?).

And then throw into the mix the currently unstable international situation following, firstly, the Covid pandemic with its disruption of manufacturing processes and supply chains and, secondly, Russia's war in Ukraine, and its effect on world commodity prices, and the consequent geo-political realignment. It's a right royal mess, and governments worldwide are going to have their work cut out to manage the situation in the best interests of their citizens.

But for our next government doubly so as it will have to manage not only the international fallout but also set about fixing South Africa, without breaking the back of the already straining economy.

One must hope that our universities are crammed with Bright Young Things filling their minds with the knowledge and skills necessary for the bureaucratic tasks ahead. And a problem-solving attitude.

Pete Bower

Editor



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SMALLHOLDER**
JUNE 2022
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Read about pigs on page 23.

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Strong acid in a septic tank?

Sir ~ I often see products advertised as drain cleaners that sound really strong and contain acid. Surely, if the drain being cleaned ends in a septic tank it's going to kill everything in the tank stone dead?

And then, having turned the contents of the septic tank into a lifeless, acidic stinky pit, will adding a dose of bacteria and enzymes be enough to rectify the pH and start the anaerobic enzymes again?

The reason for my concern is that the common wisdom concerning septic tanks is that once you have killed the bugs in your tanks, by adding a harmful chemical (eg Caustic soda, also a drain cleaner) you have to start from scratch by pumping out the now dead, toxic contents, and reactivating the tank with new enzymes.

Anonymous (details supplied)

From the Editor: We asked Cindy Engels, director at A Shak Construction Chemicals ~ a leader in a wide variety of chemical formulations ~ for the answer.

"The reader is right to be concerned as septic tanks

are very finicky. The drain cleaner should have diluted sufficiently by the time it reaches the septic tank. If you dose immediately with a product such as Biosplash, a granulated formula made from a blend of freeze dried bacteria and enzymes designed to digest and liquefy organic waste, the residue of the drain cleaner in the pipes will kill the enzymes before they reach the tank. So I suggest you dose 24 hours after you've used drain cleaner. Another option is to immediately dose directly into the manhole at the septic tank and not through the system. This is what I generally do.

"But our Draine cleaner should mostly be used in grey water pipes as this is where fat deposits and hair etc will block the pipes. The grey water should go directly to the soakaway and not to the tank. Only in very old septic systems do they both go to the septic tank. If, on a septic tank system, your toilets are backing up then generally it is an indication that your tank is full and needs to be pumped anyway.

"After pumping, dose the system with a few sachets of Biosplash to replenish the enzymes."

NEWS

Learn about mushrooms at 2-day practical course

Smallholders interested in learning about growing mushrooms can now participate in a two-day mushroom training programme, run by Cedarberg Smallholding in Eloff, Mpumalanga.

The first course was held in early May where nine participants were trained in the science and practice of oyster and button mushroom production.

Training co-ordinator Maani Hoosen says the course covers the full process of mushroom growing including the importance, types and uses of mushrooms,

substrate preparation, fruiting, and packaging and marketing strategies. Course objectives include understanding dietary and commercial importance of mushrooms, learning the difference between types of mushrooms, and more.

The next course will be held on 9 July at a cost of R1 000.

Contact Hoosen on info@cedarbergproduce.co.za or Maani66hoosen@gmail.com or call 071 820 5127 or 073 855 7376.

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Small farmers get equipment from government

Lucky small farmers in KwaZulu-Natal and Bronkhorstspuit in Gauteng have benefitted from government handout programmes as the Dept of Agriculture, Land Reform & Rural Development has handed over a number of pieces of equipment to farmers over the month of May. In the Melmoth community of KwaZulu-Natal, small-scale sugarcane farmers received title deeds and settlement certificates, as well as a railway siding cane handling machine to assist in the transport of their produce. This project was facilitated by the SA Farmers Development Association on behalf of 1 900 small-scale farmers in the Makhathini area, south of Ulundi. Other farming and transport equipment was also given to the community. Elsewhere, members of the Farmer Production Support Unit in the Sokhulumi Agri-park north of Bronkhorstspuit accepted delivery of agricultural production inputs and equipment. This was the first phase during which the department invested over R17 million to procure two tractors and other implements. Government also provided investment to cover the

appointment of security to guard the equipment. The Sokhulumi Agri-park is one of three agri-parks that will benefit from assistance within the City of Tshwane this year. The others are at Rooiwal and Winterveldt north of Pretoria. These agri-parks were developed out of a study conducted that assessed the viability of agri-parks in the city. The study identified suitable commodities for each park, based on climate, land use capabilities, economic factors and more. 🌿



Minister Thoko Didiza, iKosi Mkambi Mahlangu from Sokhulumi and the Speaker of the City of Tshwane, Dr Makwarela, with members of the Farmer Production Support Unit in Sokhulumi Village. Photo: Twitter



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OBP says it's on track for AHS season

Onderstepoort Biological Products (OBP), the state's animal-vaccine manufacturing company, has committed to resolving vaccine shortages for African Horse Sickness (AHS) before vaccine season begins.

This comes after an open letter penned by heavy-hitters in the veterinary science community condemned the institution earlier this year for its inability to provide a stable supply of life-saving vaccines. In the letter, it was suggested that the time had come for the state-owned organisation to allow pharmaceutical producers in the private sector to take over the

production of vital animal vaccines if OBP continues to be unable to supply.

However, OBP now says sufficient progress is being made in resolving equipment challenges. The organisation also says it is evaluating contingency plans to ensure that when AHS vaccine season begins, usually in spring, there is sufficient supply.

OBP has committed to providing a minimum of 20 000 AHS doses in the "red zone" which is the area of South Africa in which African Horse Sickness is endemic, namely just about the whole country bar the Western-most parts of the Western Cape. 🌿

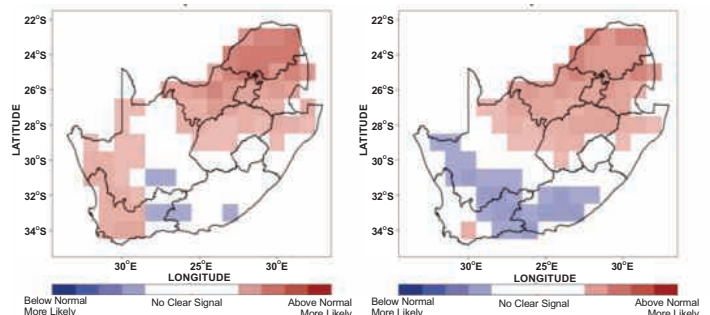
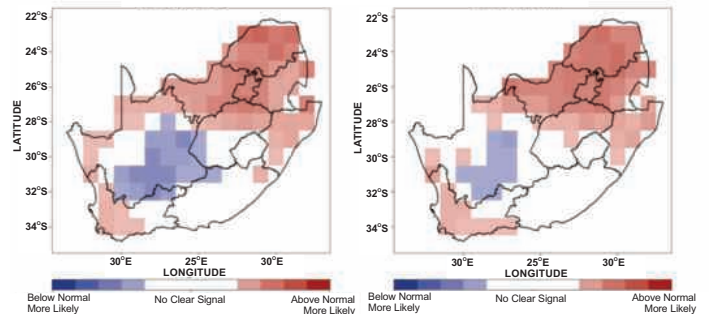
Warm winter on the cards for GP

Following the wettest (and most destructive) rainy season in memory for large parts of the country, the SAfrican Weather Service (SAWS) has forecasted weather patterns to return to neutral state for the winter months.

The La Niña weather system that brought with it more than 1 000mm of rain for parts of Gauteng will ease off into winter's usually dry months with SAWS predicting below-normal rainfall for most parts of the country. In the Cape, where winter rainfall is a given, SAWS predicts slightly below-normal rainfall which might affect crop yields.

In Gauteng, June, July and August are expected to be moderate months with both minimum and maximum temperatures above normal. This pattern continues throughout the country, save for the Northern Cape which SAWS predicts will see below-normal temperatures this winter.

This is expected to continue into late winter with temperatures remaining just slightly above normal into September. 🌿



Source: South African Weather Service

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SMART SMALLHOLDERS

Grafting trees to help his family

A postponed land-grant arrangement with an aspirant KwaMhlanga farmer left him with a yard filled to the brim with more than 2 000 small trees in bags ready for planting, which he is now selling to the public.

John "Bush" Mahlangu had an arrangement with the Dept of Agriculture whereby he would be granted land for a fruit farm if he could show that he had the trees available to get started.

Accordingly, he and his family began growing fruit trees of various species from seed and, later, began grafting on wood from already established trees.

Mahlangu explains that, while a tree grown from seed alone will bear fruit, it takes some three to five years before this happens. In contrast, a grafted tree will begin bearing much sooner ~ in one to three years.

Among the species he has grafted are lemon, guava, fig, avocado, pawpaw, granadilla, pomegranate and kling peach, as well as moringa and various types of aloe.

Over the course of six or seven years his stock grew to fill his KwaMhlanga yard ~ some 2 000 saplings, all ready to be established on the land promised to him by the department.

However, last year he received notification from the department that the deal was postponed, until at least 2024, thus leaving him and his family with a yard full of trees which he then decided to turn into a business on its own, by selling them as they grow.

Helped by his wife and daughter, Mahlangu continues to grow rootstock from seed, on to which he grafts from established trees, and sells both seeded and grafted trees. He sells the seeded stock for R50 each and the grafted for R120.

To be able to supply Gauteng buyers more readily he supplies a depot in Wonderboom South in Pretoria,



John "Bush" Mahlangu works with his plants.

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Some of Mahlangu's stock of grafted fruit and other trees.



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Tunnel farming offers many benefits

Now, in June 2022, a full two-and-a-half years after the initial Covid-19 lockdown, the bulk of farmers share quite a negative point of view of the current state of affairs. Diesel prices are rising, fertilizer prices are through the roof, it's nearly impossible to find pesticides and herbicides at reasonable prices, and, conversely, the prices that farmers get for their products on the open market has not increased much in the past ten years.

Needless to say, farmers are looking for ways to cut costs and start making money.

According to leading tunnel farming and horticulture industry supplier, Dicla Horticulture of Muldersdrift, for many years tunnel farming has been regarded as one of the most effective ways to produce vegetables. "But," says Dicla Horticulture managing director Dirk Tijssen, "with all the recent changes, farmers start questioning if it's still worth spending all that capital on a greenhouse structure."

Tijssen lists some of the main advantages of opting for a covered structure, instead of producing crops on open lands:

☐ Climate control ~ Since a greenhouse tunnel structure is covered with plastic sheeting, you provide the crops with a controlled growing environment. By controlling the temperature in the structure, through ventilation or heating and cooling systems, an ideal environment can be created for ideal growth.

A structure also makes it easier to control humidity and light diffusion. And, to not skip the most obvious aspect, you protect your crop against weather extremes, such as frost, heat, wind, hail and rain.

☐ Increased yield ~ The controlled environment provided enhances crop production so that it is directly linked to an increased yield.

Further to this, the average fruit quality is a lot better from tunnels, which allows you to negotiate a larger profit margin.

☐ Better space utilisation ~ Open land production generally requires a lower plant density, and space wasted on pathways for tractors and harvesters often

wastes more.

Tunnel farming is an ideal solution to best utilise space, especially when space is limited on a small-holding. Add to that: a tunnel farm operation can be started off on a fairly small scale, and expanded as funds and expertise allow.

☐ Saves water ~ Accurate water (and liquid fertilizer) administration can be the difference between a crop's failure or success.

Growing your plants in a tunnel allows you to control and apply water strictly when and where needed, resulting in a lot less water wastage. This is directly linked to a farmer's financial success.

Adding liquid fertilizer to the water as it is administered means you are achieving two tasks at the same time, in a process called "fertigation".



A tunnel built by Dicla Horticulture.

☐ Better protection against pests and diseases ~ A tunnel structure provides a definite level of protection against crop threats such as birds and insects.

Furthermore, with the correct management, and, for example, the use of drip irrigation (see accompanying article), fungus infestations and diseases can be minimised by controlling the moisture levels, and accurately applying the correct herbicides and fungicides at the correct times on the crops as necessary.

Not only do you protect the plants in your tunnel, but you also protect other plants in other structures by limiting the spread of diseases.

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TUNNEL FARMING

- ❑ **Extended growing seasons ~** This might be the biggest advantage of tunnel farming. With the correct management, a farmer can extend a growing season quite a bit by planting earlier and removing plants later than they would survive on open lands. Not only this, but with proper heating and cooling, crops can even be grown outside of the season. In general, out-of-season crops fetch a much better price, which will have a direct impact on the farmer's success. In areas of extreme winter cold, and with certain tender crops, growers sometimes opt simply to cease growing during the coldest few months, using the time to carry out maintenance on the tunnels and their equipment, and to replenish and renew growing media.
 - ❑ **Saving on input costs ~** As with water, the administration of fertilizers, pesticides and fungicides can be much better controlled and accurately administered inside a tunnel structure. This offers the farmer the opportunity, not only to save costs, but more importantly to better plan.
- Says Tijssen: "Ultimately, the combined benefits of tunnel farming far outweigh the risk.
"Farming in a controlled environment allows you to save on all fronts, while your plants are healthier, your productivity better and your crop quality top-



Tunnels come in a variety of sizes.

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"By being able to control some of the risk factors associated with vegetable farming, tunnel farming has proven to be more financially viable than some other conventional methods."
One of the biggest advantages of tunnel farming is that there are many options available, from micro-setups to large scale commercial farms, and anyone will find that there is a setup that will suit their individual needs. Size, material, control systems and irrigation systems are all examples of factors that can be customized to best suit your situation.
For more information: Dica Horticulture, tel 011 662 1371. 🌱



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TUNNEL FARMING

Planning irrigation in your tunnels

Whether you farm directly in the field, in greenhouses or under shade cloth, your plants will need the right quantity of water to be healthy and in turn for you to have a good crop and be profitable. Due to the risk of hail and other forces of nature more and more farmers turn to farming in tunnels or under shade cloth. Although there are many benefits, tunnel farmers will have to irrigate more as that crop will not benefit from rainfall.



Drip irrigation line adjacent to a seedling.

Although irrigation is important for all production types, covered farming (be it in tunnels or under shade cloth) has unique needs, constraints, and benefits in respect to irrigation. These irrigation amounts can be tailored to a crop's water needs, needs that change throughout the crop's growth cycle.

The most-used irrigation method in tunnels and other covered structures is drip irrigation, specifically for vegetable production. Drip irrigation conserves water and is an effective way of applying liquid fertilizer and pesticides.

It also helps overcome one of the most serious dangers of overhead or spray irrigation in tunnels, namely the high humidity that results from spraying or overhead irrigation in such a confined space, and the consequent danger of fungal infection and disease.

It is possible to customise dripline to suit various factors, such as how much water you have available, the water needs of the plant, and how long the dripline needs to last. Dripline irrigation consists of

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TUNNEL FARMING

flat drip tape, made of plastic, which comes in different wall thicknesses, ranging from 0,15mm to 0,9mm.

Because of the thin pipe walls a drip irrigation system operates at low pressure, rather than the high pressure of a spray system.

The thicker the wall, the longer the dripline will last. Within the dripline are emitters that release water at the specific rate of the emitter, which can be as little as 0,8l per hour, up to 4l per hour. Emitter spacing can be matched with crop spacing to maximize the water efficiency. For example, pumpkins would normally be spaced 1m apart, whereas spinach is spaced 30cm apart.

Drip irrigation can be installed almost anywhere and works well in tunnels and shade cloth structures of all sizes, from the smallest domestic garden tunnel to the largest commercial operation.

Moreover, driplines are commonly laid loose atop the soil. This enables them to be lifted off the beds when the time comes to cultivate the soil, whereafter they are relaid and new seedlings are planted adjacent to each emitter. Because they are loose crop rotation is made easy, simply by choosing line with the correct emitter spacing for the next species.

A dripline system can be readily modified to feed



A dripline emitter.

both water and nutrient to the crop, by the simple addition of a dosing pump and fertilizer tank connected to the system's inlet manifold. Using a liquid fertilizer solution of known concentration in the tank, the dosing pump is adjusted to deliver a precise amount into the system as the water passes through it, diluting it further and calculated to deliver exactly the right amount of nutrient to each plant at each stage of its growing cycle.

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Choosing machinery for your tunnels

Tunnel farming has become increasingly popular for South African smallholders due to its high yield relative to the amount of space used.

Once you have your tunnel erected, it will then be up to you to decide how you wish to grow your produce.

For those growers wishing to make some income off their tunnel, there are two schools of thought for layout and design. The first is using raised beds or containers. This means

constructing or purchasing growing beds or containers to allow for plants growing at waist-height. For hobby growers, this is ideal as the process of cultivation and harvesting will be easier on your back, and your outlay on the raised containers themselves will be manageable.

However, for commercial purposes, raised growing beds in a tunnel will require labour intensive farming. You will need to cultivate your growing medium by hand, often employing people at an ongoing cost to do this. Then, any work you need to do during growing such as weeding or fertilizing, will also need to be done by hand, requiring time and labour.

A more efficient way, therefore, to use your tunnel to its full potential is to grow directly in the soil. For this, you will ideally have erected

your tunnel over a piece of arable land ~ or worst case scenario have brought in fertile soil before or after building the tunnel. More importantly however, you must ensure that your tunnel entrance is large enough to allow machinery to pass through easily. It is this machinery that will allow your tunnel to become an efficient and profitable growing location.

It is important to remember, however, that if you are

Continued on page 17



Landini Solis 20.



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TUNNEL FARMING

going to use machinery such as small tractors in your tunnels, you will need to leave sufficient space between your growing beds for the machinery to move around. This means you could potentially lose valuable area. But the toss up is if you will make the growing process more efficient through quicker cultivation.

Do you need a ride-on tractor and small implements and if so what make? Or a walk-behind? Or just a powered tiller?

In South Africa, there are a number of options when it comes to small tractors. The Landini Solis range offers at its small end the Solis 20 or Solis 26, both of which are ideally suited for tunnels. The four-wheel drive Solis 20 has a maximum width of just over a metre and stands just under 2m tall under its Rops (roll bar). It has a Cat 1 hydraulic lifting capability of 580kg and a full-sized PTO. The Solis 26 is slightly bigger at a width of 1,19m.

Various Japanese-made tractors are available for use in tunnels. In the Kubota B-Series, the B 1181 and 1241 are both under one metre wide with lift capabilities of 540kg and 615kg respectively. Additionally, Kubota's L series tractors are designed for use in vineyards and offer compact power for small spaces. Yanmar compact tractors offer the SA series of mini tractors. Hinomoto is available largely second-hand in South Africa. The 180DT offers a tilling width of 1,1m.

When buying a mini or compact tractor for your tunnel, bear in mind that these tractors usually require Category 1 implements, and not the more commonly used and larger Cat 2 devices.



Stihl MH 710 tiller fitted with plant protection discs.

Two-wheel walk-behind tractors are popular in parts of Asia and are available in our market. They require their own implements entirely (ie, not Cat 1 or 2), but are well-suited in terms of size and power required for a tunnel. An alternative to mini-tractors and walk-

behinds with ploughs, etc or rotavators, certainly in smaller applications, are walk-behind power tillers, at least for working the soil. Stihl's MH range and Husqvarna's TF and TR ranges, are ideal



Husqvarna TR348 wheeled cultivator.

for tunnels. Both ranges offer a variety of sizes and power. Depending on what you are planting, you might be able to get away with a small one operating at a depth of around 15cm, but there are models that extend up to 30cm and more. These tillers will help weed, plough or crumble your soil. Breaking your soil up into smaller pieces will help aerate the soil and prevent weeds from growing.

In the smaller, non-wheeled tillers forward motion is achieved by the rotation of the tiller tines which, in certain soil conditions, can be quite forceful in pulling the machine forward.

Thus, they can become quite fatiguing to operate as one has continually to hold them back lest they leap forward on their own.



Diesel two-wheel walk-behind tractor fitted with a rotavator.

Forward motion in the larger, wheeled models is controlled not by the tines but by the cleated wheels through a gearbox so they are less tiring to operate for long periods.

For planting, certainly at ground level, the small hand-seeders, either wheeled for continuous sowing of fine seed such as carrot, or single-drop for individually-spaced seeds, or the hand-operated Chinese seedling planters now available through certain agri-dealers, will prove a boon for preventing back strain. Wheeled and single-shot hand-operated fertilizer dispensers are also now commonly available. 🌱

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IN THE GARDEN

How to grow water chestnuts

There are well over 20 000 known species of edible plant worldwide, yet due to globalisation, colonialism and the mechanisation of agriculture only about 20 provide 90% of our, and our domestic animals', food needs. Many edible plants are wild, undomesticated and not really suitable for production, yet there are dozens of domesticated or semi-domesticated crop species in Africa alone that can be grown easily and productively by smallholders, that can increase the food variety and security of the farmers' families and livestock, and readily find a market in speciality, health food or ethnic markets without the grower competing with large, established farms.

"Orphan" crop species are food plants that were important to people before the simplification of the food supply that accompanied the spread of industrial agriculture and which can, and should, be important again in a more ecologically sensitive,

The first in a series of articles on "orphan" crop species by Jason Sampson, curator of the Manie van der Schijff Botanical Gardens at the University of Pretoria.

small-scale farming community.

One such crop is the Water Chestnut (*Eleocharis dulcis*).

Better known in the East, where it is grown in rice paddies as a companion plant to the staple, and used in multiple recipes and food types from curries to stir fries,

this plant is found growing wild along the Eastern parts of South Africa, particularly KwaZulu-Natal, and all through Tropical Africa.

It is not known if it was ever cultivated as a crop in Africa, but would without doubt have been known as a forage food to traditional peoples within its range, where it could be found growing along river banks, the shores of



Water chestnut being grown in old bathtubs as part of a hobby growing setup. 500 to 1 000 chestnuts can be produced in such a setup, perfect for one family's use.

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IN THE GARDEN



Freshly harvested water chestnuts on left, with true chestnuts, *Castanea sativa* on right.

lakes and in pans.

This is a highly productive crop, particularly considering the minimal input needed for growth.

All the plant needs is waterlogged conditions, good soil and full sun, although addition of nitrogen containing fertilizer can increase yields.

The water it needs to grow in need not be moving, which allows for cultivation in containers such as baths or modified flow-bins and, unsurprisingly, the plant also lends itself perfectly to aquaponics.

When one hears the name "chestnut", one might assume that the crop is some kind of tree, but water chestnut is an unassuming grass-like plant with hollow, cylindrical leaves and a spreading habit under ideal conditions.

The edible part of the crop are its tubers which are visually very similar to true chestnuts, and have a sweet, coconut like taste and texture.



Sorting chestnuts. Each pile is 100 tubers, and weighs about 3 kg.

This is an aquatic plant and although it can grow under irrigation, for full production it needs to be grown in relatively stone free soil saturated with water. The water depth can be up to about 5cm but it is not necessary to have standing water around the plant's crown. The largest tubers are produced in the top 30-50cm of soil.

Plants are grown from fresh tubers which are planted in very early spring. The tubers are very hardy, and often sprout in August with warmer weather.

The secret to full production is to take advantage of the fact that the plant spreads like a grass in the earlier part of the growing season. The months of September to December are spent spreading to fill an area, the months of January to March are spent with the plant becoming as dense as possible in that space, and April-May are spent forming the winter survival tubers, which are the largest and most succulent.

The plants die down with the first frosts, and harvesting can begin. Best planting density for maximum production under normal conditions is six to eight tubers per square metre. One can feed with nitrogen containing fertilizer every six to eight weeks from September to March.

Resist the temptation to split your plants when growing. Maximum production is a result of interaction between surface area covered and density of the final clump. Once planted at the optimal starting density let the plants grow until harvest season.



The first sign that harvest can begin.

Continued on page 21

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IN THE GARDEN



Freshly harvested water chestnuts ready for peeling.



The "chestnut" name makes a lot of sense when the tubers are peeled for use. The flesh is white, dense and crunchy with a distinct coconut flavor.

They grow so thickly they seldom need weeding. Productivity in mass plantings can approach or exceed that of potatoes, roughly 40 tons per hectare. The crop is ready to harvest at the end of the season when foliage dies down.

The plants are grown from fresh tubers, and for propagation purposes these keep best in damp soil. Always save a section of your growing area unhar-

vested with tubers in place for replanting in spring. One can supply tubers packed in wet coir in the winter months, and these are best planted soon after arrival.

Water chestnut tubers are extremely popular in Chinese cuisine, and keep their crunchy texture when cooked. There are myriad ways to use them, from gluten-free pizza base recipes to traditional stir-fry. They can also be used as a potato substitute, adding a sweet, coconut like taste to any meal, although some prefer them sliced when used fresh as the crunchy texture is novel in a stew.

Tubers are peeled before use, and can be eaten raw, boiled, fried or dried and made into a flour.

Sources of fresh water chestnut for consumption are few and far between in South Africa, and most of the local culinary demand is filled with canned tubers, which cannot compare with the fresh product.

A ready market will be found at Chinese grocers and delicatessens, among others, and the opportunity exists for value added produce such as water chestnut flour, or frozen chestnuts, to name two possible products only.

Few crops can produce as well in limited space, so if you have space that can be used to incorporate this crop into your growing, whether in ponds, dams or suitably modified large containers, water chestnut propagation is highly recommended.

However, just a last word of warning: ducks and geese are one of the few "pests and diseases" one can expect to affect these plants, and they will uproot and eat any tubers they can find. Suitable protection can be as simple as chicken wire over your grow beds, but be aware of water-fowl when growing water chestnuts!

For more information on this, or other orphan crops, contact Jason Sampson at jason.sampson@up.ac.za. 🌱



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Farming pigs in a climate-smart way

Small scale farmers throughout South Africa are becoming affected by climate change. Smallholders have noticed the unpredictability of the climate, along with changes in rainfall patterns, delays in rain falling, prolonged dry spells and extreme temperatures including heatwaves. There has been an increase in extreme weather events such as drought, floods, windstorms and cyclones. Among others, pig producers are having to adapt some of their practices to mitigate the effects of climate change. These effects are impacting the provision of water, quality of feed and efficiency of feed conversion.

Most concerning is that pigs, particularly, are affected by heat stress. Most animals sweat and pant as ways to relieve increased internal heat. Pigs however cannot do this. They do not sweat and because they have small lungs, their panting is not very effective. They also carry more fat than most other livestock, which does not help.

Heat stress leads to loss of appetite. Pigs also drink a great deal of water at these times, which disturbs their electrolyte and acid balance. This leads to diarrhoea and in extreme cases the animal might die. Humidity also affects the heat stress. If the humidity is high, pigs suffer heat stress at lower temperatures,



Wallowing in the mud can reduce body temperature.



Piglets and sow.

depending on their age, breed, housing, and flooring. The intestinal health and growth performance are affected if there is a 30% average humidity combined with temperatures above 28°C. If the nursing sow and her piglets are kept in a farrowing house, there are a number of factors that can affect their health. The temperature needs to be regulated and maintained at the right level. In order to produce sufficient milk and maintain optimal feed intake for a healthy physical condition, the sow requires a temperature range of 10 to 22°C. New-born piglets need a temperature range of 32-37°C. Later, piglets in the farrowing pen should be kept at a temperature ranging between 27-32°C.

The prevention of draughts on both the sow and the piglets is also most important.

The producer needs to create ventilation control systems that can adapt to changing weather conditions.

An adequate water supply is vital to the healthy development of the pig, for a number of reasons. Piglets up to 30kgs need a litre of water a day, while a lactating sow needs 18-23 litres.

Where small scale farmers raise their pigs outdoors, there are a number of measures that can be taken to mitigate the effects of climate change. Where growing crops are challenged, producers should choose grass or cover crop varieties that can withstand climatic change.

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LIVESTOCK

Wallows and shaded places should be well designed and managed. Wallowing in the mud can reduce body temperature by up to 2°C. Pigs wallow for longer when the temperature rises. Pigs usually begin wallowing at temperatures over 12°C.

Temperature and humidity have a big impact on roots and wallowing.

Producers are urged to decrease the number of animals, in order to ensure optimal health and growth.



Windsnyer. Image: D Moyo

Increased pest and disease outbreaks have also been noticed with climate change.

Smallholders can consider working with hardy indigenous breeds of pigs, which can better withstand these new challenges.

“Kolbroek” and “Windsnyer” pigs are recognized as indigenous pig breed populations in southern Africa. There is also the South African Landrace, which has been recognised as a breed in its own right.

These breeds have been bred to withstand higher temperatures, local pests and diseases.

They are better equipped to thrive in harsh environments, where exotic breeds will not cope. 🌿



Piglets should be protected from draught.

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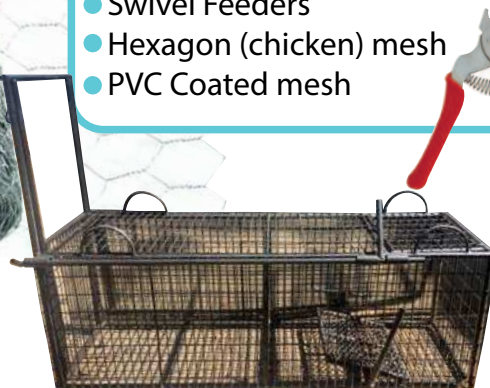


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Know the law: Livestock and the NSPCA

South Africans are familiar with the work done by the National Society for the Prevention of Cruelty to Animals (NSPCA) in connection with pets. However, smallholders should also be aware of their services when it comes to the well-being of farm animals.

The NSPCA operates on a national basis with dedicated inspectors in specialised units which each cover specific animal welfare issues.

SPCAs in South Africa are governed by the SPCA Act 169 of 1993 which is administered by the NSPCA, constituting it as a statutory body.

The organisation not only speaks for those who cannot speak, namely the animals, but in 2016 the Constitutional Court ruled that the NSPCA has the statutory power to institute private prosecutions. SPCAs are obliged to respond to any complaint that is made in connection with animal welfare, enforcing the Animals Protection Act No 71 of 1962 when deliberate cruelty takes place.

There are a number of different units with specific foci and one of them is the Farm Animal Protection Unit (FAPU).

The use and abuse of farm animals, which now by legal definition includes crocodiles and certain species of wildlife, in sheer numbers of animals affected, far exceeds any other form of mistreatment.



NSPCA inspectors are well-trained.

The FAPU is committed to improving the quality of life of these animals and ensuring their compassionate and humane handling.

Pro-active work includes inspections and the taking of appropriate action at facilities where animals are farmed, bred, housed, handled, transported or slaughtered.

Facilities include intensive and small scale farms, pounds, abattoirs, sale yards, hatcheries, prisons and agricultural facilities. They also inspect petting farms, crocodile farms, alpaca farms, mohair farms and animals being exported.

The *SA Smallholder* has for some months documented the NSPCA's campaign to have the shipment of sea of live animals banned. They have partially succeeded in encouraging the withdrawal of leading Kuwaiti livestock trader Al Mawashi from transporting live sheep to the Middle East. The NSPCA's application to completely ban the live export of animals by sea from South Africa is still to be heard in court later this year.

The Farm Animal Protection Unit undertakes the monitoring and protection of sheep, pigs, goats, cattle including dairy cows, poultry, ostriches, emus, crocodiles, rabbits, equines, and alpacas; plus farmed fish and other aquatic species raised for food production. Their reactive work includes responding to complaints, all of which are investigated and feedback given.

So if *Smallholder* readers see that animals in their area are not being adequately fed and looked after they may report this to their local SPCA.

This is how they suggest members of the public should go about reporting:

☐ Firstly, if the cruelty is something that can be stopped immediately, then stop it. If, for example, a horse or a dog is being unmercifully beaten, intervene if you can safely do so.

☐ Of course, the sort of person who would mistreat an animal this way would be quite likely to vent his anger on anyone who interferes, and members of the public should use discretion.

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LIVESTOCK

☐ If the situation can be recorded, photographs or videos are useful evidence.

☐ When you contact the SPCA, whether by phone or email, be ready to give as much of the following information as possible:

~ Your own name, address and telephone number. This is necessary for record purposes and also enables the inspector to inform you of the result of his/her investigation. It is the policy of the SPCA to treat all complaints in strict confidence. Names of complainants are divulged to nobody unless such complainant has no objection.

~ The name(s), address(es) and telephone number(s) of the person(s) involved.

~ The date, time and place of the offence.

~ The names, addresses and telephone numbers of any witnesses.

~ The registration number and description of any vehicle involved.

~ State whether you would be prepared to testify in a court of law.

Then give a detailed description of what you saw, as factually and unemotionally as you are able. This is important, for emotion clouds coherence, and important details may be omitted.

It might happen that people are concerned about the treatment of animals, but are not sure that the offences should be reported.

Two South African National Standards (SANS) were published in 2014 which are guidelines for the humane treatment of livestock.

These National Standards are read together with national legislation (Animals Protection Act and other relevant legislation) making them supplementary legislation.

☐ SANS 1469:2014 Humane handling and facilities for the protection of livestock at shows, auction sales, vending sites and livestock pounds;

☐ SANS 1488:2014 Humane transportation of livestock by road.

There are also Codes of Practice for each species of farm animal for further guidelines.

Go to <https://sasmallholder.co.za/resources/> to refer to the SPCA's Working Equine and Farm Animal

Welfare Guide.

The organisation also asks the public to report any animal cruelty that they have seen on social media.

The National Donkey Protection Project works closely with owners of working donkeys, providing support to both the people and the animals. Educating people on humane treatment of donkeys is regarded as vital.

The SPCA slogan is "We are giving donkey owners a Hand UP not a Hand Out. This gives the donkeys a kinder, brighter future."

The NSPCA has specialised response teams on standby around the clock to respond to disasters such as fires, floods and drought.

These inspectors can be dispatched to the affected areas at very short notice to assist smallholders and farmers to locate their animals and take them to places of safety.



SPCAs also monitor animals being transported.

Compassionate assistance is also provided to the injured and dying.

The SPCA also responds when there are accidents involving vehicles carrying live animals or these vehicles being delayed while on the road due to bad weather, industrial action or disruptive protests. 🌸

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IN THE KITCHEN

Lacto-fermenting your vegetables

Smallholders are always looking for ways in which to preserve their produce. Lacto-fermentation is a particularly easy method. The name is a bit misleading, as it has nothing to do with milk. Rather, lacto-fermentation is the process by which good bacteria break down the sugars in foods and form lactic acid.

Vegetables that you can ferment include cabbage, carrots, cauliflower, cucumbers, garlic, kohlrabi, peppers, radishes, French beans and turnips.

Lacto-fermented foods include kombucha, yogurt, sourdough bread, sauerkraut, kimchi and pickles.

We talk about "curing" meat or vegetables and this means that we are drawing the moisture out of the produce. There are two basic cures: a salt cure and a brine cure.

Fermented Ginger Carrots

Ingredients

- ☐ 4 cups coarsely grated carrots
- ☐ 1 Tbsp fresh grated ginger root
- ☐ 1 Tbsp sea salt

Method

Wash your carrots and grate them in your food processor or on the large hole on your hand grater. Grate the ginger.

In a medium bowl, mix carrots, ginger and sea salt. Knead with clean hands.

Transfer the mixture to a large glass jar, pressing with a spoon or your fist to submerge the carrot mixture completely underneath the liquid. If necessary, add a bit of water to completely cover the mixture.

Seal and let sit at room temperature out of direct sunlight for five to ten days. Taste test and move the jar to cold storage (or your fridge) once the taste is to your liking.

Fermented Radish Slices Recipe

This fermented product uses a brine cure.

Ingredients

- ☐ 2 cups water
- ☐ 1.5 tablespoons sea salt
- ☐ Large bunch fresh radishes (about 700g), washed, trimmed, and cut into 1cm thick slices
- ☐ Sprigs of fresh dill and a couple of cloves of garlic (optional)

Method

Bring water and salt to a boil in a small saucepan over high heat. Remove from heat, stir until salt dissolves, and let cool to room temperature.

Start placing the cut radishes into a large jar such as a Consol jar. When fermenting, it is best to try to fit as many radishes in the jar as possible. This will reduce the amount of brine needed, and the amount of air that can get trapped inside. Carefully layer them.

Half way through, spread a layer of dill and sliced garlic, before layering the rest of the radish slices to the top of the jar.

Spread more dill and garlic.

Cover with cooled brine, leaving a couple of cms headspace.

Seal the jar.

Let the radishes sit on your counter for five to seven days, until the brine goes slightly cloudy and the radishes taste quite tart. When they've reached the level of tang you like, refrigerate. 🌿



Fermented radish.

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EVENTS

Agricultural Show And Farmers' Day

Join leading companies in the plant, animal production, mechanisation and agricultural food chain hosted by Ekurhuleni Agricultural College. The event will include exhibits, workshops, presentations and lectures.

Date: 8 July 2022

Location: Ekurhuleni Agricultural College, 43 2nd Road, Cloverdene, Benoni

Contact: Musa Baloyi on 082 965 6961

Solar Power Systems Course

This comprehensive photovoltaic solar design and installation course was created to address the need of individuals, organisations or small businesses that require basic information on the size, rating and installation of solar systems. Course objectives include being able to assess what equipment should potentially be of good or poor quality, distinguish how photovoltaic technologies differ from each other, know what the most appropriate energy saving technology is for a particular application, perform calculations for the design of a solar power system, and more.

This course is ideal for Do-It-Yourself enthusiasts, people with little or no electrical knowledge, as well as electricians and other craftsmen. No formal prerequisites are required to attend this course. The course is presented by Carel Ballack, who has been involved in the energy and renewable energy sector for more than 17 years.

This is the first leg of a twin course. The second leg is a separate course that deals specifically with batteries and which will soon also be presented with KragDag.

Date: 9 July 2022

Cost: R1 650, until 24 June, thereafter available at full price of R1 950 (bookings close on 7 July 2022 at 00:00).

Location: Diamond Valley Estate, Pretoria, Gauteng

Contact: 087 231 1644 or email info@kragdag.co.za for more info or to book.



Mushroom Growing Course

Two-day mushroom training programme, run by Cedarberg Smallholding in Eloff, Delmas. Learn all about the science and practice of oyster and button mushroom production including the importance, types and uses of mushrooms, substrate preparation, fruiting, and packaging and marketing strategies. Course objectives: Dietary and commercial importance of mushroom production; List and distinguish different types and mushroom species; Produce healthy mushrooms; Harvest, pack and store mushrooms; Source lucrative mushroom markets.

Date: 9 July 2022

Cost: R1 000 per person

Location: Plot 129 Corner Road Number 10 & 3, Eloff, Delmas.

Contact: info@cedarbergproduce.co.za or Maani66hoosen@gmail.com or call 071 820 5127 or 073 855 7376.

Open Field Vegetable Production Course

Hosted by the ARC Vegetable & Ornamental Plant Institute in Roodeplaat, Pretoria East, this course covers classification of vegetables, winter crops, summer crops, influence of environmental factors, fertilization and irrigation, spacing, planting times, seedling production, planting programme, marketing principles, record keeping, pest and disease management and sanitation.

Cost: R3 800pp (minimum 10 people).

Dates: 13-17 June, and 14-18 November.

Contact: evdheever@arc.agric.za.

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Eat, and eat well (but not turnips)

One of the best things parents can do for their children is to expose them to as wide a variety of foods as they can, from as early on as possible. They won't thank you for it at the time, of course, and many of the things they taste they will reject with a screwed-up face and a loudly exclaimed "yuk!"

But in time, as their palates develop, they will come to enjoy a much broader spectrum of flavours and textures than less adventurous feeders.

In our house, many were the occasions when a visiting kid would say, at table, "I don't like... X or Y or Z". On asking the child "have you ever tasted X or Y or Z?" the answer would invariably be "No."

In the home of my childhood we ate exceptionally well, and as broadly as the shops of Pretoria in the Sixties would allow, my father's view having been that one must eat to survive so one may as well eat well, and my mother having been exposed in her youth to a wide variety of Continental, Mediterranean and Scandinavian cuisine.

I vividly remember eating my first oyster. I was seven or eight, and on a family holiday at Second Beach, Port St Johns. Every morning outside our cottage would be seated local women with damp hessian sacks in front of them, in which they had the oysters they had prised off the rocks at dawn. So they were as fresh as one could get. And delicious. I still love oysters, and so do our kids, although it can become an expensive love affair at today's restaurant prices. And despite vegetables such as artichoke, broccoli or Brussel sprouts, or seafood other than hake, sole or kingklip being virtually unheard of in Pretoria in the Sixties, these and other items we now take almost for granted appeared occasionally on our dinner plates, sourced from where I have no idea.

Sure, there were things that were placed before us on our plates that we tried, and loathed. In time, however, I came to like and enjoy many ~ if not most ~ of them.

And while some of those things I disliked as a kid were cooked at home, many more emanated from the boarding school kitchen, where the number and size of portions of whatever was going were monitored far more carefully than the quality and flavour of whatever it was.

And being a school with Anglo-Catholic pretensions it specialised in culinary torture.

The school kitchen, adjacent to the dining hall, had a particular skill in reducing perfectly good cabbage to a grey, tasteless mush, in the process filling the building with a pungent aroma of fart.

I don't think I'm unusual, therefore in retaining to this day a strong dislike to "English" boiled cabbage, although I greatly enjoy this versatile green fresh, pickled, fried or wrapped around savoury mince. Another cost-saving horror the school visited upon us long-suffering inmates was to substitute boiled potatoes with boiled turnips. Turnips are, I think an acquired taste, to be polite.

Personally I cannot think of anything vegetable that is less enjoyable. They are worthlessly revolting, in my view.

Today, apart from a few internal organs of assorted livestock I will give just about anything a try, and enjoy most of it.

But I still draw the line at turnips.



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