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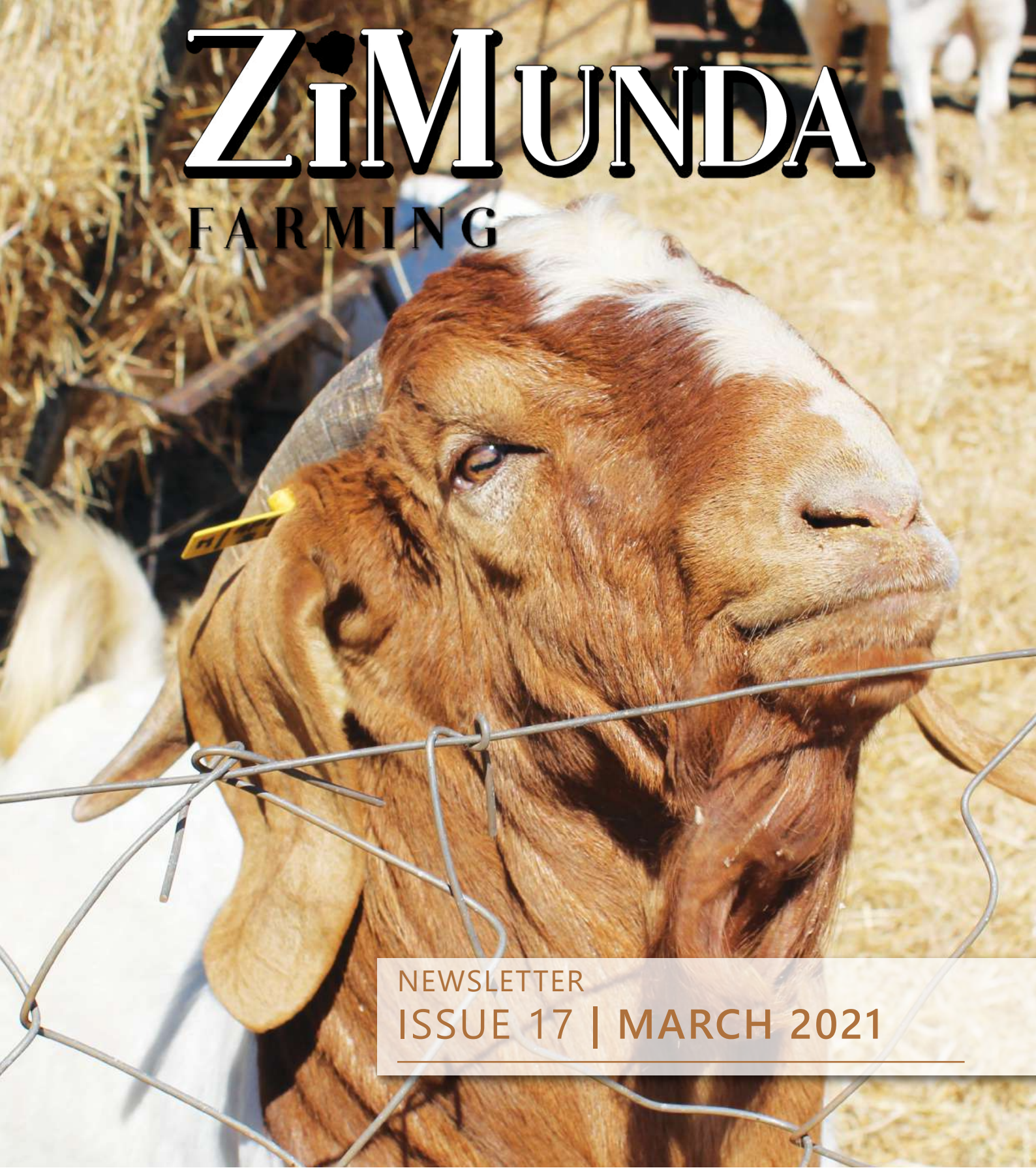

NEWSLETTER

ISSUE 17 | MARCH 2021

AGROFORESTRY

SUSTAINABILITY IN TOBACCO PRODUCTION

AGRIMACHINERY

TYRE MAINTENANCE

LIVESTOCK

PEN FATTENING - SHEEP & GOATS

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Pen Fattening Tips for Sheep & Goats

BY JAMES KABINDA, ANIMAL PRODUCTION SPECIALIST/CONSULTANT

Small ruminants (sheep and goats) are important components of the livestock subsector. They are regarded as means of cash income, and play a vital role as sources of meat, and milk for smallholder keepers in different farming systems and agro-ecological zones of the country.

Most of the small ruminant population in Zimbabwe is managed by small-holder farmers, and are sold on a need basis to augment household income and food security.

Pen fattening refers to intensive feeding of livestock in feedlots to slaughter weight with adequate fat deposit (finish) over a certain period of time. It targets markets with a demand for fat animals. The article gives insights in sheep and goat fattening.

REASONS FOR SHEEP AND GOAT FATTENING

- It is a simple process that can be achieved within the capabilities of small-scale farmers to implement.

- The results of sheep and goat fattening are highly visible can be realised within a short period of time.

- It generates quick cash for farmers by adding extra mass to the slaughter stock at a younger age, thereby increasing turnover.

- It is profitable because of the value/kg (weight) of the animals' live weight increases as both weight and condition increase (it increases the degree of fatness of the animal in order to achieve higher grades).

HOW TO SELECT FOR LIVESTOCK FOR FATTENING

- The selection of good quality animals is very important if you are planning for fattening.

- Select sheep and goats that are healthy without any physical defects.

- Select animals with medium body condition scores of 2.0 to 2.5. Avoid emaciated (thin or weak, due to illness or a lack of food) animals as they often take a long time to recover. Selected animals should have a large skeletal frame.

- Choose breeds with the better potential for growth and fattening e.g., Boer goats. Also consider the weight of the animals. Choose animals with weights ranging from 20 to 25 kg for better fattening.

- Farmers should be aware of castration as it influences the fattening process. The selection of castrated or uncastrated animals depends on the final product desired and market conditions. Generally, castrated animals deposit more fat (gain weight) when compared to uncastrated ones. In general, uncastrated animals have more muscular growth. However castrated animals have higher demand in the market.

- Avoid animals that are too old as they are not suitable for fattening process and their demand in the local market is low. It is better to select animals between 2 and 4 years of age for fattening process.

HOW TO PREPARE FOR PEN FATTENING

Adequate pen space must be provided singly, but two or even more similar animals can be mixed e.g., by age and sex. You also need housing for the animals to rest at night. Group animals according to their size and sex. Large animals tend to bully smaller animals and keep them away from feed troughs.

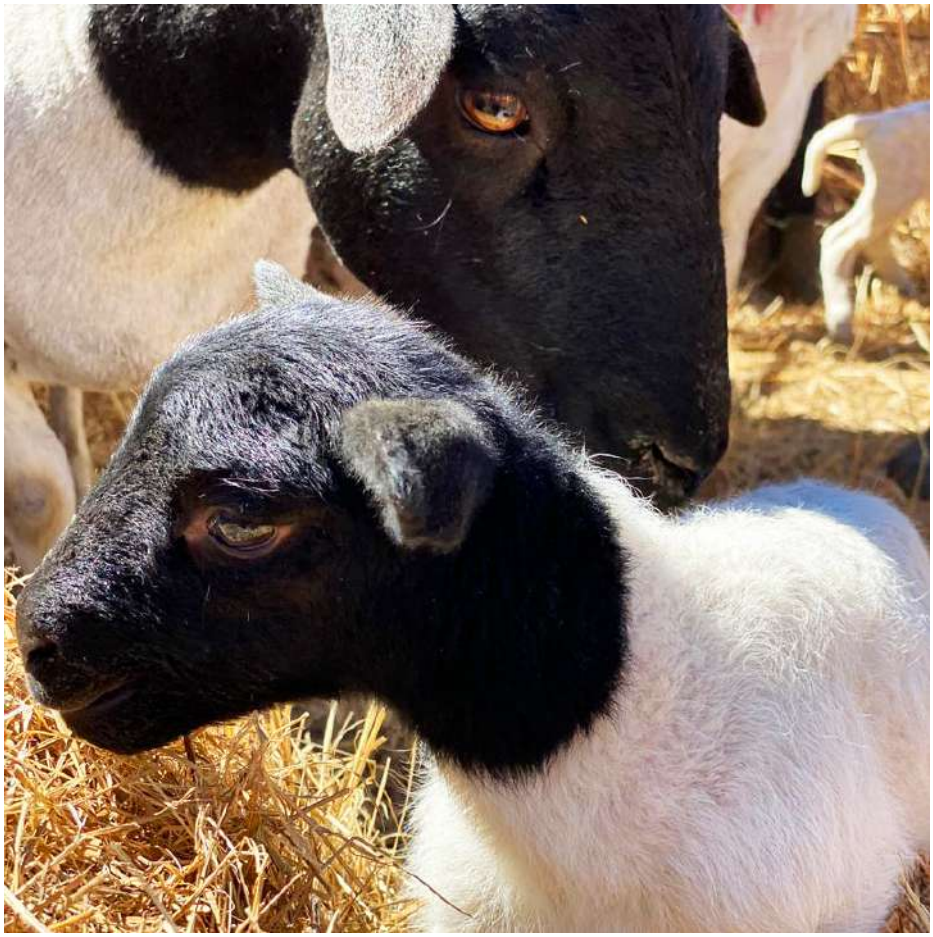
Prepare the holding pens with the *feed and water troughs*. When constructing pens, the feed trough should be as far away from the water trough as possible to avoid feed spoilage If the feeding trough is in one corner of the pen, the water trough should be in the corner diagonally across.

Water must be available at all times. Take precaution to make sure that a shortage of water does not occur during the feeding period. Make sure that *enough feed* has been bought in or prepared to last for the duration

of the feeding period.
Buy in animals when prices are low and sell during peak of demand when the prices are high. Buy feed and store it during periods prices are low.

Dose and dip before commencing the fattening. *Vaccinate* all animals against Pulpy kidney, Foot and Mouth disease, and any other diseases considered essential in the area where the feedlot is situated.

Identify and number the animals for *record keeping* purposes.



HOUSING AND PEN SIZE

Shelter should be provided to protect the animals from adverse environmental conditions like rain. Housing for the animals should include an overnight shelter, which can be built within the fattening pens or separate. The shelter ought to be cost effective. Any building material will suffice, depending on availability and financing. Allow a space of 2-3 square metres per animal when constructing the overnight shelter or pens. Normally the shelter is left open on one side with the walls 1.2 metres up on the other sides, with a gap of 0.5-0.8 metres left between the walls and roof. It should be noted that muddy feedlots reduce the feed efficiency, thus should be kept dry always. This also reduces the risk of foot-rot. Floors should be well elevated to allow drainage and cleaning. Elevate to at least 15 degrees. Waterers and feeding troughs should be easily accessible to both the animals and caretaker.

FEEDING MANAGEMENT

Feeding can be pasture based or concentrate based. Feed the animals for 90-120 days, depending on the desired animal condition and type of ration fed. The fattening program should commence after necessary feed supplies are secured. Underfeeding and incorrect timing are common causes of failures in fattening activities. Allow a feeding space of 20 linear centimeters per animal. Animals should have feed available at all times including evenings. Administer vitamin and mineral supplements to the animals.

DEMAND AND MARKETING

The increased demand for livestock products including goat meat offers small-scale farmers in semi-arid Zimbabwe opportunities for increased market participation. Statistics by the Trade Map show an increase in the global demand for goat meat by 125% in 2016 from 2006. This demand should be harnessed through formal exports of goat meat. Goat production in Zimbabwe has been receiving special attention from various stakeholders with organizations such as ZimTrade offering to help producers export goat meat to lucrative markets such as Angola and the Middle East.

Fattening of small ruminant animals can be a profitable venture, though there is need for stake holder intervention especially when the discussion is centered on the small-holder farmer.

It takes the farmer's preparedness to venture into the business, which includes training on proper management practices, and linkages to formal markets.

For more information on Pen Fattening, contact James Kabinda, Founder of KB Livestock Solutions, on +263774225873 or email: jameskabinda@gmail.com.

For more information on sheep husbandry, refer to *ZiMunda Farming Newsletter Issue 5*.

For more information on goat husbandry, refer to *ZiMunda Farming Newsletter Issue 2, 4, and 14*.

For more information on identification & recording, and body score condition, refer to *ZiMunda Farming Newsletter Issue 1 and 8*, respectively.

Image provided by James Kabinda

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Traceability & Self-Regulation in Animal Health

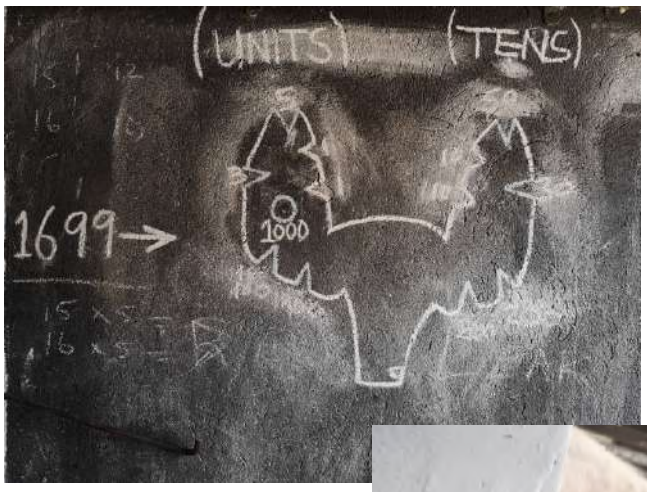
BIANDRI JOUBERT, LLB, LLM IMPORT AND EXPORT LAW

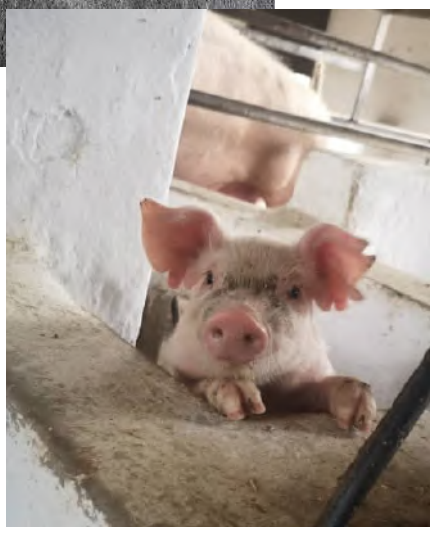
Traceability is the aptitude to trace various aspects of, an animal through the stages of its life. The traceable aspects vary and are dependent on factors such as whether the animal is farmed in a high-risk pest area, is destined for human consumption, export, stud-breeding, or if the animal is a potential carrier of diseases that are transmissible to humans, etc.

This article introduces how the concepts of traceability and animal health fit into the international cloud of trade-related regulation and laws. It also explains how this is relevant to individuals in livestock farmers at a national level, whether or not there is national legislation enforcing it, and regardless of scale. This article does not focus on a specific National or Government traceability system and is therefore, broadly applicable to any farmers.

THE CLOUD OF INTERNATIONAL TRADE LAW

I call it the Cloud of International Trade Law because it feels like a cloud of legislation, floating somewhere outside our normal angle of sight and with a similar, "out of sight out of mind", kind of reality. Understandably, it feels even more removed from daily reality if you are not an importer or exporter.





Top - Notches are placed in one of five locations in the pig's right ear to show the litter number and in one of three locations in the left ear to show the individual pig number.
Right- A notched piglet at the Pig Industry Board Farm.

Animal health is the sole focus of the World Organisation for Animal Health, shortened to the OIE, from the French, Office International des Epizooties. It is one of the three official international standard-setting bodies that fall under the World Trade Organization (WTO). The other two apply to food safety (Codex Alimentarius Commission) and plant safety (the Intergovernmental Panel on Climate Change). With 164 member countries in the world, WTO has only one particular agreement that applies to the measures enforced by the Government to keep human, animal, and plant life, and health safe during the trade of food, animals, plants and their products. These are called Sanitary (animal) and Phytosanitary (plant) measures (SPS). The OIE provides Governments with guidelines through the terrestrial animal health code.

One can imagine standing in a field, boots in the dirt, overlooking a fenced-in area with cattle in it, with the cloud of international law and guidelines above, raining down rights, obligations, and principles.

Vision the national legislation and official traceability systems as the fence, drawing clear boundaries and guidelines at a level specific to your country or region. The boots in the dirt as the practical self-regulation level. The fence that there as a demarcation of the right side and a wrong side, and it is fixed. As a livestock farmer you will be most aware of the boots you wear every day, their size, and the practical reasons for that choice in style.

THE SELF-REGULATORY LEVEL

Traceability and related systems at a self-regulatory level work in a similar manner. Traceability, biosecurity, compartmentalisation, etc. occur at a practical level within the normal angle of vision, often in unison with national systems. Interested farmers are advised to read through the OIE's guidelines and understand the basic principles thereof, and applying a basic system to their own land. I will use self-regulation of traceability for animal health as an example below.

The traceability system has to be practical and fit for purpose, like the boots. What is important, is to understand why it is important at boots in the dirt level. From there, the design, or the "how" can be worked out and improved on. There are three main reasons traceability is important in this context.

1) It helps keep animal-based protein safe for human consumption.
2) It gives the farmer data with which they can protect their herd and other people's herds proactively.
3) It provides certainty and control.

Like everything in agriculture, nothing operates in a vacuum or on its own, there is interconnectivity and it is the same with traceability. It is strongly dependent on the ability to identify an individual animal and it is strengthened by other measures like biosecurity measures and on farm compartmentalisation, for example. Traceability provides data and data is powerful to a farmer. It can help identify trends in individual animals and assist in management of other things. Early adoption and record keeping also makes fitting into a national traceability system easier.

THE PIVOTAL QUESTIONS TOWARDS SELF-REGULATION

There are a few questions that can be asked when considering the importance of this type of discussion. Look at the disease situation in your area as a start. Do you know if any harmful pests and diseases are present in the area you farm in? Or in the area of the farmer, you bought an animal from? Are you sure you know? If there is any doubt, there is already a strong argument to be made to implement biosecurity and traceability measures. If data is thin on the ground, record your own. It may even come in handy down the line to prove the health status of your own herd. Animal health is closely linked to human health. A healthy animal produces healthy food for humans and the OIE has a big drive towards a concept and awareness of "one health".

Top - Ear-tagging, a system for the identification and registration of individual bovine animals

Right - Cattle branding, a permanent identifying mark on the hide of an animal. The preferred place to brand is high on the upper hind leg/hip area

Below – Eartagged cattle at LuipaardsVlei Brahmans, Chipinge

THE ON-FARM SYSTEM OF TRACEABILITY

There are a number of pieces of regulation related to animal identification that are essential to traceability. Traceability can be simple. If you are already identifying animals with tags or brands, you have already started the data collection process of traceability. If a neighbour's animals stray onto your land, are you able to identify the owner by a brand mark or ear tag and can you identify the animals that might have been in contact with it? These are important things to know, especially when diseases such as foot-and-mouth disease are present in the country or area you farm in.

There is no reason why you cannot implement your own on-farm system of traceability. Trace movement, record medicines, and vaccines trace contact with other animals, etc. Trace anything that can build a data set to benefit the health of your herd and the national herd. It essentially comes down to deciding for yourself what is to be gained from such a system and designing one that fits your budget. It does not have to be high technology, but it should meet the basic principles and records must be detailed and consistent.

THE IMPORTANCE OF SELF-REGULATION

Self-regulation does not mean ignore what the relevant authorities recommend or require. On the contrary, it is an additional set of safeguards that you can do for yourself, for your industry and to proactively attend to disease threats instead of reactively. It helps to control outbreaks when they happen by being able to contact trace in the same way the world is contact tracing persons with high-risk exposure to COVID-19. When an outbreak occurs, or animals get sick traceability data assists in the effort to identify the cause and contain the spread.

There is great potential for the livestock industry to self-regulate as a way forward to improve quality and production of livestock and meat in the Southern African Development Community region.

Backlink - For more information on identification & recording of cattle. Refer to *ZiMunda Farming Newsletter Issue 1*, an article by the Sekuru sponsored by Sponsored by the *Zimbabwe Boran Breeders Society*.

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Poultry Production

BY GENERAL BEVEN MUNDIDA, LIVESTOCK CONSULTANT

What is the correct ratio of cocks to hen?

The correct ratio should be one cock to 8 or 10 hens but many farmers and experts insist on 8 hens to one cock.

How do I prevent my cocks from fighting?

Cockfights establish the pecking order. My advice is for the farmer to ensure that the correct ratio of cocks to hens is maintained. Over time cocks establish their own pecking order, consequently reducing competition over the hens (fights). If the fighting persists the farmers can separate the notorious cocks and put them in different compartments, which solves the problem.

Where should I locate the laying nests within the chicken house?

A compartment for laying should be built at the corner of the chicken shed in a dark place. The laying compartment should be covered with old sacks to ensure that the nest is dark on the inside where the hens can lay eggs without disturbance from other chickens. Chickens can be cannibalistic and other chickens may peck and injure the laying hen in the oviduct (egg canal) while laying eggs if the nest is not protected.

What are the advantages of raised poultry houses/fowl run?

Raised poultry runs present an advantage on hygiene and sanitation. They allow chicken droppings to drop to the ground below through the slatted floors or wire mesh. Chicken droppings contain a lot of ammonia which can cause several problems for chickens; in some cases, if it is not dealt with you can lose birds to pneumonia and other respiratory problems. The slatted or raised floors, also minimise chances of chickens eating contaminated feed.

Why do my chickens eat their eggs?

Egg eating can reduce egg sales and your farm's productivity. Preventing egg eating in the first place is easier than stopping it after the habit is formed. There are many reasons why chickens eat eggs, these include;

1. Accidental discovery

Chicken can acquire a habit of egg eating when they come across a broken egg and eat it, this is called accidental discovery. Once the egg is broken, the chickens begin to eat the yolk and develop a taste for eggs. Therefore, even though the initial egg-breaking was accidental, it may gradually become a habit for the chicken to eat eggs. Sometimes it only takes one chicken to develop and the rest will learn the habit and also start eating eggs.

Prevention of Accidental discovery - When it comes to raising chickens, collecting eggs is best done in a timely fashion in order to avoid egg breakage and egg eating. Therefore, collecting eggs earlier in the morning and during the day is good practice to ensure a good egg harvest.

2. Calcium deficiency

Chickens also eat eggs as a result of an inadequate and unbalanced diet especially the lack of enough calcium and protein. Calcium deficiency causes chickens to seek out a supplement diet of eggshells.

Prevention of calcium deficiency - Your chickens should get a balanced diet with plenty of calcium and protein. Feed them with a complete feed notably one formulated for laying hens; calcium helps form strong eggshells which are less likely to break, while proteins

give healthy chickens, which makes them less inclined to break and eat eggs.

3. Overcrowding and boredom
When the chickens are overcrowded and bored, they can become prone to egg eating. If possible, provide hens with space to roam and pasture or at least a run with fresh grass and bugs.

What makes chickens lay shell-less or soft-shelled eggs?

1. Age
Soft eggs or eggs missing shells can be found on first-time layers and older hens. While the biological framework of younger chickens may be still undeveloped and needs a little more time to get used to laying eggs; older chickens' reproductive systems may no longer be reliable leading to decreased number of eggs and more malfunctions in the egg-laying process e.g., laying of shell-less eggs.

2. Lack of calcium and Vitamin D
The lack of calcium and Vitamin D in chickens' diet may cause chickens to lay shell-less eggs as calcium is vital in forming eggs shells.

3. Stress and diseases
Chickens need adequate sleep for the eggs to set properly, if the chickens are under any kind of stress e.g., environmental, overcrowding, they may lay shell-less eggs. Some bacterial or viral infections may also be the cause behind chickens laying shell-less eggs. An example is the Egg Drop Syndrome (EDS) which is caused by a viral infection adenovirus in laying hens. It is characterised by production of soft shelled and shell-less eggs in apparently healthy birds.

Managing the production of shell-less eggs - Farmers are advised to ensure that they feed their chickens a balanced diet with sufficient calcium and Vitamin D to prevent their chickens from laying shell-less eggs. They should also ensure that the chicken houses have adequate space to avoid overcrowding that leads to stress and many other problems.

Image provided by General Beven Mundida

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Pushed to the Limit

BY NEIL ELLIOT

Agricultural tyres have a number of essential roles to which in general we do not pay much attention to. By optimising certain settings and applying some recommended tips, you can considerably improve tractor performance, boost productivity as well as get the most from the tyres.

The tyre is the main actor in transmitting power to the ground, making it your principal ally in the pulling power of your vehicle.

Mechanical settings, the height of the studs, wear and pressure are all elements that influence your daily work as well as the compaction of your soils, which can affect your profitability. Consider certain techniques (shared down below) linked directly to your agricultural tyres and you will be able to improve your productivity with little effort.

1. Check the lead

When the front wheels of your tractor tend to wear more rapidly than the back wheels, this can be linked to the wrong amount of lead. In other words, the front axle is not correctly synchronised with the back axle. In principle, the lead should be between 0 and 3% to allow your vehicle to transmit all its power.

2. Avoid soil compaction

The use of ill-adapted tyres will encourage soil compaction. This inevitably leads to a loss of productivity. To optimise your yield, there are several solutions such as adapting your tyres to the type of ground to avoid further compaction. To do this, you first need to establish the two types of compaction:

Surface compaction which is due to the incorrect adjustment of agricultural tyre pressure. Therefore, make sure to check the tyre pressure regularly.

Deep compaction which is caused essentially by too heavy a load at the level of the axle. In this case, do not hesitate to mount wider tyres with a larger volume of air or duals if necessary.

3. Avoid mixing odd tyres

For best results, tyres should be replaced at the same time to ensure compatibility and good, even wear. Mixing old tyres with new tyres can result in the new tyres wearing down faster which can result in poor handling of the vehicle at higher speeds. Tyres that are different sizes, or of a different construction should never be mixed on the same axle.

4. Regularly inspect tyres and perform the necessary repair

Tyres should be inspected for possible damage, particularly cuts or breaks that enter or expose cords in the rubber. Damaged tyres should be removed promptly from the wheel and sent to a reputable tractor tyre company for a comprehensive inspection and if necessary, replacement. Leaving tyres damaged can potentially lead to fatal accidents.

5. Use recommended rims

The use of rims narrower than the recommended brings potential mounting problems because the rim shield or flange cover moulded into most tyre designs tends to interfere with the seating of the tyre beads on a narrow rim. Once mounted on a narrow rim, the tyre rim shield applies undue pressure on the rim flange, with possible tyre sidewall separation or premature rim failure at heel radius. On a narrow rim, the tread is rounded. As with an over-inflation tyre, tread-wear will be concentrated in the centre area of the tread and traction in the field will be reduced.

For professional information and advice on tyres, rims, tubes as well as fitment and balancing services, please contact a tyre representative today on 08677 200 300 or email us at info@tyrezim.com or visit our website on www.tyrezim.com

For more information on Lead & Lag Management for maximum tyre use, refer to the *ZiMunda Farming Newsletter Issue 10*, and for more insights on Minimising Soil Compaction refer to the *ZiMunda Farming Newsletter Issue 4.*

Image provided by Neil Elliot

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Regenerative Agriculture

An innovative dimension to the agroecology movement

BY JOHN WILSON, ACTIVIST, FREE-RANGE FACILITATOR AND GARDNER.

The term Regenerative Agriculture was coined by the Rodale Centre in the United States of America (U.S.A) because of the limitations and co-option of Sustainable Agriculture. The reasoning was that we need much more than the sustainability of the land, we need its regeneration. Why would we want to sustain degraded land? That land needs regenerating.

Regenerative Agriculture goes beyond the organic versus chemical agriculture debate, arguing that ***what matters is achieving healthy soil and biodiversity***. It is not only a question of being organic or not organic. For farmers who have struggled with the idea of switching over to organic production, this seems to have helped them understand the movement away from chemical farming as a transition. For example, in the U.S.A and Australia, there are many farmers who consider themselves regenerative farmers who still use some chemicals. But, at the same time, genuine regenerative farmers are trying to reduce this chemical use wherever they can, with their aim being to reach zero use of chemicals.

The development of Regenerative Agriculture in the U.S.A and Europe

Regenerative Agriculture has mostly developed as an approach and term in the U. S. A and Australia, - in Europe to a lesser extent. It has had fairly good support and involvement of at least some scientists in these countries. They have been able to provide research input on the microbiology and structure of soils, demonstrating how cover crops and managed grazing, for example, have regenerated soils. The documentation of progress in these areas has been crucial to enabling Regenerative Agriculture to become increasingly recognised by policy makers.

Above: *Peacemore Maera showing well mulched healthy sorghum in Namire village, Ward 3, Chimanimani District*

From a practical/technical point of view, I have been impressed with what I have read and watched about the rise of regenerative agriculture in the U.S.A and Australia. I think that what some of these farmers are doing is putting to bed convincingly the myth that industrial agriculture, and not the alternatives to this, will feed the world. Regenerative farmers in the U.S.A with well-documented evidence, are conversely illustrating that if we want to create widespread hunger then we should continue to follow industrial agriculture practices, which destroy the soil and biodiversity and make farmers increasingly dependent on large corporates.

Regenerative Agriculture has a strong emphasis on the viability of farming while making the shift away from industrial high-input agriculture. I have seen criticisms that Regenerative Agriculture does not take into account the political economy dimension of farming enough. This is probably true, though there are regenerative farmers who are keen to break the corporate stranglehold of farming.

An innovative part of agroecology

My personal perspective is that agroecology makes an excellent umbrella for ***the global movement of citizens transforming*** away from industrial food and farming systems to systems that revitalise the earth by working with nature as much as possible. This is a movement that brings citizens, both producers, and eaters, closer together and working towards a more just system that is tied closely to local culture and context. It's a system that is fair to farmers and provides eaters with nutritious food, while also regenerating the natural resource base and helping address global warming.

I see regenerative agriculture as an innovative part of agroecology. Regenerative agriculture's breakthroughs to new, financially viable, and scientifically evidenced practices are critical to the development and spread of agroecology in Africa. Regenerative Agriculture seems to have taken to another level the pioneering of alternative practices that happened in the late 20th century and early 2000s. My sense is that in our African context we could usefully add this innovative dimension of regenerative agriculture to help strengthen the development and spread of agroecology across the continent.

Backlink- for more information on Agroecology, refer to issue 15 of the ZiMunda Farming Newsletter.

Images provided by Kumbirai Dube, PORET Trust.

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Water Harvesting Story

BY JUSTICE NCUBE, FAMBIDZANAI PERMACULTURE CENTRE

Reclaiming a gulley by their backyard has made the Dubes comprehend the essentiality of water in agricultural activities. Luckson Dube and his wife Nomthandazo Ncube are both water harvesters in Matobo. Their overpowering desire to harness and store their own water has helped them initiate a number of agro-based income-generating projects at their homestead

The problematic gulley

The old gulley that initially cut across the couple's backyard fields had been a tenacious problem for a long time. It usually flooded during the rainy season and massively swept away all the topsoil in the nearby fields.

The Solution – Water Harvesting Technique

Efforts to deal with this persistent problem had seemed vague until Luckson's exposure visit to Mr. Mawara's homestead in Zvishavane through the Fambidzanai Permaculture Centre. Luckson learned different ways of effectively harnessing, safely storing, wisely using, and reusing water. On arrival, back home after the informative visit, he testifies that he generously shared the noble knowledge with his wife and kids. They immediately started trapping all the water that swiftly flowed as runoff in the old stream and safely stored it in underground tanks for constant future use in small projects that needed water to thrive. Presently, the enthusiastic couple has initiated quite a number of agro-based projects at their homestead. There is now enough water for the fish, the bees, the chickens, the tree nursery, and other household activities.

> "After learning about water harvesting in one of the Agroecology exposures visits at Mr. Mawara's homestead, I came home and shared the information with my family. We decided to come up with our own effective way of controlling the swift water that gushed as runoff from a nearby hill through the gulley behind my home. The idea worked out well and we have managed to harness as much water as possible", says Dube.

The process of harvesting water

The Dube's firstly reduced the velocity of the water by piling bushes and building blockades that cut across the stream in fair intervals from the hilltop to the mouth of the gulley. They built a weir after the final and smallest blockade using tightly-tied sticks that look like a wire and pole gate. The small dam is used to trap the water into one pool and direct it into the underground storage tanks beneath, using no engine power but gravity. Some of the water is also piped from the rooftops into the same mentioned tanks through gutters. Both tanks can approximately store more than 400 litres of water collectively and can be continually replenished by the underground water.

> "I first piled bushes as a loose blockade to lessen water velocity. I then placed another second semi-permeable barrier using bricks, poles, and wires. The last one had more stones than poles because I mainly wanted it to collect the silt before it entered the large pool. All the water that seeps through these three-speed breaks collects into a small dam before flowing into the storage tanks underground", says Dube.

The benefits of water harvesting

Collecting and storing water has influenced the Dube's to expand and mechanise their water harvesting operations. They have since spilled into small-scale aquaculture, apiculture, nursery, poultry, and tree nursery projects. The projects have become a livelihood that is bringing in some monetary gains and immensely contributing to their day-to-day survival.

They have also managed to lessen water drawing burdens by procuring a brand-new submersible pump to aid in drawing water from the underground storage tanks. The money used in buying the pump was obtained from honey and nursery projects which both flourished due to the availability of adequate water. The machine is going to lessen the burden of using manual labour in drawing the water for irrigation and other domestic uses.

On his last remarks on behalf of the whole family, Luckson urged all farmers to harvest as much water as possible from the little rainfall they receive. He emphasised that water is very essential in all agricultural activities.

For more information, please contact Justice at ***justice@fambidzanai.org.zw*** or skype: ***Jussie Ncube.***

Backlink: For more information on water harvesting and the use of solar power in water harvesting, refer to the ZiMunda Farming Issue 12 and 16, respectively.

Images provided by Justice Ncube

Supplementing Main Stream Crops

BY ROB JARVIS

Cashflow is paramount in Zimbabwe and nearly all farmers are pressured into having regular streams of ready cash to meet monthly salary and wage requirements. Farmers are often tempted into quick and regular turnover enterprises to meet these demands that it is difficult to finance from the highs and lows of regular summer and winter cropping programmes.

Off rainy-season farming enterprises

Many farmers turn to chickens (egg-layers, road-runners and/or broilers} or have a breeding herd of cattle/sheep/goats and have paddocks and pastures, full or supplementary feeding schemes to allow regular off-take and generate cash. This is a clever way to add value to the mainstream crops, especially in summer when most Zimbabwean farmers, given a good season, have maize, soya, sorghum, millet, and groundnuts to sell. But of course, they all come to market at the same time, forcing prices to drop, or the payments from statutory boards slow down and can even dry up completely, and the farming systems are put under huge stress. So, you all need a Plan B because for sure there is a lot of maize this year!

Horticulture options

Vegetable growing is an option, generally, it is quick and if you hit the market at the right time, with good quality products, you can find a ready market with top-end retailers. Seedlings of brassicas are best sought from specialist growers who make available thousands of young plants, growing vigorously in plugs. Planted on well-prepared beds, under a drip irrigation scheme custom-designed again by professionals for just such a purpose. If the plants are well-tended, each plant fertilised, top-dressed with precise requirements, and herbicide, weeded and protected from pests and disease, then within three months, the crops can be harvested and completely sold off to the top-end markets.

At ART farm

We have a long history of doing just this at ART and the cashflow is evened out by having a stream of vegetables generating cash and this we hope to do throughout the autumn, winter, and spring period before the heavy rains return next summer. Good preparation, near-perfect plant stands, great choice of varieties, and pre-emptive strikes at the pests and diseases that inevitably come when crops are grown so well. It is intensive and there is no margin for error and time will tell whether we can do this sustainably on this two-hectare drip-irrigation block. We have built into the system some eco-friendly rotations, using lablab *(Dolichos)* and sun-hemp *(Crotalaria)*. We are also going to turn crop remnants into compost and re-apply it to the fields and reduce dependence going forward on inorganic fertilisers. Diversity in the scheme will be paramount and already cabbages, broccoli, cauliflower is accompanied by carrots and sweetcorn. Timing is everything and legumes and high-value garlic and onions will follow in the winter months when they do best.

Images Provided by Rob Jarvis

Below: The experienced management team at ART, L. Mutemeri, C. Ndoro and J. Mpondha standing on the edge of an immaculate block of horticultural crops with ART Trust Board member Percy Malusila (far right).

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Building the Foundation of Sustainable Tobacco Production

BY THE SUSTAINABLE AFFORESTATION ASSOCIATION (SAA)

Forests play a critical role in sustaining people's health and livelihoods, employment creation, provision of essential environmental services, and contribute to the economy. Deforestation reduces the availability of these essential benefits to both the present and future generations.

It is estimated that Zimbabwe loses about 300,000 ha (3 times the size of Harare) of indigenous forests annually due to indiscriminate cutting down of trees and veld fires and 12-15% of this figure is attributed to tobacco curing. Zimbabwe is the world's fourth-largest producer of tobacco with over 150,000 smallholder farmers relying on wood for curing their tobacco. With record production of nearly 260 million kilograms of tobacco in the 2019/20 season, it can be estimated that over 2 billion kilograms (200,000 tonnes) of wood was utilised to cure the golden leaf at an average of 8-10 kg of wood per kilogram of the tobacco. Although legislation is there, Statutory Instrument 116 of 2012, which requires that for every 3 hectares of tobacco the farmer must establish at least one hectare of trees for future curing of his tobacco, very little is being done to enforce compliance.

SAA's Purpose

Sustainable Afforestation Association (SAA) is a non-profit organisation founded in 2013 by the Tobacco Merchants with the purpose of developing sustainable energy options for tobacco curing. The Association's Constitution lays out three key objectives:

a) *To provide a sustainable source of timber for use in the tobacco industry.*
b) *To investigate and implement strategies for the conservation and rejuvenation of existing indigenous and commercial forests.*
c) *To undertake activities and projects directly or indirectly relating to the provision of sustainable sources of timber, and the conservation and rejuvenation of existing timber resources.*

SAA's main focus has been on planting Eucalyptus trees – fast-growing, good curing fuel, and their management is well understood. Choosing the right tree species for biomass energy is about balancing growth against high wood density and heat value. SAA will continue to investigate suitable alternative species for consideration in the future development of its afforestation program.

Sustainable Energy Options for Tobacco Farmers

The pressure is mounting against the use of methods that destroy the environment when curing tobacco and Zimbabwe needs to demonstrate that it is following a trajectory that will result in the sustainable production of the golden leaf. While the use of coal is still globally acceptable as a short-term measure, very few farmers have access to it, hence the prevalent poaching of indigenous wood.

Sustainable sources of wood for tobacco curing exist in the Eastern Highlands commercial forests where residual wood is left in harvesting operations. Some tobacco merchants are already exploiting this resource base for their contract farmers. Statistics from the Timber Producers Federation indicate that since the early year 2000 there was 156,000 ha of plantations, which have reduced to about half to-date. Over 50,000 ha of these plantations are on resettlement farms where they are now not managed for timber production. A lot of Indigenous wood from clearing agricultural land and road construction is burnt or left to rot when it could otherwise be utilised.

Below: Rhodesdale Farm's 5 year old tree plantation

SAA's Achievements

• Tree planting

Since its inception in 2013, SAA has established approximately 20,000 hectares of commercial Eucalyptus plantations through long-term partnership contracts with about 320 farmers in the four main tobacco growing areas of Mashonaland and Manicaland provinces. Farmer partners provide the land and SAA provides the capital and management skills. The parties share the timber at the end of each rotation and ownership of the plantation reverts to the farmer after three rotations. SAA's partner sites are now quite visible from the highways – just before the Great Dyke on the Harare Chirundu Road, just before Macheke and Rusape tollgate along Harare Mutare road, near Featherstone Police station on the Harare Masvingo Road, and on entering Bindura along the Harare Mt Darwin road.

Above: Old Larkhill farm - 6 year old plantation, Marondera

To develop a culture of tree planting among communities, an additional 500ha has been planted in partnership with small-holder farmers in Makoni and Mt Darwin; the communities provide land and labour while SAA provides seedlings and technical expertise

• Sustainable management of indigenous woodlands

While the Communal Land Forest Produce Act allows subsistence utilisation of woodlands for local community benefit, the harvesting is often for commercial use, which leads to over-exploitation and subsequent deforestation. Sustainable management of indigenous woodlands has the potential to supply the much-needed wood for tobacco curing and SAA has been looking for collaborative partners to develop woodland management models that could be employed at the farm level to reduce forest loss.

To counter the threat of wood poaching in both SAA plantations and local indigenous woodlands, a team of about 250 security guards was set up. SAA estimates that in addition to 20, 000 ha of Eucalyptus plantations, it is also protecting in excess of another 20,000 ha of indigenous woodlands around partner farms. SAA is working closely with the Forestry Commission, the Zimbabwe Republic Police (ZRP), and the National Prosecuting Authority (NPA) to apprehend wood poachers and ensure that mandatory jail sentences imposed by the Courts.

• Trialing other energy technologies

To augment its biomass energy drive, SAA has also collaborated with the Tobacco Research Board on biogas trials to explore the use of methane gas from animal dung and solar energy as alternative energy options for tobacco curing. There has been very little progress in the development of these modern technologies primarily due to a lack of national strategies to promote them.

The Call to Action

Combating deforestation requires the active participation of everyone; communities, landowners, local authorities, the government, and civil society in general. The Sustainable Afforestation Association's vision is to transform Zimbabwe's forestry landscape by producing tangible results in the next two decades. Tobacco farmers need to understand that the tobacco business should factor in energy requirements in the production chain. The afforestation levy collected from farmers should not be viewed as passport for free wood from indigenous forests but rather to lobby for its effective utilisation.

Sustainable Afforestation Association

Images provided by the Sustainable Afforestation Association

Tree planting at SAA