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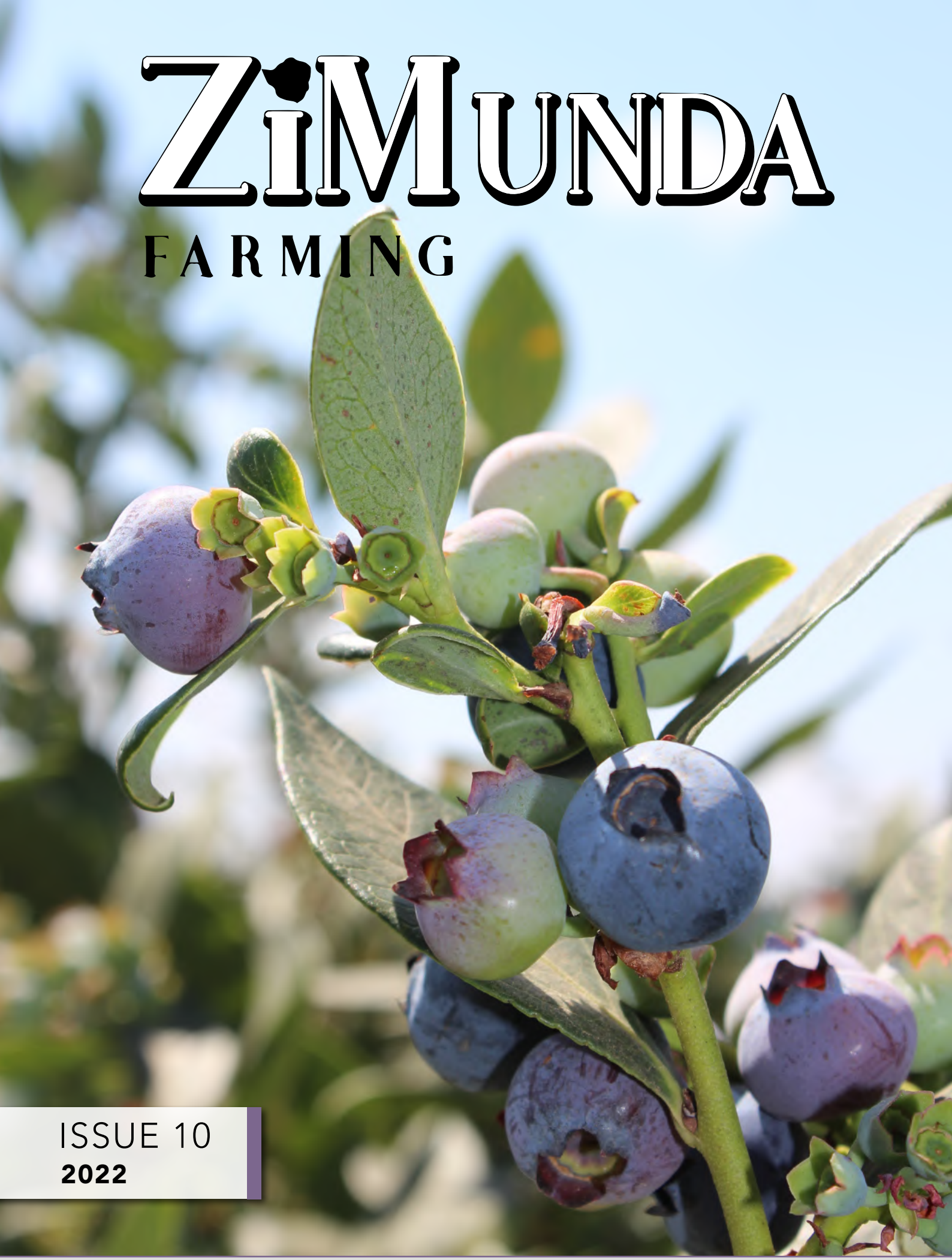

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2022

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From the Editor

At long last, the first rains are here and not a day too soon for many farmers; both livestock and crop farmers who have been planning for the onset of the rainy season.

The blessing of the rains can unfortunately also come with some pertinent issues which farmers have to be on the lookout for. Edgar Watson Howe says quote: "Farmers only worry during the growing season, but townspeople worry all the time", it is the time to get all of your risk awareness and preparedness hats on. As advised by a retired seasoned farmer, Stu Taylor, it is important for cattle farmers to dose their stock for roundworms and the calves for tapeworms. He goes on to note that if the stock was not dosed for flukes at the end of winter, one should, especially in the highveld areas surrounded by vleis. In cropping systems, farmers must be aware of their drainage system. They should map out where infield drainage trenches should go in case of excessive rains to avoid water logging.

The team at ZiMunda Farming wishes you all a good start to the growing season 2022/2023 and a bountiful harvest (in good time of course). Be sure to share your experiences with us.

Yours in farming

Vimbai

OUR TEAM

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Cover Image : **Healthy blueberries at a farm in the Enterprise area. Image provided by Hannah Rothwell**

Contents

Irrigation and Fertigation Protocols

Experts from Netafim Farmers Guidelines.

Blueberries are a challenging crop due to their sensitivity to water stress, salinity and acidity levels. Based on our extensive agronomic experience, Driptech through Netafim provides irrigation and fertigation guidelines that help farmers increase yields while optimising use of water and fertilisers.

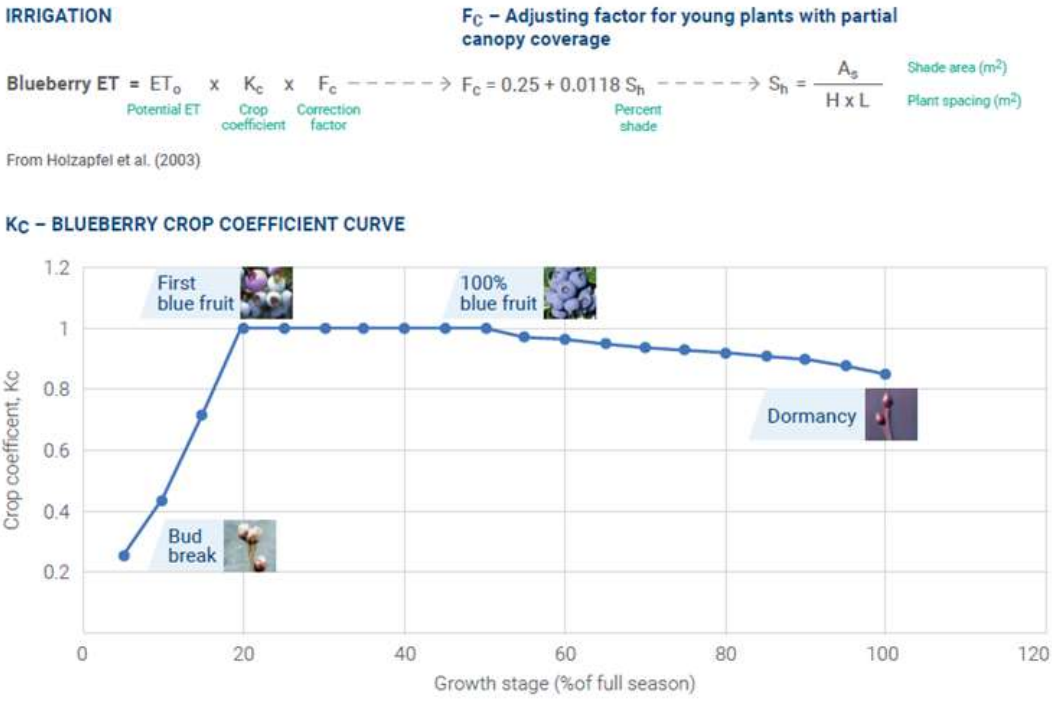
With an objective of promoting irrigation and fertigation protocol guidelines amongst blueberry farmers in Zimbabwe, Driptech held their annual blueberry field day at their blueberry farm in the Enterprise area. During the field day, companies that are directly involved in blueberry production such as Dudutech, Netafim, Growrite, and Swartland Spuitpompe were given an opportunity to speak on their products and Chriss Maggs an expert in blueberry farming expanded on fruit fly infestation during his talk. This was thereafter followed by a tour of the technologically advanced pumphouse and the blueberry field.

The guidelines discussed during the field day are intended for Northern, Southern and Rabbit eye varieties, grown in local soil with a target yield of 4Kg/plant. We recommend adjusting your plan based on your specific local conditions related to soil type, climate, variety, planting patterns and yield targets.

A. BLUEBERRIES GROWN IN SOIL

Irrigation Guidelines

- Recommended driplines stocked at Driptech are streamline, Typhoon plus and Uniram. If using micro-sprinklers add 20% to the water dose.
- Recommendations are based on zero rainfall.
- Effective rain event is one over 10mm.
- Rain efficiency should be calculated at 60% rate.
- After a significant rain event, you should resume irrigation when top soil layer starts drying. If soil is sandy or when climate is hot it can be within 2-3 days. If soil is heavy or in cooler periods it can be up to 7-8 days.
- Recommendations are for fully grown plants. If plants are already productive but canopy is not fully grown, use the correction factor (Fc) to adjust the irrigation amount.



Fertigation Guidelines

•We recommend applying fertiliser in every irrigation, split the total amount for the relevant period in to expected irrigation events. If you cannot fertigate every irrigation, it is recommended to fertigate at least once a week
• Fertigation should start only after the system is fully pressurised and stopped 30 min before irrigation is stopped.
• In case of rain, skip

irrigation but do not skip fertigation. Fertigate with a high concentration of fertiliser and a small water volume.
• Blueberries requires acidic surroundings. pH should be adapted to 4.5-5.2 and 5-5.5 for Rabbiteye.
• Blueberries prefer NH4 over NO3, thus use appropriate fertilisers (high Ammonium) and take into consideration the effect of the fertilisers on soil pH.
• % NH4/N - Total: ~70%

B. BLUEBERRIES GROWN IN SOILLESS SUBSTRATE

Irrigation Guidelines

• During irrigation planning, the substrates' volume, chemical and physical characteristics as container dimensions and shape must be taken in to consideration because they have a major effect on irrigation quantity and frequency.
• As container volume is limited, frequent irrigation may be needed and beneficial. Yet, length of irrigations must be moderate (>5 min) to avoid salination of the substrate.
•Adequate drainage is crucial to avoid salination of the substrate.
• On-going chemical analysis of both drainage water and irrigation water are crucial.
• Always keep EC-out level higher by ~0.5 point than EC-in level.

Fertigation Guidelines

• In soilless substrate we work in concentrations, not quantities.
• It is recommended to apply fertiliser in every irrigation, so split the total amount for the relevant period in to expected irrigation events.
• Determine the required nutrient for plant growth according to plant development status.
• Adjust the nutrition procedure according to substrate characteristics.
• Determine the correct ratio between the various elements.
• Adjust the pH level.
• Avoid salinity problems.
• Trace elements are absent in soilless media and, therefore, must be added.
• Continuance, on-going chemical analysis of both drainage water and irrigation water are crucial.
• Blueberries require acidic surroundings. pH should be adapted to 4.5-5.2 (5-5.5 for Rabbiteye)
• Blueberries prefer Ammonium nitrate (NH4) over Nitrates (NO3). Use appropriate fertilisers (high Ammonium, mainly during vegetative stage) and take in to consideration the effect of the fertilisers on soil pH.
• Maintain a high level of micro-elements, mainly during vegetative stage.
• When moving from vegetative stage to flower bud differentiation, Total Nitrogen (N) amount and NH4 percentage should be decreased. Potassium, Magnesium and Calcium should be increased.
• One day of irrigation without fertilisers is recommended once every week or two, since substrate EC typically increases due to frequent use of Sulphur-rich fertilisers.

FINAL NOTES

• Blueberries have a very shallow root zone with no root hairs so frequent irrigation is important.
• Blueberries are sensitive to both water deficit and water excess.
• Blueberries are sensitive to salinity (do not irrigate with water that has EC levels above 2ds/m).

With a tonne of knowledge impacted during the field day, farmers left the blueberry Farm knowing that blueberries reach their full genetic potential when they are given the right amount of water and nutrients at the right time throughout the growing season.

Images provided by Driptech & Hannah Rothwell

DripTech

THE RAINY SEASON IS COMING...

Jumbo TANKS

0867 700 7000

The Pecan Industry in Zimbabwe.

by Dr Jeremy Hubert, Balu Pecan and Livestock Company Ltd, ARDA Balu Estate.

Pecans have been grown in parts of Zimbabwe for well over 70 years but the industry is still small and undeveloped. The first experimental plantations were established in Mazowe on the Highveld in the north and Chiredzi Research Centre in the lower south of Zimbabwe. Early commercial plantations have been producing since the late 1960's. These plantations were small and located on the Highveld areas and in both the north and south of Zimbabwe.

The industry has received much interest over the last decade and there is an associated increase in commercial production throughout the country. New plantings have occurred since the early 2010's and are on going. This response is due to improved security of land tenure, increased investor confidence and emergence of pecans as a global commodity. It is also reflective of the much bigger and successful industry in South Africa with Zimbabwean producers looking to legacy crops with a strong export potential.

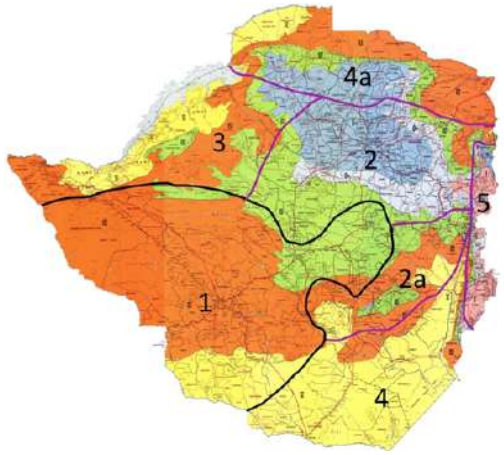
Zimbabwe Regional Pecan Suitability

The suitability of the regions in Zimbabwe are still debatable with plantations now occurring both in the high rainfall areas of Mashonaland East and West Provinces, as well as in drier colder areas of Matabeleland Provinces, above 1000m.

Based upon the relief map of Zimbabwe areas of suitability have been defined in order to establish preferential locations.

1. This area includes much of Matabeleland North and South. Largely situated in Natural region 4. The rainfall, sandy soils and the high winter chill units and hot summers make these areas the most suitable for pecan production. Under irrigation only.
2. This area has higher rainfall than area 1. Winter chill units will be satisfactory, but the higher rainfall means greater scab risk and therefore restricts variety suitability.
2a. Lower rainfall than Area 2, but warmer winters may reduce winter chill units. Limited local suitability
3. This area will tend to have winter temperatures which are too high for accumulation of chill units.
4. This region is definitely too warm in winter for pecan production. It is also too dry for rain-fed production.
4a. Adequate summer rainfall for rain-fed production, but winters are too warm.
5. High rainfall and moderate summer temperatures make this region unsuitable. (This area is considered very suitable for macadamia nut production.)

Relief Map of Zimbabwe
Areas of Suitability for Pecan Production



The Current Plantations - Currently Zimbabwe has about 1000ha of Pecan plantations established or undergoing establishment. The annual production is estimated only to be around 200t/annum. However with around 700ha recently planted and more plantings currently occurring yearly this number will increase over the nest few years.

Pioneer planting material (1960's) was selected from the Nelspruit regions in South Africa with a wide range of cultivars planted. These included Pawnee, Ukalinga, Navajo, Barton, Wichita, Choctaw. Now as the industry develops the plantings are tending to follow the trend of what is being cultivated in South Africa that revolves around Navajo, Western Schley, Choctaw and Wichita cultivars.

The nursery industry is slowly developing within Zimbabwe however the majority of plant material planted has been sourced from established South African nurseries. Although the plant material is of good certifiable quality the cross border logistics are not ideal in relation to minimizing transplant shock and early mortality.

Challenges in production - With recent current plantings over the last 5 years local issues have become apparent. Areas of Zimbabwe are highly prone to the species of subterranean termite. This has proved to be an early challenge to growers; with normal mechanisms of termite control not adequate for this particular pest. This may well be related to plants that are also stressed from the extended logistics is importing material.

Zimbabwean Production Overview

The natural attributes of parts of Zimbabwe are regarded as favorable for pecan production with good sandy soils in Matabeleland, adequate chill units and a summer that is not too extreme heat wise nor too wet. Matabeleland has average rainfalls in the 450 - 550mm region whereas in the Mashonaland rainfall is typically in the 700 – 850mm range. However the crop timing is most suitable for current export markets. The crop harvest is slightly earlier than the bulk of the South African production. This may be beneficial to the Southern African trading pecan hub as Zimbabwe will lead into Northern hemisphere markets. The winters are somewhat shorter than in South Africa, and bud – break tends to occur slightly earlier. Several larger scale plantations are underaway in Matabeleland.

The industry will expand rapidly in Zimbabwe over the next 10 years and it is hoped that a thriving small scale out grower industry will develop on the back of the growing commercial projects. The nature of agriculture in Zimbabwe today lends itself to small scale production with a high level of tree management. This industry is viewed upon most favourably by the Zimbabwean Government looking to develop sustainability amongst smaller scale farmers. The Zimbabwean Government is supportive of long-term plantation crops and has provided concessions in that regard.

Finite variables are mainly restricted to water availability and land tenure issues; other constraints are access to intellectual property and on the ground advice as well farmers developing concurrent cash flow models to sustain growing plantations. Funding for these long-term projects needs to be matched with investor expectations. Zimbabwe's access to the international market is yet to be seen but with low entry costs and competitive costs of production, Zimbabwe will be competitive.

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Watermelon Farming - Summer's Bounty

By Francis B. Mapindani, Sales Agronomist Seed Co

Kito F1 Variety

Watermelons are quite synonymous with summer. They are some of the best refresher fruits on a hot summer's day. Watermelons are particularly great for hydration of the human body since they are roughly 92 per cent water. Despite all of its benefits, watermelon production in Zimbabwe has not been quite well adopted over the past years.

However, that seems to be changing, the number of new watermelon farmers has been on an upward trajectory of late in the recent years. Clear evidence on its high Return on Investment from a relatively low start-up cost as compared to other vegetable crops, has probably made watermelon farming more appealing. A full hectare of this crop can be grown for a little over US$2500-00. This will cater for a population of between 6 000 - 8 000 plants per hectare depending on the variety used. If everything is done well, 2-3 large sized fruits can be expected per plant within 90-100 days after planting.

Water melons are generally sensitive to cold temperatures and even a mild frost can severely damage the crop. They generally thrive in hot and humid climatic regions therefore; winter plantings should be avoided in frost prone areas. In Zimbabwe, water melons can be planted in the Lowveld from June to August. In the Highveld, plantings can be from August – September and from January – February.

I am sure you are asking yourself the question, ***"How can I produce my watermelon crop successfully?"*** Using the Right seed and incorporating Good Agronomic practices is the formula to a bumper watermelon harvest.

THE RIGHT SEED

The most popular watermelon variety in Zimbabwe is Crimson Sweet. It is a relatively old openly pollinated variety that has been sold in Zimbabwe for years. It produces medium sized round fruits which have a signature dark green rind with light green stripes. The interior colour gives it its name as it has deep red flesh which is quite sweet tasting. However, Jubilee type watermelons have penetrated the market of late. Jubilee watermelons have a light green rind with dark green stripes which has made them to be coined "Zebra" watermelons. They are relatively large sized with an oval shape. The most popular Jubilee variety in Zimbabwe is Kito F1 from Seed Co Vegetables which produces 10-12kg fruits that have a deep red interior plus a high brix content.

GOOD AGRONOMIC PRACTICES

1. Soil Requirements and Land Preparation

Watermelons thrive in soils with a slightly acidic to neutral pH that hovers between 5.5 – 6.5. Getting your soils tested will help you to know your soil's pH as well as its nutritional status. You can also get to know the level of Phosphates and Salts in your soil plus other critical trace elements like Zinc and Boron. Well-drained soils with good aeration and moisture retention are preferred. A timely addition of organic material which is well decomposed can help in obtaining the right soil structure. Soil must be deeply ploughed and disced

to obtain a good root system for our watermelon crop. This promotes optimal use of moisture and helps to prevent soil-borne diseases. Watermelon roots develop to a depth of 30-40cm thus, the soil structure must be optimal. They can be directly planted as seed or transplanted as seedlings at an in-row spacing of 90cm - 1m and an inter-row spacing of 1.5m – 2m. Plantings can be done on the flat or on raised beds that measure 1.5m centre to centre.

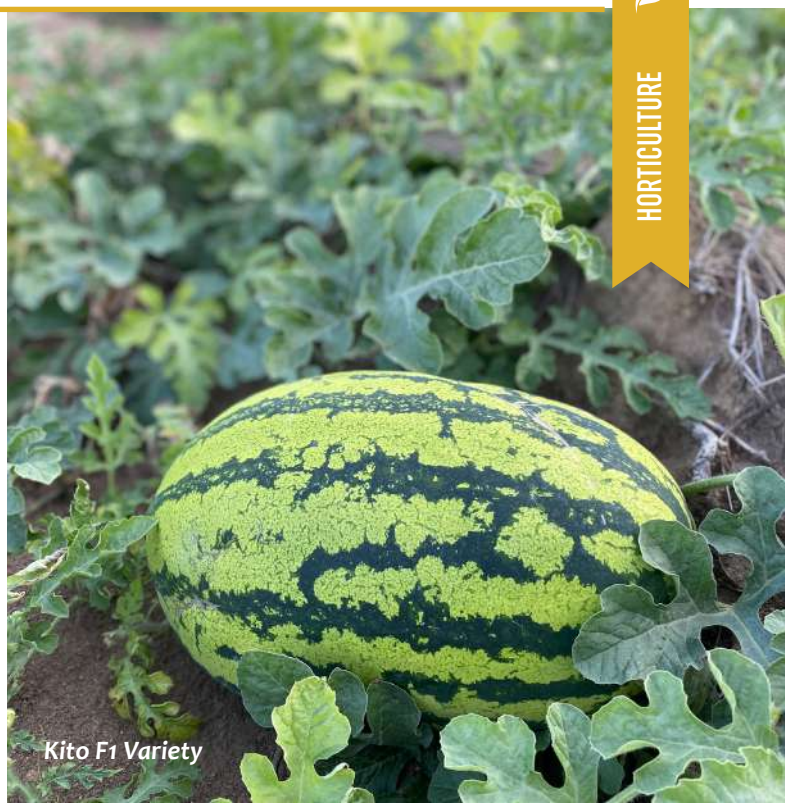
2. Fertilisation

Fertiliser types and quantities are usually dictated by our soil test results but however, general guidelines are always there for farmers to refer to. Compound High C (6:28:23) is recommended as the basal fertiliser in watermelons at a rate of 250kg – 300kg per hectare. Gypsum is also recommended at planting to help mitigate Blossom end rot, a deficiency symptom of calcium that can affect our fruit quality. Top dressing usually starts at 2 weeks after the watermelon seedlings reach the 2 true leaf stage. Ammonium Nitrate is split applied at week 2 and week 4 using a rate of 200kg per hectare. Sulphate of Potash is split applied at week 6 and week 8 using a rate of 200kg per hectare.

3. Crop Protection

Watermelons can be affected by quite a number of disease and pests that can pose a significant impact on the overall output. Fruit quality can be gravely affected by disease and pest agents which might render the produce not sellable in a number of cases.

Major pests - At the crop's formative stages of growth, cutworms and white grubs are the biggest threats. Killing off a young seedling is enough to impact our yields. Larvicide drenches can be used to control these. However, the most economically important pest in watermelon production is the Fruit fly. Fruit fly adults lay their eggs in the fresh flesh of young fruits. When the eggs hatch, the fruit fly maggots feed inside the fruit causing distortion and cracks. These cracks act as the entry point for fungi & bacteria which cause the fruit to rot. This can severely reduce the number of sellable fruits thus impacting the gross return. Chemical control options are available as well as pheromone traps that lure the male fruit flies thus, an integrated pest management system can be used.



Kito F1 Variety

Major Diseases - Powdery Mildew and Downey Mildew are common diseases in watermelons. Both diseases should be controlled as soon as they are detected as any slight delays can be difficult to manage. Leaf damage reduces the surface area of the leaves which heavily affects photosynthesis thus, plant productivity. Anthracnose should be looked out for as well. It typically causes black sunken areas on the fruits which heavily affects their quality. These diseases are all fungal thus, they can be easily controlled using fungicides which include Copper oxychloride, Lime Sulphur and Mancozeb. It is recommended to alternate these chemicals at one-week intervals so as to reduce any possibilities of chemical resistance by the fungi.

4. Harvesting the Right Way

Watermelon is harvested at full maturity and typically does not develop in internal colour or increase in sugar after being removed from the vine. Flesh colour should have reached a mid-pink to deep pink-red or crimson colour depending on the cultivar and it must be firm and crisp. Maturity indicators include the following;

- Dull sound when thumped - dull hollow sound when the watermelon fruit is tapped with the knuckles.
- Death of the tendrils near the fruit as it reaches maturity.

On harvesting do not pull the fruit off the vine, cut the stem about 2-4 cm long using a sanitised sharp knife or pruning scissors.

Crimson sweet Variety

Growing watermelon, if done rationally and on a scalable basis is a good source of income, it is my hope that you have a bounty harvest in you summer 2022-2023 crop.

Precision Agriculture - The New Normal

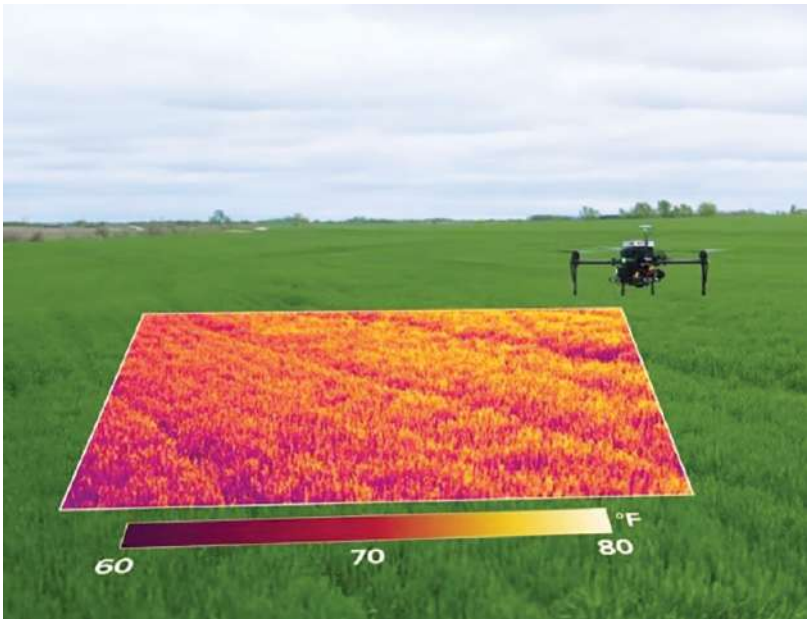
By Tinodiwanashe Mawire

In the recent past there is increased focus on the release of information presenting the most innovative results emerging from research in the field of precision agriculture for both small-scale farmer practises as well as commercial farmer practices.

Precision Agriculture (PA) is described by McBratney, et. al (2005), in their book Future directions of Precision Agriculture, as a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops. This definition was then simplified by Mr Schmaltz the CEO of Decisive Farming to everything that makes the practice of farming more accurate and controlled when it comes to the growing of crops and raising of livestock.

In the systems approach, PA is regarded as a way of thinking beyond specific technologies where the practice focuses on adapting and adopting to the constant changes that the world is experiencing. In which this consequently allows for better management of both spatial and temporal variabilities of production on the farm through scheduled and spot application of inputs resulting in sustainable food production. Because of the variability in technologies of employment in the farming practice, some of terms that used together with this concept are Precision Agronomics (combining methodology and technology) and Site-Specific Management (the management of agricultural crops at a spatial scale smaller than that of the whole field).

Use of multi spectral imagery for crop monitoring



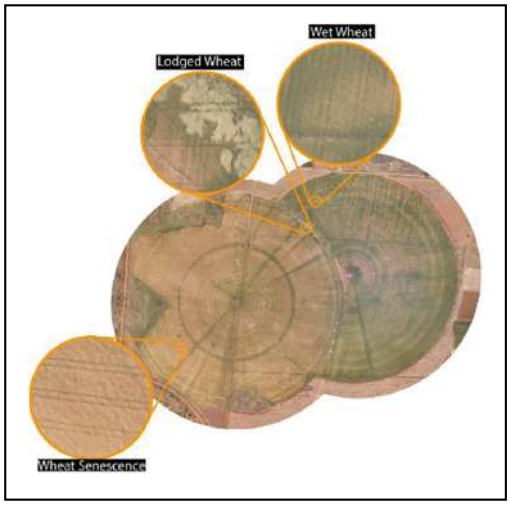
CROP MONITORING

Through monitoring crop status, by measuring variables such as soil conditions, plant health, fertiliser and pesticide effect, irrigation and crop yield, decisions are then made informed by facts rather than umbrella applications that do not take into consideration the variables in the field. By making such informed decisions, adoption of PA results in:

- Enhanced input use efficiency.
- Reduced environmental impacts such as leaching of unused nutrients which leads to eutrophication (pollination of water bodies).
- Irrigation efficiency.
- Labour use efficiency (reduced labour).
- Efficient use of time.
- Increased farm profits and production quality by reduction of input costs.

ADOPTION OF PRECISION AGRICULTURE

PA is not a one size fit all concept, but one that requires gradual approach, in consideration of the resources that one is exposed to. Application of PA concept can be a balanced soft or a hard approach based on the needs and specific socioeconomic conditions of the specific country, which makes PA not only suitable for developed countries but also for developing countries. Simple technologies like conservation farming, **(Pfumvudza),** that encourage principles of timeliness, high standards and reduced wastage are also part of the PA concept adoption.



Field mapping for crop harvesting forecasting

LAND PLANNING AND PREPARATION

PA should be embedded into the farming systems in the planning phases by starting with proper land use planning. The concept of land use planning is the foundation of all systems of PA for any farming endeavour no matter how small. Land use planning will help determine the suitability of your land for the different enterprises of the farm and it also include aspect like soil profiling and topography analysis which will ensure the right crop is placed in the right place.

Soil preparation for planting is critical for establishing the appropriate tilth that allows good crop establishment, impacting on the final yield. A well-prepared soil facilitates correct planting depths, good soil seed contact and correct seed spacing, all impacting the yield of the crop. Timeous land preparation will also mean timeous planting. Research has indicated that delaying to plant maize by a week reduces yields by 5%. Precision in timing of planting can be increased by the availability of irrigation.

CROP WATER MANAGEMENT

A precise assessment of crop water requirements is the first step in ensuring that adequate water is applied to the crop. Over irrigation and underirrigation are equally damaging to the crop and the environment and should be avoided. Precision agriculture entails that a farmer should select an irrigation method or system that supports crop requirements, minimises water loses while supplying water uniformly across the field. The introduction of technologies like drip irrigation, centre pivot and microjet systems are examples of technologies that farmers should adopt in ensuring precision irrigation management. Furthermore, one may also be able to schedule water supply with fertilisation to avoid loses through leaching.

PRECISION IN FERTILISATION

Precision in fertilisation starts with the selection of the correct plant nutrients required to support the growth of a selected crop. Soil sampling and analysis should be the first step, as this will help determine the soil nutrient status as well as the soil type. A combination of soil analysis data and the prescribed requirements for the particular crop will result in the application of the right fertilisers in the right quantities at the right time and at the appropriate crop stage. Application of fertilisers at the wrong growth stages promotes inefficient utilisation of nutrients by crops.

CROP HEALTH

Weed competition with crops for nutrients, moisture and sunlight significantly reduce final yield. PA requires a farmer to have information of the types of weeds dominant within his field, their sizes and the soil type (soil analysis result). The farmer can thus select the best approach to control the weeds, be it mechanical or chemical or even a combination of both. When using herbicides the application rate will depend on the weed spectrum, growth stages of the weed, as well as the soil type. Proper calibration of the spraying equipment used is an imperative to avoid under and over application of the herbicides. Delayed and inefficient weed control may result in 30% loss in the potential yield of the crop.

TECHNOLOGIES OF PRECISION AGRICULTURE

Various technologies are being discovered and introduced, which will help in enhancing the level of accuracy and control of the operations, thus increasing the level of precision. The use of technologies such as remote sensing, drip irrigation and field mapping serve as a tool to help the automation of a well-designed system and as a result increasing the number of correct decisions per unit area of land. The farmer should therefore work on improving the systems and cultures on the farm that are premised on precision farming as it is now the way to go.

Conclusively, PA is generally the practice of doing the right things at the right place and at the right time, with accuracy and control, as informed by data collected from the different variables in the field.

Images by Scout Aeriel (See Zimunda Issue 4 magazine) & ZiMunda Farming

Feather Loss in Chickens

By General Beven Mundida,
Livestock consultant

Feather loss in chickens can easily be a frustrating outcome in new farmers. It can either be a natural process of the annual molt or be a result of many other factors that can lead to a sudden drop of feathers. These can either be natural and cannot be altered or health related and can be regulated by paying close attention to your flock's health and behavior. Some of these factors include;

a. Molting

Molting is a natural occurrence where nothing can be done to stop it. It starts sometime between the age of 16-18 months (depending on when she was hatched). The chicken molts to shed off old and battered feathers that no longer keep warmth and replaces them with a new set of beautiful, shiny and warm feathers that will do good job in heat retention in the next winter.

Some farmers find that their chickens start molting from the

head and neck area first yet others report that their chickens lose body, wing or tail feather at random times and in no perceptible order. Some hens will have a soft molt and this is where you can barely tell if she is molting or not. Whilst others will have a hard molt looking like they have been through a chicken plucking machine.

The growing of new pin feathers can be painful hence avoid touching the bird and keep an eye out for any bullying. Sometimes fellow flock mates may pluck out some of the blood quills and eat them as they are a good source of protein.

b. Disease and Poor Nutrition

Most diseases in chickens do not necessarily cause feather loss however the feather loss can be due to an illness or poor nutrition. In essence this is not a cause but a symptom. Feather loss can be observed in diseases such as fowl pox, cutaneous Marek's polyomavirus, malnutrition and gangrenous dermatitis. The good news is that most of these diseases are uncommon but if you suspect any of these common diseases (cutaneous Marek's and Fowl pox) then make sure to get a diagnosis and treated.

If the chickens are free of disease and not molting, a farmer has to review nutrition. Malnutrition can occur if the current feed brand is not providing enough nutrients. Switching the feed brand can be a solution to complete nutrition. If you are producing on farm-feed through mixes, make sure to add vitamins, minerals and trace elements. If a chicken has been severely malnourished for a while it is possible that it will never grow all its feathers back.

c. Predator Attacks

Predator attacks are stressful to the whole flock and not just the bird that was attacked. The stress can trigger feathers to fall out and it can take weeks for them to get back to normal. Birds that survive a predator attack usually have a lot of missing feathers and perhaps some flesh as well.

Young inexperienced predators may end up with only mouthful of feathers but the more experienced ones sadly end up with a chicken for a meal. Sometimes after a predictor attack, all you will find is a pile of feathers and it can be very emotional. If the bird survives an attack, immediately for wounds. The predator will have removed a good clump of feathers from the area but you may also find teeth marks, tears and talon rakes.

The dense layer of feathering has been a lifesaver for many birds. As the predator is dealing with a mouthful of feathers the bird can sometimes escape to safety. Needless to say, this can be utterly traumatic for the bird. It will be frightened for a while; is will likely stop laying eggs and may go into a molt. Overall, it will likely take several weeks for your bird to get their feathers back.

d. Lice, Mites and Other Parasites

Imagine having nasty little ants or spiders walking through your hair. That is what happens to chickens when they get lice and mites. These parasites will congregate in certain areas, usually the shafts of feathers and around the vent as it warm and moist. They cause intense irritation and the chickens will scratch and pull out their own feathers in an attempt to be rid of them.

Lice do not suck the blood of their host but live on the discarded skin scales and other detritus found on the chicken's body. Whilst, mites will suck the blood of their host and in extreme cases this can lead to anemia, sickness and eventually death. Depluming mites are probably the worst since they burrow into the skin of chickens around the feather follicles and can be difficult to get rid of.

Checking and treating your chickens for external parasites should be done regularly to avoid finding an overwhelming infestation. Minor infestations can be treated with poultry dust and farmers should not forget to treat chicken houses and nesting boxes too.

e. Mating

Hens that are frequently mated by the roosters can start to develop bald areas. Her back can become quite bald by the end of the season because this is where she is grabbed by the roaster for stability. Some bald spots can appear on her back where the roaster treads her with his feet. During the mating season, you should check these areas often and carefully. If the rooster is overly amorous, he can tear up her skin with his talons causing pain and blood to shed. If you find any wounds, they should be gently cleaned and then covered in antibiotic ointment. Deep tears may even need stiches so you will need to contact a veterinarian. While these wounds are healing the hen must be isolated to give time for her feathers to grow back.

f. Broodiness

Broody hens are easy to spot. They are grumpy, bad tempered and look like they are ready for a fight. Once a broody hen is settled into their nesting mode, they will pluck feathers from their breast. This not only lines the nest with warm downy feathers for the chicks to rest on but is also ensures that the incubating eggs are right next to her skin. This means her body temperature can easily keep the eggs as the right temperature for hatching and the chicks will be kept toasty warm after hatching. A bald spot will appear somewhere near her keel bone. It will be difficult to see since she is not likely to let you pick her up. The plucked area will soon regrow some feathers as many broodies will go into a molt after raising their chicks.

g. Preening

Chickens occasionally lose feathers when they preen. This is where they take oil from the preen gland situated at the base of the tail. And spread that oil over their feathers using only their beak. The process helps to keep feathers in great condition. During the preening process the bird may remove broken feathers that are unsightly. They do usually lose a lot of feathers during preening so you probably will not see much difference in the hen's feather covering.

Since it is unsettling to have one or more of your chickens' missing feathers, while you cannot speed the regrowth of their feathers, the following overall tips will create the best environment for them; provide dietary protein; prevent boredom; provide a dust bath against lice and mites; and isolate a pecked chicken until the feathers grow back.

For more information on poultry health contact Beven on +263 776 420 161 or email: gbmundida@gmail.com

Starting off With Day Old Chicks vs Point of Laying

By James Kabinda, Animal Production Specialist

Oftentime, new layer chicken production farmers have to decide on their business strategy by answering this question – Should I start off with Day Old Chicks (DOC) to sell as Point of Lay chickens (POL) or must I buy POL chickens for egg production?

Reflecting on a heated debate that I had with a colleague a few years back about advantages of starting with day-old chick's (DOC) vs young chickens (POL) in egg production – I believe that both launches are profitable. However, comparing which launch is more profitable than the other requires a thorough understanding and assessment of the risks (financial or administrative) associated with each start. Also, this argument should not be based on comparing which launch is more profitable than the other, but how profitable each launch is. Below is a comparison of the risks and economics of both starts.

Risk Assessment

Since hens usually start laying eggs around 18-22 weeks of age, buying in POL pullets for egg production is the easiest way to get started. POLs are easy to keep, at this age roosters are quite distinct from hens and egg production is instantaneous (quick return) translating to prompt income. Without a doubt, starting off with POLs is an expensive method because of their acquisition cost, therefore there is need for careful consideration when buying them. On purchase one should only purchase stock from a reputable producer and be careful not to buy;

- Poor flock quality – this will translate to poor egg production in both quality and quantity hence a huge loss on investment.
- Bad birds (unhealthy) – some suppliers do not feed or vaccinate the birds properly.
- True age of birds - sometimes suppliers may lie about the true of age of the birds and they will not lay when expected to or they may have a shorter egg laying span.

A different strategy would be to purchase DOCs - this requires a much higher level of stockman ship as compared to starting off with POLs, so one might need to wait on this strategy until they have more experience in poultry management before trying it. For instance;

- Vaccination programs - many vaccinations are administered from DOC to POL, which calls for skill. As opposed to POL, which administers two vaccination programs via spray or drinking water at 8 weeks intervals.
- Brooding difficulties - There are many risks associated with brooding difficulties and mortality rates when raising birds from the day they are laid, which is one of the main reasons why some people may shy away from doing so because there is a higher risk of mortality.

As with POL birds, the same goes in purchasing DOC, one only has to only buy from unscrupulous suppliers.

Cost Benefit Analysis

The effectiveness of these two strategies also depends on the amount of funding available for each start. Starting with POL birds requires a significant sum of money, that must be available before beginning the project, whilst starting with DOC birds only requires a small amount of money because raising a day-old bird is less expensive than buying a point of lay. Raising one POL pullet versus raising a layer chick from day old to POL can cost as much as $11.00 more. A DOC would cost about $4.26 to raise to POL (18 weeks) and a single POL pullet would cost about $17.21 to raise to egg production (18 weeks).

Accordingly, an enterprise producing eggs starting from POL would have a negative gross margin of $4.71 per bird after 18 weeks, while an enterprise starting with DOC would have a negative gross margin of $4.26 (i.e., cost if not selling as POL) per bird (Table 3). It can be observed that there is not

much of a difference in gross margin for the first 18 weeks for either start, though there would be a significant difference with more birds. However, if the aim is to sell at POL after rearing from DOC, a producer can accrue up to $2.50 per bird (Table 4) in gross profit.

Table 1: Simplified budget for an 18-week rearing per bird (DOC start).

VARIABLE COST (VC)	AMOUNT (US$)
DOC (per bird)	1.4
Layer feed (per bird for 18 weeks egg rearing)	2.29
Vaccine costs per dose	0.37
SUB TVC	**4.06**
5% misc. costs	0.203
TOTAL TVC	**4.263**

Table 2: Simplified budget for an 18-week egg production per bird (POL start)

VARIABLE COST	AMOUNT (US$)
POL (per bird)	8.00
Layer feed (per bird for 18 weeks egg production)	8.16
Vet costs	0.029
Empty crates	0.2
SUB TVC	**16.389**
5% misc. costs	0.81945
TOTAL TVC	**17.20845**

The total number of eggs produced from a single pullet over an 18-week laying period, assuming a laying percentage of 85% will be around 107 eggs. If the eggs are sold at $3.50 per crate, the enterprise receives a total revenue of $12.49 per bird (Table 3).

Table 3: Gross margin analysis for raising a single POL for an 18-week egg production period.

Selling price per crate (US$)	3.50
Target laying percentage (%)	0.85
Total eggs for 18 weeks laying per bird	107.1
Number of crates	3.57
Gross income (US$)	**12.495**
Less TVC	17.20845
Gross margin (US$)	**(4.71345)**

Table 4: Gross margin analysis for raising a single DOC for an 18-week rearing period to sell at POL.

Selling price per POL (US$)	8
Target liveability (%)	0.85
Total birds at 18 weeks old	0.85
Gross income	**6.8**
Less TVC	4.263
Gross margin	**2.537**

Cost Benefit Analysis and Risk Assessment as explained above can provide any new farmer with mindful insights and considerations before making the decision on which strategy to pursue when they get into the layer and/or egg production business.

Images provided by Melissa Katunga and Foundations for Farming.
For more information on layers contact James Kabinda on jameskabinda@gmail.com or +263 774 225 873.

The Somerset Hub Launch

By Dawnveiw Ranch, Marondera

Through the Nestlé Dairy Empowerment Scheme (NDES), we have witnessed the growth of the Hub and Spoke model within the Dairy Farming Sector of Zimbabwe. In this model an anchor farmer is identified within a farming area and a milk collecting facility is erected at their farm. Thereafter, out growers around an anchor farmer can also use these facilities to deliver their small batches of milk, which is then collected by Nestlé in bulk at once. The anchor farmer does not only host the local farmers to use the dairy facilities like cold chain management of milk, but also hosts on-farm-training for knowledge sharing.

In 2015, this strategy was put to test in Chitomborwizi in Mashonaland West and thereafter building on its success, Nestlé Zimbabwe moved on to build other farmer networks in Watershed in Hwedza (2019), Agroprosperity Trust in Marondera (2020), AgroProsperity Trust at Malwatte Farm (2022) and now our very own Sommerset Milk Hub at Dawnveiw Ranch.

A touch of History

Dawnveiw Ranch was founded in January, 2019 by Wellington and Lydia Nheta. It began as a mixed farm producing Boran stud animals, beef, biofortified beans and green vegetables, and poultry. Lessons learnt from the beef farming division reflected that it takes a waiting period of up to 3 years for a farmer to start realising any profits. Hence, we needed to compliment beef farming with something that brings in cash within a shorter period of time so as to improve our operational costs. For example, a dairy cow unlocks more immediate value with 19 l/day at 60c a litre. The dairy industry also has a more structured and ready market given the huge gap in the country's milk output. The cash we receive from our processors weekly allows us to meet the day to day running costs at our farm.

The growth of both the farm and the herd was inspired by the efforts of the Heifer Grant Program and Matching Grants Facility (MGF) chaired the Transforming Zimbabwe's Dairy Value Chain for the Future (TranZDVC) project and ushered by We Effect.

Lessons from our Management Strategies

The founding cow of the Dawnveiw Ranch, Lynne used to give only 10l of milk per day but with growth, research and experience we have increased our milk output to 20l/day/cow averaging to a total of 500l/day. Our herd is now comprised of 27 milking cows,14 heifers, 2 bulls and 21 calves. Our milk output hinges on the following management factors;

- Proper feeding thus gives good body condition.
- Excellent hygiene suppressing mastitis incidents.
- Intended and careful breeding thus good traits in our herd.
- Maintaining good health standards

Feeding facilities

Reproduction Approaches

At Dawnveiw Ranch we primarily use natural breeding methods as compared to Artificial Insemination. Our herd sire, Gibson is a Holsten. We acquired him from Mr Mhofu, a seasoned farmer in Beatrice a year ago. This bull struck us because of its;

- Capacity to increase milk production quantities in its progeny.
- Milk with high fat and protein content which means more revenue.
- Good levels of Somatic Cell Counts in the calves that it sires.

We are looking forward to using Artificial Insemination in the reproduction of our herd - which will allow us to cross our breeds and acquire new genetics. Local crosses are cheaper to purchase, more resistant to diseases and are small framed

The herds' grand sire

hence require less feed as they have smaller stomachs.

Somerset Hub Launch

The growth of our ranch has awarded us the opportunity of being selected as a Dairy Hub hosting 40 farmers who produce 700 litres per week from indigenous animals. As the anchor-farmer we host the local farmers - they use our dairy facilities like cold chain management of milk, on-the-farming, access dairy feed production and processing, vaccines and market for their produce to ensure availability of their business. During the official launch of the Somerset Dairy Hub by the Zimbabwe Association of Dairy Farmers (ZADF) and the Government of Zimbabwe, Mashonaland East Minister of State for Provincial Affairs and Devolution, Hon A. Munzverengwi encouraged farmers to continue doing the best in what they do as she applauded the Mashonaland East province for contributing up to 39% of the milk into the country.

During the launch Dr J. Nyika, Chief Director Department of Veterinary Services, emphasised on udder health noting the importance of keeping a healthy blood flow into the udder for the profitable production of milk quantities. He invigorated Dairy farmers to be vigilant on mastitis diseases as its effects are grave and economic.

The way forward

At Dawnveiw Ranch is looking forward to expanding our dairy operations by increasing our herd to around 75 to 80 animals and producing 5000 litres of milk per week. We are hoping that we get access to land with a longer tenure which will allow us to put more permanent structures. In addition, we would like to curb the high cost of feed by enhancing sustainable production of low-cost dairy feeds such as silage, pastures if we get more grazing land. Sommerset Milk Hub will continue to foster Public Private Partnerships which are key to driving our countries' National Development Strategy 1 (NDS1).

Backlinks - For more information on dairy farming refer to ZiMunda Farming;

Magazine Issue 9 – Key factors that determine the success of artificial insemination.
Magazine issue 8 - Commercial Dairy Farming Field Day at Mafuro Farming.
Magazine issue 8 - Nestlé Celebrates World Milk Day at Malwatte Farm, Marondera.
Newsletter issue 21 - Quality Control in Dairy Production.
Newsletter issue 20- Mafuro Farming– Building a Profitable Pasture-Based Dairy
Newsletter issue 18 - Becoming a dairy Farmer.
Newsletter issue 14- Mastitis in dairy cattle production & its management and increasing.
Newsletter issue 5 - Dairy Profitability Using Sexed Bull Semen.

Companies setting up for the field day

Showcasing the Tuli at Fabwell Farming

By ZiMunda Farming with Doug Follwell

Tuli based genetics have consistently shown higher PD's (Pregnancy Diagnosis). The breeds' udder uniformity and teat size play a significant impact, in which the Tuli breed is renowned for.

Fabwell Farming is a well-established Tuli farming enterprise in Zimbabwe. It was founded in 2018 by Mr. Luka Fabris and Mr. Doug Follwell in the region of Kezi - Matabeleland South and Norton - Mashonaland West. In the face of growth its operations expanded Gwanda, Matabeland South. The success of the farm has been attributed to a lot of team work between Doug Follwell (known as Coach by his team), his wife, the financial support from his partners and his team of employees. Doug prides himself in having built a family feel in the workspace because he and his team foster an attitude of gratitude, are social and genuinely enjoy what they do in their different workspaces.

Since the team at Fabwell Farming has gained a lot of hands-on experience over the years on their Tuli division, Doug decided to have a field day and gather interested parties to come have a tour and listen to talks around their Norton farm. The field day was packed with farmers, vet doctors and even companies such as Softrite Payroll, various stockfeed companies, Fivet and Coopers animal health came through to mingle with the farmers and share about their services.

As a follow up to some of the talks done by Doug during the field day, ZiMunda Farming compiled a few questions for Doug to share with you.

ZiMunda Farming (ZF) - Why did you choose to farm with the Tuli?

Doug Follwell (DF) – I have found that the Tuli are very adaptable to our various farming regions around the country. Their ease of temperament, high fertility, exceptional udder and teat placement amongst other factors makes the Tuli an easy caring beef cattle breed.

A well built cattle handling facilities at Fabwell Farming.

Insights on Reproduction

ZF - Having stated during the field day that your heifer selection programme is strict from the beginning and that your first priority in selection is for fertility. Can you walk us through this process on how you select your heifers to be permanent cows in your herd (from weaner to cow selection)?

DF – Weaner heifers are selected with Herdmaster ratio performance data shortly after weaning. The remaining heifers are all carried through to bulling at two years old and exposed for a short duration bulling season. We do not keep

Mr Doug Follwell

any heifers that are not pregnant, regardless of their genetic potential. The most difficult group are the first calver's to reconceive. Often requiring additional management and nutritional supplementation.

ZF - Since fertility and a short inter-calving period (ICP) are two important factors in every livestock enterprise. How are these managed at Fabwell farming?

DF – Seasons and conditions vary. It's up to management to ensure that the herd is maintained with enough resources to allow optimal conception in the breeding season. It may require a change from the norm, season by season. Watch the rains and grass growth accordingly. Change dates slightly if need be. The critical art is vigilant herd attendants to note that females are cycling and bulls mounting. A delayed approach does not leave time to rectify the situation.

ZF - During the field day you touched on how your bulling season is changed according to the rainy season (pentads). How is this done and what advantages have you garnered from this management practise?

DF – The grass flush with the onset of the summer rains is the greatest free gift of nutrition to any livestock farmer. It's only my view. Grass grows two weeks after the first soaking rain. Two weeks to allow enough growth to get gut fill. Two weeks for the rumen to adapt to the massive protein adjustment and to get over the running stomach - six weeks have gone by already. Only then will the cattle start to gain weight and be able to perform fertility functions.

ZF – During the tour, the participants had an opportunity to see your magnificent bulls, hear of their history and condition such as ramp fat, inter and intra muscular fat as well as eye muscle. How some of these important in bullying?

DF – Yes in my opinion. The level of body fat is an indication of the animals reserves and being able to draw on these to allow for reconception.

ZF – Because you hold a unique and outstanding gene pool in your bulls in Zimbabwe, in your opinion what makes a good Tuli bull?

DF – Each breeder chooses what they prefer and that's what keeps it all interesting. I prefer larger framed animals so long as I maintain the fertility within the herd. Bulls should come from fertile dam lines, be very functional and therefore able to cover the cows. Over the past few years, I have used bulls with larger eye muscle area and have considerably more fat scan data available.

Because I have chosen the route of my gene pool, two large feedlots within Zimbabwe have been able to see that my particular Tuli cattle are performing to a very high standard, they have higher than expected average daily gains and very importantly fat deposition comes quickly. I have been selecting for this. Carcass size has been an added advantage.

Perceptions on Nutrition Management

ZF - Pasture and grazing management is one of the most important aspects of cattle ranching. Taking note that Fabwell Farming is located in different regions and grass type, what management aspects are the same for both?

DF – grass height during the rainy season is critical to manage the protein requirements

Part of the audience at the Tuli field day

Top notch bull genetics on show at Fabwell Farming.

ZF - What is done differently in two locations?

DF – only the date of the bulling season. In Mashonaland we bull cows 23rd December and in Matabeleland we bull cows 1st March.

Observations from your Health Management System

ZF - What are the lessons you have learnt from your vaccination programmes and chemicals?

DF – Prevention is better that cure.

Importance of Record Keeping

ZF – Fabwell farming is embracing technology through Bluetooth ear tags. Why have you taken this direction and how is it benefiting your record keeping?

DF – Each animal is individually bluetooth tagged . No two animals can ever have the same bar code. This has helped tremendously with stock records and greatly reduced the human error factor. Using technology this can all be checked on the computer.

ZF – If one has a very large herd, record keeping can be a very tedious job to execute correctly and timely. During the field day you elaborated how HerdMaster, the herd recording and management package has been your life saver; can you explain how this is so?

DF – With a combination of Gallagher equipment to record data and Herdmaster we are able to use the data collected to make informed breeding decisions. This could be days to calving, inter calving period, birth weight, weaning weight, potential mature cow weight. Milking ability and many others. This program is so powerful that a number of traits can be selected for.

ZF - Any parting words to fellow Tuli farmers?

DF - Livestock is a long-term investment that requires a lot more daily management than most people give farmers credit for. It takes about five years to get a viable breeding herd operational. Do not over stock. The best investment is buying a bull that will have a positive influence on the future performance of your herd - seek advice before hand.

Financial Sustainability in Beef Cattle Production

Every year since 2012 (except for year 2020 – Covid pandemic), around the month of September all roads lead to the Beef School which was held at ART Farm, Harare from the year 2012-2017 and thereafter, Bulawayo at the Mystique Conference Centre. This year was no different. From the 20th to the 22nd of September, beef farmers and companies supporting the beef value chain were gathered once again Mystique after what looked like a very long Covid break. The three-day conference was packed with educational talks from both local and international seasoned farmers and professional experts (See page 31). To complement this year's theme ***'Financial Sustainability in Beef Cattle Production',*** there was also a live demonstration by an expert Fungai Nyagwande and Chef Ryan Warham on the various cuts of a hind quarter which was kindly donated by Grills.

Ramblings

On the second evening, after the awards ceremony the podium was graced by Dr Japie Jackson; a well-seasoned farmer; a very knowledgeable veterinary doctor; and the farmers role model. His rumblings took the night away as he was honoured by an award in acknowledgement of his dedicated lifetime service to the livestock community. Dr Jackson was born on Riverton Farm, Masvingo east and qualified with a BVSc degree from Onderstepoort in 1954. His first employment was as ranch veterinarian on Liebig's Ranch in Beitbridge, West Nicholson and Nuanetsi districts. In 1975, he joined the government vet department and in 1975 went full time farming with a veterinary practice.

His main interest since youth has been the natural veldt and the interaction between cattle and vegetation. With cattle, fertility in the measure of their well-being and pregnancy diagnosis (PD's) became the thrust of his practice. And now, with more than one and half million PD's later, done over and over again, on many different kinds of veldt, under so many kinds of management, in so many different seasons and so many breeds of cattle, a picture has emerged in his mind which he shares often at field days and events like the Beef School.

Taurai minding the registration desk.

Dr Jackson sharing his wisdom during the question and answer section.

A bit of mingling at the Polachem stand during tea break.

Dr Beffa cordinating the event.

Year of Nkone

At the end of the Beef School, the Nkone Cattle Breeders Society of Zimbabwe were honoured to be asked to close the occasion with a vote of thanks and take up the torch for **"The Year of the Nkone"** culminating in Beef School 2023. Tara Maidwell, the secretary represented the Society. In her speech she acknowledged how truly productive and professional the 3 day event had been and went on to say that "*I for one have learnt an incredible amount and if we can all take just one new idea, one new system, one new treatment and implement it into our herds, our communities, our business plans, we can ONLY make our Cattle Industry better. We have been given the knowledge and tools, let's use them. Beef School is only possible through a team effort so let us start with the captain of the team - Zimbabwe Herd Book".*

A Vote of Thanks

The birth and growth of the beef school is indebted to the late of Dr Bradfield for his assistance and support in the regional beef industry. This year's beef school (10th) was totally independent of the Aldam Stockman School, South Africa. In a statement John Crawford, the ZHB Chairman remarked that *"We have learnt a lot from our neighbours and thank them for their assistance".*

Now the ZHB team has taken up the reigns and made the event possible; Dr Mario, who brought together the speakers and chaired the event; Craig, ZBH's Techno guru who made all visual, audio and cyber connections possible; and Taurai, a smiling face that kept everyone calm and collected, answered the queries and questions patiently. During the vote of thanks, a special mention was given to the following sponsors who helped make this event possible; National Foods, Feedmix, Coopers, Windmill, Polachem, Profeeds, Grills, NMB Bank, Fivet and Agrifoods; the Brahman Society for taking on the task of showcasing their beautiful animals and for the very informative talk; and the Mystique Conference centre staff who hosted and catered the event.

The event was a tremendous success and till next year. In the meantime, we celebrate the Nkone breed!!

A FeedMix representative handing out gifts during their sponsers section.

A beautiful display of the Brahman breed.

Meat cuts demostration.

Below is the list of topics covered at the beef school (Power Point Presentations can be downloaded on the ZHB website https://zimherdbook.co.zw/Beef-School.html). A few selected articles will be showcased in consequent ZiMunda farming magazines.

Pasture Management	
Prof Kevin Kirkman	Rotational grazing systems that suit your environment
Ray Young, Doug Follwell and Ferdie Jordan.	Bush Control – A local perspective on the use of Limpopo 200GG for controlling encroaching woody vegetation to improve carrying capacity of natural pastures in the Bulawayo region.
Dr Richard Fynn	The Drews venter grazing system for the Zimbabwean Highveld.
Prof Kevin Kirkman	Lessons from years of research in grazing.
Cattle Health	
Dr Doug Bruce	Farm biosecurity.
Dr Nick McHardy and Dr Oswin Choga	Diagnosis and treatment of Theileriosis.
Dr Josphat Nyika	Disease Update.
Meat grading and Beef Value Chain	
Dr Patrick Tawonezwi	Live animal and carcass classification and grading systems for beef cattle, goats and sheep in Zimbabwe.
Blessing Doro	Beef value chain – efficiencies and delivering value to the consumer
Financial Aspects in Beef Production	
Erasmus Bhunu	Budgets, cash flows and accessing loans for cattle production.
Chris Light	Block chain and crypto currency in the meat industry.
Fradreck Chimhenga	Where farmers fail financially in the modern-day Zimbabwe.
Charlie Rundle	Auctioneer's observations on cattle marketing in Zimbabwe.
Nutrition Management	
Lisa Rumsfeld	Feed efficiency.
Anna-Marie Verhoef	Cattle supplements and feeding.
Reproduction, Performance and Recording	
Dr Mario Beffa	Matching cow size to environment to maximise fertility.
Dr Doug Bruce	The importance of body scoring.
Catriona Millen	Better animal selection with BREEDPLAN.

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2023 - The Zimbabwe Herd Book Year of The Nkone

By Sekuru

The Nkone cattle were brought to Matabeleland by King Mzilikazi and his followers 150 years ago. The Nkone is a sub-type of the Nguni cattle of South Africa and is one of the three types of indigenous cattle found in Zimbabwe. It belongs to the **Sanga group** which originated in central Africa when long and shorthorn ***Bos taurus*** cattle, which had come down the Nile several thousand years ago, were crossed with more recent ***Bos indicus*** arrivals from south Asia. They were displaced southwards by these new arrivals.

Recognising the productive potential of the Nkone, the Government established a pure breeding herd at Tsholotsho in 1946 to conserve these animals which were being lost due to indiscriminate crossbreeding. The herd was subsequently transferred to Matopos Research Station, where, in addition to the continued conservation programme, the Nkone features in adaptability studies and crossing trials for small holder dairying.

Nkone cattle have a well-developed neck hump, short glossy coats and pigmented skin. The **Nkone Cattle Society**, originally formed in 1966 and resuscitated in 2019, recognises all red and white coat patterns: red, red and white, roan, white and Nkone (white back stripe with red side panels, which is an optimum configuration for solar radiation).

Numerous studies over the decades in Zimbabwe as well as in the sub-continent have all shown that the Nkone is an excellent maternal breed due to its **superior calf survival, fertility and superior mothering** abilities and thus cow productivity. It has also been noted for ease of calving in cross breeding systems, even when heifers were mated to terminal sires. These traits have been ascribed to the breed's superior hardiness and adaptability.

The Nkone is an ideal low maintenance-easy care breed and provides an excellent base for crossbreeding, thus warranting greater utilisation in both the purebred and crossbred livestock industry. The Nkone Stud Book is open, in recognition of the fact that superior stock exists particularly in the communal farming sectors.

A few interested people including previous members resuscitated the Society in 2019 and we have had two AGM's and started inspections again. The breed's name has been changed back to Nkone as it is strongly felt that we should maintain the Zimbabwean integrity of our breed.

The present August, 2022 position of The Nkone Cattle Breeders Society of Zimbabwe is as follows:

- Registered Breeders 7.
- Society Members total 15.
- There is an elected interim committee of 5.
- There are now approximately 609 registered cattle.

There is a total of about 1500 unregistered and crossbred Nkone type breeding females owned by those commercial farmers and Government Institutions that answered a recent questionnaire. There could very well be a few hundred more in this category.

The Nkone Society members are determined get the Nkone breed back to its rightful position in Zimbabwe and that is as one of the three important adapted indigenous breeds of this country. The Nkone will play a valuable part in the future cattle industry of the country as an adapted, hardy, fertile breed that will maintain production on poor grazing and marginal areas with low inputs. **The Nkone is the alpha mother cow** for harsh conditions and low nutrition areas, maintaining fertility and producing exceptional terminal cross calves with exotic bulls. This is where we see the main future for the Nkone breed. But we need to breed up sufficient numbers of registered, performance tested cattle to make this possible and this can only be achieved working with the Zimbabwe Herd Book. Building the breed entails selecting for the important economic traits and to this end we encourage our Society members to join the Zimbabwe Herd Book, register their cattle and performance test them.

Size Does Matter! (Notes from HHN And MH Nkone Studs)

I posted a photo of a Nguni cow suckling a massive 7-month-old Senepol X bull calf on our Facebook page. This created a lot of favourable interest and comments and achieved what I intended it to. It showed what an incredible mother the Nguni or Nkone can be, and I have seen the same with little Mashona cows and their crossbred Sussex calves on Waterloo Farm, Macheke when Pips Peech had his Mashona there.

19-0002MH at 33 Months and 336kg with 4,5 Month bull calf 21-0032, 158kg

As a hardy, environmentally adapted maternal breed and Alpha mother cow, the Nkone is hard to beat as long as we keep selecting and breeding for the characteristics which made it a superior mother cow. One of the most important characteristics of the Nkone is moderate size which is sustainable in hard conditions on natural grazing.

In my view, the **ideal mature weight** for our Nkone cows is around 380 kg, producing a calf weighing at 45-50% of the cow's weight at weaning at 7 months, (170 to 190kg). These weights mean you can carry 1,3 Nkone on your grazing in place of every cow of a large breed.

Our first-calving Nkone heifer 19-0002MH which calved at 28 months, must have a large amount of milk to raise her outstanding bull calf 21-0032MH seen in the accompanying photo, sucking at 4.5 months of age. 21-0032MH had a birth weight of 35kg, weaned at 220 days weighing 213kg. His Average Daily Gain from birth to weaning was 800 grams per day and his weaning ratio was 128,3.

Our overall averages at weaning for 2020 and 2021 calf crops compared to some results from Tsholotsho Breeding Station (the home of the breed) in 1973 is as follows –

	HHN and MH Nkone	Tsholotsho Breeding Station 1973
Heifers		
Birth Weight Average	29,85 kg	22,7 kg
Age at Weaning	211 days	210 days
Average Weight	144 kg	150 kg
Daily Gain Birth to Wean	558 grams	606 grams
Weaner/Cow Ratio	37%	35,7%
Bulls		
Birth Weight Average	31,4 kg	27,2 kg
Age at Weaning	211 days	Ag 210 days
Average Weight	150 kg	170 kg
Daily Gain Birth to Wean	573 grams	680 grams
Weaner/Cow	41%	40%

2021 calves 4,5 months.

The above figures are very interesting and I would not like to see our birth weights increase from where they are now. Increased birth weights equal increased mature weights. Our weaner weights are a bit low and could go up 20 kg. This would also increase the Weaner/Cow ratio. Tsholotsho chose replacements based on Average Daily Gain from birth to weaning. They started off at a minimum of 600 grams/day and then increased that to 700 grams/day. This resulted in cows that gave more milk and produced heavier weaners with better Average Daily Gains.

So, we have a very good idea what the average registered Nkone CAN and SHOULD do to maintain the breed as it was naturally designed while maintaining its ability to produce a good calf every year in tough environments with minimum purchased inputs. Tsholotsho maintained an average 88% calving rate in a sixty-day calving period for many years.

Calves

What about the Nkone in a **Terminal Crossbreeding programme?** To my mind this is one of the great strengths of the breed and will make its future. We have all seen the pictures of a little 350 kg cow with a very large calf well over 200 kgs and still suckling. The Nkone cow, as long as it has the milk can increase your production dramatically when crossed with a suitable exotic breed that "clicks".

Your Nkone cow remains the same size and eats the same amount but gives you a considerable increase (as much as 30% -40%) in weaner mass and production with a crossbred calf and this is where Terminal Crossbreeding ensures that you keep the very best and most efficient Alpha Mother Cow and get rid of all crossbred progeny. Your F1 cows are going to be fantastic and inherit a lot of the excellent Nkone traits but their large size will detract from their efficiency and hardiness and reduce the number of cows you can carry. The ideal herd ratio would be 60% purebred Nkone cows with Nkone bulls breeding Nkone replacements for both herds and 40% purebred Nkone cows put to Exotic bulls and all progeny are sold.

Celebrating Excellence at the Beef School 2022

By the Zimbabwe Herd Book

At the 2022 Beef School, the Zimbabwe Herd Book presented its Awards for the second time. Three categories were chosen: Housekeeping, Performance Recording and Fertility.

Housekeeping Awards

This Award was adjudicated by the ZHB staff and was based on communications, timeliness and completeness of returns. 10 points each were awarded for the following 7 criteria: Communications; Birth Notifications within 60days; Sales and Transfers Notifications within 30days, Completeness of Submission of DNA Samples; Return of Levy Lists; Levy Payments and Inspection Returns. The following farmers worn the house keeping awards;

Gold: 1st Place - Lorna Joubert of Luipaardsvlei Brahman.

Silver: 2nd Place - Anne Cooke of Zimbo Tuli.

Bronze: 3rd Place - Philip and Linda Reed of Anivai Tuli and Reed Brahman.

Completeness of Performance Recording Awards

The completeness of performance recording award for the Tuli breed was won by Philip and Linda Reed of Anivai Tulis with a 3.5 Star Rating and for the Brahman breed it went to Dr Themba Dlodlo of Nguni Brahman Stud with a 4.0 Star Rating.

BREEDPLAN Star Rating assesses the quantity of pedigree and performance information submitted. Limited to breeds with breed runs: Brahman and Tuli (Simmental and Simbra have just started with breed runs and their star rating are below 3 and hence omitted from adjudication). The assessment was limited to herds that submitted performance data during the year. Herds were assessed on the following criteria:

- Animal Details (birth date, sex, sire, dam) 60 points
- Fertility traits 40
- Birth traits 40
- Weight Traits 60
- Total 200 points

BREEDPLAN star ratings were as follows:

- Bronze Standard: 3 or 3.5 Star, indicating reasonable information
- Silver Standard: 4 or 4.5 Star, comprehensive information
- Gold Standard: 5 Star, complete information available

Fertility Awards

Fertility awards were adjudicated across breeds based on the lowest inter-calving period (ICP) and according to the following criteria:

- Limited to own bred currently active cows with 2 or more calvings;
- Age at First Calving <44 months; and
- Lowest Inter-calving Period (ICP).

Four categories of awards were considered based on number of active cows with two or more calvings as follows:

- Small > 10 to 30 cows
- Medium > 31 to 60 cows
- Large > 61 to 100 cows
- Very Large > 100 cows

Very Large Herds:

Position	Number of cows with two or more calves	AFC	ACI	Breeder	Stud
2nd	122	32	445	Fiona Irvine	Irvcon Simentals
1st	170	31	402	Lianne Herbst	Simbrahs

Large Herds:

Position	Number of cows with two or more calves	AFC	ACI	Breeder	Stud
2nd	76	34	454	Jan Kageler	Oldonyo Tuli
1st	83	38	439	Dirk Odendaal	OD Brahmans

Medium Herds:

Position	Number of cows with two or more calves	AFC	ACI	Breeder	Stud
2nd	40	33	416	Wayne Greave	Enondo Brahman
1st	37	35	408	Themba Dlodlo	Nguni Brahmans

Small Herds:

Position	Number of cows with two or more calves	AFC	ACI	Breeder	Stud
2nd	120	40	453	Kennedy Maguta	Maguta Brahmans
1st	12	37	407	Philip & Linda Reid	Anivai Tulis

The awards ceremony is fast becoming a tradition for the Beef School and has farmers looking forward to its celebration. Companies such as National Foods Limited who proudly sponsored a prize of five tonnes of feed of Lianne's choice are also coming to the party as a way of cheering farmers on their wins.

The Role of Sweet Potatoes in the Zimbabwean Economy

By Jetwell Mugabe, Crop Production and Molecular Technologies Division, TRB.

Sweet potatoes ***(Ipomoea batatas)*** are a Convolvulaceae family dicotyledonous plant. They are grown for their high yields and, to a degree, drought tolerance, as opposed to maize, which is used as a household carbohydrate source. Tuber uses in industry will almost certainly absorb realised yields and help to keep crop prices stable. If its production and consumption are approached holistically, sweet potato can help Zimbabwe's economy grow. In the food processing and manufacturing industries, the crop has enormous potential. The total national yield for the season 2020-2021 was 422,618 metric tonnes, up from 114,558 metric tonnes the previous season (2019-2020).

Sweet potato crop in the field at Lesbury Agro in Rusape

Environmental requirement

Sweet potatoes are incredibly adaptable, allowing them to be grown almost anywhere
in Zimbabwe during the rainy season. The plant is tropical in origin and cannot withstand frost. It thrives in climates with an average temperature of 24°C, plenty of sunshine, and warm nights. They require 750–1,000 mm of rainfall for optimal yields, though 500 mm can suffice in a growing season to achieve close to optimum yields. Tuber initiation, which occurs 50 to 60 days after planting, is the most critical and sensitive growth stage for water requirements in the crop. If aeration is poor, the crop is susceptible to waterlogging, which can cause tuber rot and stunt storage root growth. Dark soils with signs of water logging are not conducive to long-term production, and sandy loamy soils are more preferred. Although some soils that are prone to cracking can expose the tuber to pests and diseases during development, dip, well-drained soils are the best. Sweet potatoes do not flower in Zimbabwe because they flower under short days of 8 hours and vegetative propagation is the only option.

Once established sweet potatoes are a simple crop to grow, a farmer only has to deal with weeds once, and the crop requires less fertiliser as compared to maize and Irish potatoes.

Nutritional Value

The sweet potatoes tuber's nutritional value is unparalleled, second only to avocado. It has the ability to help combat against malnutrition, which is still prevalent among Zimbabwean infants. It is a nutrient-dense crop; in addition to being a good source of carbohydrates, it contains;

- Proteins, albeit in small amounts.
- Fats and fibre.
- Vitamin A, Vitamin C, Niacin, Vitamin B6, and pantothenic acid.
- Minerals such as potassium, manganese, and copper.
- Chlorogenic acid and anthocyanins (a recommended nutrient element amongst cancer patient)
- Antioxidants with anti-aging properties in orange-fleshed and purple-fleshed sweet potatoes.

The crop's richness can help maintain good gut health, a healthy vision, improve brain function, and boost the immune system.

Harvested sweet potato tubers

The Potential of Sweet Potato

According to the International Potato Centre, viral infestation can reduce yields by up to 50%. In a study that was carried out by Edward Mutandwa in 2008, virus infested sweet potato vines could produce yields as low as 0.5 tonnes per hectare. The continuous use of virus-infested planting material from season to season is the main cause of such low yields in Zimbabwe. Plant tissue culture has been used to produce disease-free sweet potato seedlings, which is the foundation for a sweet potato-based economy. The most practical way for the crop to reach its full agronomic potential is through plant tissue culture, which is a proven way of eliminating plant pathogens. Adopting seedlings from plant tissue culture could result in yields of up to 40 tonnes per hectare. Some varieties, such as Brondal, have produced up to 60 tonnes per hectare with proper management. The lowest yielders will produce 23 tonnes per hectare, resulting in 6.9 tonnes of dry matter per hectare - all using virus-free tissue culture planting material.

By any standard of dryland agriculture, these figures are staggering. Dr. A. J. Masuka, Minister of Lands, Agriculture, Fisheries, Water and Rural Development, estimates that 1,2 million households in Zimbabwe have access to land. With proper management, one family can grow a quarter hectare of disease-free sweet potato vines, yielding 5.75 tonnes each. With those figures in mind, Zimbabwe has the potential to produce up to 27,6 million metric tonnes of dry matter per year. House consumption will not exceed half a million metric tonnes per year if current consumption trends continue, leaving the rest for export and value addition.

The process of micro-propagation in tissue culture

Challenges in Production

Since the crop does not flower in Zimbabwe, breeding is limited to countries like Mozambique which experiences the conducive day length. As a result, there are no varieties bred specifically for Zimbabwean conditions to withstand the persistent mid-rainy season dry spells (Bailey, et al., 2021).

Despite Kutsaga's state-of-the-art tissue culture facility's capacity to supply the entire country with disease-free sweet potato vines, access to disease-free sweet potato vines is limited. This is due to the slow adoption of the technology and an over-reliance on donors for seed material. Therefore, continued use of ratoon crops, which aid in the spread of pests limits the crop's production expansion.

Value Addition

The tubers can be dried in the form of chips which can further be processed into flour. Sweet potato flour production can help reduce the demand for desperately needed foreign currency while also reversing Zimbabwe's large wheat imports. The flour can be combined with local wheat to create a more nutritious bread. This alone has the potential to empower many local farmers and the economy as a whole.

Traditionally the tuber is only boiled and served with tea, but with rising popularity, new recipes have emerged; sweet potato chips, fries, toast, mashed sweet potatoes, roasted sweet potatoes, sweet potato hash, and spiralized sweet potatoes. With this in mind the crop has a capacity to compliment maize as an alternative starch source. The tuber can also be used in stock feed blend, to produce ethanol (biofuel), beer and other alcoholic beverages, varieties with a high starch content can be used to make pastry dough, sweeteners, Asian noodles, and citric acid.

The crops nutritional value, high yields, industrial applications, and ability to be consumed in a variety of ways are all compelling reasons for Zimbabwe to adopt sweet potatoes as a strategic crop. By expanding the crops hectarage, using disease-free seedlings from tissue culture, and cultivating more varieties, both local farmers and the country can harness its economic advantages.

References

Bailey, M., Heinnich, D. & Kruczkiewicz, A., 2021. Climate Profiles of Countries in Southern Africa Zimbabwe.
UNOCHA, 2020. Zimbabwe Situation Report, Harare: United Nation's offices for coordination of Humanitarian Affairs.

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Back links – ZiMunda Farming Newsletter Issue:
24 - Orange-Fleshed Sweet Potatoes (OFSP) at Lesbury Agro Farm by Rob Smart and Stu Taylor.
10 - Seedbed Recommendations - Sweet Potato Nursery by Nomusa Chizhanda, a sweet potato breeder.
6 - The Orange-Fleshed Sweet Potato Program by the British Embassy, Harare.

Cattle or Wheat?

By Rob Jarvis

Consultant Sandi Roberts explains the philosophy behind the choice of mixes for cover crops.

At the Agricultural Research Trust (A.R.T) we are continuing the programme of investigations into regenerative agricultural practices and comparing them with traditional farming activities. In August we held a field day for interested parties to get updated on the work being undertaken by A.R.T. We combined a block in our long-term regenerative trial with a 4-hectare bulk planting of mixed cover crops down in the commercial farm area. The idea of this was to allow the cattle continuous grazing, albeit only for a few hours each day, on the lush green cover crops. Last year we controlled cattle in the feeding herd with barrier tape, but this year we have upgraded to a solar powered electric fence system and this certainly keeps the animals in perfectly. At the field day there were demonstrations done by the experienced technical team, led by Darryl Edwards, from Foundations for Farming, on the importance of ground cover, or mulch, to effectively hold rainwater and allow it to percolate into the ground, on the effect of healthy soil with stable aggregates compared to overworked soils that immediately disintegrate when drenched with water. We could see the healthy mycorrhizal network of a fungi-rich zone around the roots of the cover crops as they were pulled up and shaken by Hugo Winkfield. The same was not apparent in the wheat crop plants which had been grown with normal basal fertiliser applications and top-dressings of nitrogen.

Pits dug in the cover crop area and in the traditional wheat crop block clearly showed a much darker, richer topsoil zone under the covers. Both areas had about the same amount of irrigation applied up to that stage. The cover crop in the block consisted of the following seed- mix, Blansa clover, 2 kgs/ha; Purple top turnip, 1 kg/ha; Barley, 18 kgs/ha; Forage oats 18kgs/ha; Wooly pod vetch, 10 kgs/ha; and Black rape 1 kg/ha. The mix met the preferred ideals of regenerative systems by having grasses for fodder, legumes to feed the mix by fixing nitrogen and brassicas and root crops to provide biodiversity. The cattle did not like the brassicas and turnips and after heavy grazing they were very much in evidence on the soil surface. On the second grazing, done after two further cycles of irrigation they were also quite selective in eating the vetch and much of these legumes remained after the herd had passed through the block.

Our test herd weights were compared with a similar sized-herd that is kept on the dryland natural paddocks, or fed on the maize and soya stover in commercial crop lands. Weight gains this year have been lower than we achieved last year and we are currently trying to zero-in on the possible causes for this. Unfortunately, in regenerative agriculture, there are probably as many solutions as there are questions and the nature of growing cover crops, grazing and then

Hugo Winkfield highlights soil structure profile in the wheat crop.

Darryl Edwards shows how working the soil destroys soil structure.

The cattle are doing their bit, flattening the cover crops right down at an effective stocking rate of 1000 head per hectare.

following with summer cash crops means that small-plot replicated trial work is all but impossible. Still the cattle have averaged just on a kilogramme a day weight gain for several weeks. Last year it was 1.6kgs/day on average.

For more information on refer to the following ZiMunda Farming Newsletters;
Issue 27 - Summer Cropping in a Regen Situation by Rob Jarvis.
Issue 25 - Winter Cover Crops Economics by Hugo Winkfield and Rob Jarvis.
Issue 23 - The ART of Farming - Summer of 21 by Rob Jarvis.
Issue 20 - Regenerative Principle in Cattle and Fodder Crops by Rob Jarvis.

Tobacco Agronomic Practices for Sustainable and Economic Production

By Chinaniso Chibudu, Senior Plant Physiologist, Tobacco Research Board

Profitable production of tobacco depends, amongst other factors, on effective and sustainable management practices. While Kutsaga tobacco varieties have a yield potential of up to 5 tonnes per hectare, the national average yield for tobacco production in Zimbabwe remains below 2 tonnes/ha. Factors affecting yield include; poor pest and disease management, non-adherence to cultural and agronomic practices. Outlined below are some tobacco agronomic practices that growers should use for sustainable and economic production.

Seedling selection

Selecting the correct tobacco variety suited to the growing region is very important. Growers should also note that, careful selection of seedlings at transplanting is critical for a good stand. An ideal seedling for transplanting should be 10-15 cm in height, pencil thick, well hardened and free from disease infection or insect damage. Any seedlings which are below this standard are subject to transplanting shock and thereby reduce crop stand. Old seedlings (>90 days) should be avoided as these tend to flower early reducing yield. As a general rule, triadimenol should be applied two days before transplanting to prevent sore shin in the field.

Transplanting

For dry planting the field should be pre-irrigated two weeks before planting. It is important to have adequate amount of water in the hole to ensure seedling survival. Planting holes should be deep and large enough to accommodate between 3-5 L depending on the amount applicable for a particular field. A prior test to determine the amount to apply is done a day before transplanting by holing out 3 holes in which 3, 4 and 5, litres are added consecutively. The minimum amount that would have linked-up with the residual moisture 24 hours later would be the ideal amount to use in that particular field.

Basal fertiliser application

The tobacco plant requires macro-elements such as (nitrogen, phosphorus potassium, magnesium and sulphur) and minor elements such as Boron for improved yields and quality. These are provided for in compound fertilisers and high analysis blends as basal applications as per soil analysis recommended rate. Effective and efficient use of fertilisers depends on soil testing, appropriate selection of nutrient source and efficient placement methods that enhance efficient utilisation of supplied nutrients in in order to increase yield and minimising fertiliser cost. Growers must apply only the amounts required by the crop (established through soil testing), at the right place, right time and right amount. Basal fertiliser is tractor applied during ridging or it can be hand-applied as banding on both side of the plant within 7 days after planting at about 10 cm from the plant crown and at the rooting zone to avoid fertiliser burn.

Top dressing

Tobacco requires adequate nitrogen for reasonable maturing time and leaf curability during its major growth period but with the amount decreasing rapidly from topping time onwards. Sources of nitrogen for side dressings that can be used include ammonium nitrate, sodium nitrate, calcium nitrate and potassium nitrate. Nitrogen fertilisers are applied using the dolloping method and the fertiliser should be placed 10 cm away from plant and 5 cm deep and covered unless it is applied under wet conditions.
As a general guide, for the early ploughed land (up to March) apply 25 kg N/ha at 3-4 weeks after planting. For the late ploughed land (from June onwards) dollop in an 8-ml cup/plant of fertilizer ammonium nitrate. For cultivars requiring extra top dressing at topping (e.g., KRK26, KRK28), apply a 5-ml cup/plant of an all nitrate-nitrogen fertiliser (e.g., calcium nitrate or nitrate of soda) at topping. If an all-nitrate fertiliser source is not available, apply a 2-ml cup of fertiliser of ammonium nitrate a week before topping.

Figure 1

a) Use a stick to make hole

b) Place AN in hole and cover

Weed Management and Herbicide Application

It is important to keep the tobacco crop free of weeds during the period of major growth. Methods of weed control include hand-weeding or by a combination of chemical, hand or

mechanical methods. The most efficient way of controlling weeds is herbicide application however, this needs careful understanding of the label in relation to the weed spectrum and application amount to avoid damage to the plants. It must be remembered that herbicides, will only become active in the soil when it is wet by either irrigation or rain. Herbicides can be applied at pre-ridging, post-ridging, pre-planting before holing out and at post-planting. Herbicide sprays must be directed towards the base of the crop to avoid direct contact with the apical bud. It is recommended that sprays be done early in the morning when there is no wind.

Topping and Sucker control

If the tobacco crop is not topped on time this will result in low yield and poor tobacco grades of the cured leaf. Topping with normal fertilisation and standard flowering cultivars should be done as soon as the plants attain 18 reapable leaves where the apical bud is removed as shown in Fig 1. Topping up to 22 leaves has been shown to be less profitable in most of the varieties except for some mammoth ones.

Figure 2

a) Bud topping.

b) Avoid splashing of suckercide on the uppermost leaves.

Topping results in sucker development. Sucker control can be achieved manually through hand-suckering or chemically through the use of suckercides. Manual sucker control however, is time-consuming and labor-intensive thus, the use of suckercides is recommended when suckers are less than 2cm in length. Suckers longer than 2cm should be removed mechanically and suckercide should not be applied when plants are wet from rain or dew or when the plants are badly wilting.

The government in 2021 approved the **Tobacco Value Chain Transformation Plan,** as presented by the Minister of Lands, Agriculture, Fisheries, Water, Climate and Rural Development. The plan aims to transform the tobacco value chain into a US$5 billion industry by 2025 with one of the pillars being increased production and productivity from 262 million kilogrammes to 300 million kilogrammes by 2025. In-order for the nation to achieve these targets, tobacco production needs to be done in a sustainable manner including through the use of tobacco best management practices as outlined above.

Figure 3

a) Poor sucker control

b) Good sucker control

For more information, contact Kutsaga Research Station's Crop Production and Molecular Technologies Division VOIP 0868 800 2604 or Email: tobres@kutsaga.co.zw

Chinaniso Chibudu
Senior Plant Physiologist
Tobacco Research Board

Chemical Phytotoxicity

By Dr Susan Dimbi, Executive Director, TRB

The Tobacco Research Board wishes to advise growers that there are several incidences of abnormally growing plants that have been observed on some farms in the irrigated tobacco crops. The affected plants are showing symptoms that include severe stunting and twisting/epinasty, cupping, curling and distortion of leaves (Fig 1a). The distribution of affected plants is in the field is regular i.e., whole rows or the whole field showing similar symptoms or extend of damage.

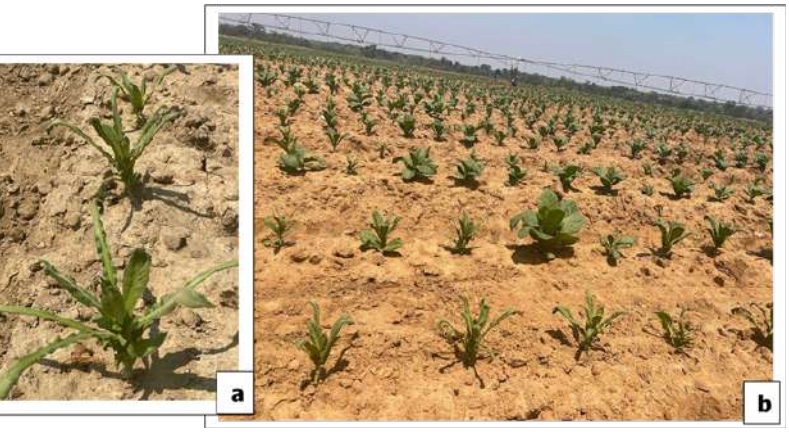


Fig 1 (a) affected plants exhibiting twisting/epinasty, cupping of leaves (b) Uniform distribution of affected plants in the field.

These symptoms and the observed distribution in the field are consistent with **abiotic disorders** (non-infective) most likely chemical phytotoxicity from some synthetic plant protection product. Phytotoxicity cases are common when an incorrect dose has been applied, an incorrect method of application has been used or where there has been a change in the formulation or source of the agrochemical. It can also stem from some contamination of a batch of an agrochemical. The TRB is carrying out investigations to establish the exact cause of the phytotoxicity and will advise of the outcome as soon as possible to prevent this from recurring in the dryland tobacco crop.

What to do if affected

Growers must not apply any chemical remedies as the problem is not a disease but an environmental disorder. They must however continue with irrigating their crops and ensuring optimal growth conditions while observing if there are any positive changes. Depending on the severity of the problem and the grower's assessment of the problem, the following options are available;

a) Leave as is. This is recommended where only a few plants are affected and the grower has noticed that the new top growth is normal. In this case it may be necessary to remove the bottom affected leaves and leave the new growth.

b) Gap filling. This is an option where only a few plants are affected and the damage has been noticed early. However, growers must note that late gap filling will affect the uniformity of the crop and later plantings may not grow optimally as they will be smothered by the bigger plants.

c) Replanting. This is an option where the problem is severe and the crop is not showing any signs of recovery. It is also only practical if additional seedlings are available.

d) Ratooning. It has been observed that some of the badly affected plants totally fail to recover, but start producing normal and health looking suckers. An option in this case will be to ratoon the severely affected plant and encourage one sucker to grow. The downside to this option is that it will generally delay the crop and yield potential may be affected.

The TRB has deployed several teams around the country to collect information that will assist with establishing the cause of the problem. Kindly assist them with information when they visit your farm. Alternatively, growers with this problem can get in touch with the Plant Health Services Division on telephone 8688002604-ext 202, 206, 214 or 236 or toll-free, 0800 4511 or Email: tobres@kutsaga.co.zw to request for a visit or to provide the required information.

Dr Susan Dimbi,
Executive Director, TRB

Your Beekeeping Culture

By the Snr Beeman, Natural Harmony Agro

A bee smoker - a handy tool in bee management.

As we round off winter to get into mid-summer, we are quite glad to have also passed the brief Spring season which decorated itself by way of new leaves, shoots, grass and even land preparations. Have you taken notice that quite recently and even now, some swarms of bees are moving freely and some would land to rest where they were least expected to. We had a busy schedule with such escapades where we had to collect the bees for relocation and rehabilitation. Save for the day, its critical time for beekeepers to also be geared for the season. I just want to encourage those with active hives to be on the lookout for the following issues before the rain season fully sets on us.

Inspect your hives - Open your hive and see what amounts of combs there are; some are pretty old brown or black and may have some whitish staff on them - remove and burn these as this is a sign of a pest in existence. This is due to some hives not having roof covers, especially the metal ones which allows moisture and rain in; this has to be corrected. Some hives as of now have bees sharing with ants with either bees inside, ants outside or on the plastic or grass roof in place-this needs to be corrected. Most hive bodies should be painted in oil paint so as to lengthen their lifespans. A painted hive gives a fresh look to onlookers and attracts bees as well.

Secure the hives - The bees are now starting to expand so breakouts are common and it is important to enable the bees to have new homes by way of new hives placed strategically around your apiary.

NB. For those of us who have bigger portions of land, please do fence off so that you protect hives from intrusion and trespassers.

Ensure water supply - It has come to my attention more often when we induct candidates into beekeeping that the aspect of water supply is overlooked. More often than not, bees are left to look for water for themselves and that's not good because bees, being one of the most hard-working species need also a lot of help to get access to water sources easily. These need to be secured properly since bees can drown. Bees need to be supplied with fresh water regularly

Kenyan top bar hive.

in shallow containers which must be regularly refilled. Note that the availability of water also attracts birds, lizards snakes and other natural wild life, so don't be taken aback when you find bees water points being shared with other species. Fish ponds are poor sources of water for bees since fish eat bees. So, your active scouts can become a meal for the fish thus reducing the rate of hive activity by an unnecessary loss of critical "staff members".

Develop a fodder bank - One of my most important recommendation is to consider your climate and develop a fodder bank for your bees. Plant annuals, perennials, plant trees and especially fruit trees as these will give you a double benefit of fruit, pollen and nectar. Remember that you are securing future colonies when you develop food sources for your bees. You should be very mindful of your garden plot, field and farm operations if you keep bees. Most bees' deaths are caused by biochemical poisoning by way of the very chemicals we use to protect our crops. We however encourage all members to plant and nurture flower producing plants deliberately. You attract new swarms and you create for the new and future seasons a bee's sanctuary. Please note that bees are dying at phenomenal rates and we will realise this when we no longer have our favourite foods on the table.

Muhacha - good fodder for bees.

For any tips, bees' removals, apiary setups and bees handling kits, contact us on the following numbers. 0734629705,0714315282.

Ntunteni Dorper Stud

By ZiMunda Farming

It was a great opportunity for Dorper farmers to acquire top-notch genetics when Doug Follwell presented the Ntunteni Annual Production Sale at his farm in Norton. For the past couple of decades, Ntunteni has strived hard to get its flock to the level of achievement where it is today - the production sale only offered TOP Genetics.

In the auction pamphlet, Stud Master Doug, noted that his primary objective has always been to buy type 5 stud rams and that a lot of his knowledge has come from repeated trips to South Africa, where he has spent extensive time touring the top stud masters and going to multiple classification days, primarily at Upington. He went on to note that the objective of his stud is to increase the body weight as primarily he has been a meat producer in the Lamb Industry. Currently his Cold Dressed Mass to liveweight ratio is averaging 56% - which is exceptional. His meat to bone ratio is over 75% in lambs.

"The other key factor in my flock has been fertility. All our sheep are scanned for pregnancy diagnosis using ultra sound at the end of every mating season and we continuously strive to increase the lamb percentage of production ewes," said Doug. He went on to state that the number of stud ewes of type 4, type 5 and elite ewes in his flock is more than 70%; this has involved meticulous selection to remove weaker animals.

The auction day received a good response from sheep farmers because of the number of top-quality animals on sale. 21 lots classified into three categories were offered to the public, farmers and breeders at the auction which started at 11am.

- 8 rams
- 20 pregnant ewes
- 15 Maiden Ewes

The auction proceedings began with all attendees going around the display pens getting a close view of the animals on offer and some even stealing a moment with Doug, his wife Sue or his team to inquire on the performance of the animals on offer. Bidding was chaired by auctioneer Allister Banks from Remote Livestock Market Systems and Lamb Direct - Lamb and mutton processor. The bidding started off on a good note as the second lot ram 20-0240DJF born on the 4th of June 2020 with a birth weight of 4.5kg was sold for a whooping US$3 800. 15 registered buyers took part in the auction and the results were as follows;

- 19 Ewes sold at an average of US$330.
- 7 Rams sold for an average of US$2100.
- Top price ram sold for $3800.

In a nutshell the auction field day was an outstanding success. Ntunteni Dorper Stud through its annual production auctions continues to deliver excellent breeding stock by way of phenotypical and genotypical selection to the Zimbabwean Dorper Industry.

Dorper breeder William Hundemark chatting with Sue Fowell before the auction started

Auctioneer Allister Banks in action.

The highest selling ram 20-0240DJF (lot 2).

Biosecurity in Sheep and Goats

By Admire Dube, Fivet Animal Health

Biosecurity refers to the management practices that are undertaken to prevent the introduction and spread of diseases. Since healthy animals are the cornerstone of any successful livestock enterprise, it is important to be vigilant in biosecurity by;

A. Monitoring Acquisition of New Animals

The introduction of new animals poses the single greatest risk to biosecurity on livestock farm. While animals may appear outwardly healthy, they could be carrying a wide variety of diseases. Anytime a new animal is introduced to the flock, there is a potential risk of that animal introducing a new disease. Before adding new stock to your farm/ flock, it is important to know the health status of the farm/ flock(s) from which you are buying or receiving animals; ask questions about the farm's health program and disease status of the flock. Only buy from reputable breeders with closed or mostly-closed flocks. A closed flock is a flock that has not introduced new animals for the past three or more years. Buy sheep from as few sources as possible. Do not purchase animals from flocks which you observe lameness, abscesses, sore mouth, ringworm, cloudy eyes, or other clinical signs of disease. While healthy-appearing animals may still be harbouring these diseases, many diseases can be avoided by thoroughly observing and inspecting the animals on purchase.

Inspect for soundness

Examine all animal teeth to determine their age and soundness. Mature females can be a good option when starting or expanding a flock, but you need to make sure they are healthy and sound. When purchasing mature females, palpate their udders to make sure they do not have any lumps, scar tissue, or hard spots, which could be indicative of mastitis. If both halves of the udder are "hard," the likely cause is Ovine Progressive Pneumonia (OPP). Palpate the testicles of rams and do not purchase rams with reproductive abnormalities or structural defects.

Daan Bosman examining detention

Isolate the new animals

Newly-purchased animals should be isolated for at least 2 weeks, preferably 30 days, before being co-mingled with other animals on your farm or being turned out to pasture. A period of isolation provides an opportunity to detect a disease problem before the rest of your flock or premises are exposed.

Isolation/quarantine areas but be a distant away from the rest of the flock. The further the isolation pen is from the rest of the flock, the better it is, ideally in another building. If this is not an option, you should select a corner of your barn for isolating new animals. Isolated animals should not have nose-to-nose contact with the rest of the flock.

While in isolation, new animals should have their hooves trimmed and inspected for **foot rot** and other hoof problems. Always assume that any new animal has been exposed to foot rot they must stand in a footbath of zinc sulfate. Koppertox or a zinc sulfate spray can be used on the hooves of individual animals. If affected an antibiotic can be used to treat foot rot.

To prevent the introduction of drug-resistant worms, new animals should be **dewormed** with dewormers from all three dewormer classes: albendazole + moxidectin + levamisole. A faecal egg count 10 to 14 days after treatment will indicate whether or not the treatment was effective. A negative or near zero faecal egg count is the goal. It will be helpful to learn the deworming history of the farm from which you purchase or receive new animals: which dewormers have they used and how often do they deworm.

B. Limiting Access to Your Farm and Flock

Some diseases can be spread by contaminated footwear and vehicles. Limiting access to your farm and animals, reduces the risk of introducing diseases. Visitors must wear plastic boots or thoroughly disinfect their footwear before entering the sheep and goats raising areas. All vehicles must be disinfected.

C. Employing Good Management Practices

Rodents, cats, and wildlife can harbour infectious agents. Feed contaminated with rodent faeces poses a significant risk of disease infection to livestock, whilst exposure from infected cat faeces can lead to ewes and does becoming infected with toxoplasmosis, one of the leading causes of abortion in sheep and goats. Therefore, there should be rodent control at the farm and cats should be vaccinated.

Dead carcasses, placenta and foetal tissues should be removed immediately from the sheep and goats raising areas to prevent the introduction and/or spread of diseases. Under no circumstances should carcasses and other waste products

Dr Doug Bruce's healthy Nguni sheep flock

be left for dogs or wild animals to eat. This attracts predators and scavengers and can spread diseases.

A vaccination program provides inexpensive insurance against common livestock diseases. It is generally recommended that all sheep and lambs be vaccinated for Clostridial Diseases and treaded for Gastro-intestinal parasites (worms) which are a primary health problem affecting sheep raised in warm, moist climates or during periods of warmth and moisture. (See ZiMunda Issue 5).

Abortion – Composting is often the best way to dispose of reproductive wastes. The females should not be permitted to eat her placenta, as this can spread diseases, such as scrapie and abortion. When an ewe or doe experiences abortion, she should be isolated from the rest of the flock. The dead foetus, placenta, and foetal tissues should be removed immediately and buried or composted. The lambing area should be disinfected and antibiotics given (fed or injected) during an abortion storm to prevent further losses.

D. Maintaining a Closed Flock

The best way to maintain a healthy flock is to maintain a closed flock. Once the genetics of the flock has been established, replacement females should be selected from within the flock and new acquisitions should be limited to rams or bucks.

It may be possible for large flocks to select their own ram or bucks' replacements, but for most shepherds, outside ram/buck purchases are necessary to avoid unacceptable levels of inbreeding. Fortunately, rams and bucks spread fewer diseases than ewes and does. While rams can still introduce sore mouth, foot rot, pinkeye, or caseous lymphadenitis to a flock, they are not likely to introduce vibrio or chlamydia.

You should not loan your ram/buck to another farm, unless the health status of the flock is equivalent to yours (or better). You should not allow other producers to bring ewes or does to your farm for breeding, unless the health status of their flock is equivalent.

E. Avoiding the Risk of Showing

Taking your animals for show to exhibitions increases the risk of introducing new diseases to your farm. At exhibitions try to minimise the nose-to-nose contact of your animals with other animals at the fair and not to share equipment, waterers, or feeders with other exhibitors. If you loan your equipment to someone, make sure it is disinfected before you use it on your animals. When you return from a show, isolate your show animals from the rest of your flock. Treat them as if you just purchased them.

Producers are encouraged to develop a written biosecurity plan and to follow it to prevent the introduction of diseases and other problems.

A Path to Sustainable Fish Production

By Lorraine K. Salimu and Milton T. Makumbe

In as much as the Fisheries and Aquatic Resources sector of Zimbabwe is at its infancy, the employment of new, efficient and sustainable production systems is at its prime. A relatively new production system to many upcoming fish farmers that has been used to great success by Large Scale Farmers in the country is cage culture.

Cage culture offers a profitable, multipurpose use of various water resources that could otherwise not be harvested. These include lakes, reservoirs, ponds, strip pits, streams and rivers whose sole purpose may have lain within irrigation use and capture fisheries. Simple cages, constructed using netting and plastic drum floats, are placed in large water bodies with slow-flowing, clean water. Though requiring a relatively higher initial investment in comparison to (earthen) ponds, establishment of cage culture in an already existing body of water is a viable option for small-holder farmers venturing into fish production in the long run and is imperative to growth of the sector.

Despite the country's endowment with at least 10,000 viable water bodies, Zimbabwe's capture fisheries sector has suffered a rampant decline in tilapia catches over the last decade. The declines have been attributed to climate change, over-fishing, invasive species introduction, overfishing, and increased poaching caused by population growth in the face of limited employment opportunities. With a national demand of 60,000MT per annum, a large deficit of 40,000MT indicates the need to venture into highly rewarding production systems to fully realise the country's potential in the sector.

Pros And Cons of Cage Culture

The pros far outweigh the cons since cage culture production addresses the largest priority of the enterprise i.e., high fish production in limited space. One of the biggest concerns associated with cage culture involves the pollution from feed waste contaminating water bodies. However, this is highly exaggerated and natural water cycling mechanisms are capable of cycling waste.

PROS	CONS
Cages are simple and easy to construct.	Sole use of high-quality feed as fish do not have the liberty to move around for natural food due to confinement.
Stock monitoring is made easier.	If not well calucuted high stocking densities may prove stressful for the fish.
The use of natural water bodies, ensures ease of water recycling, adequate dissolved oxygen and no land use.	Need for investment in security to prevent poaching.
High quality production per unit area due to little energy expenditure.	
Increases the fish production of water bodies and relieves pressure on capture fisheries.	

The Relevance of Cage Culture to Sustainable Development in Zimbabwe

Release and/or stocking of dams with fingerlings for fisheries enhancement cannot fully meet the fish protein national demand and cage culture is an aiding tool to achieve Vision 2030. Cage culture ensures meeting the national demand without further consumption of arable land for fish production via aquaculture. Increased fisheries and aquaculture production will strengthen rural economies, create employment, and enhance food and nutrition security as per the Sustainable Development Goals.

Species of Choice: Win-Win?

Oreochromis niloticus (Nile tilapia) has been termed the "aquatic chicken" due to its hardy nature, rapid growth, high disease resistance, poor water

quality and low dissolved oxygen tolerance and ease of breeding. This has made it the species of preference in aquaculture despite its highly invasive nature. Cage culture can be strategically employed to allow high production of the species in natural water bodies without interference with other tilapia species allowing conservation of indigenous tilapia.

Pushing the objectives to increase production, increase development, and ensure sustainable utilisation of resources in water bodies, Zimbabwe will be able to drive the growth of the fisheries and aquaculture sector for optimum sustainable tilapia production. The strategic decision to refocus all activities in the fisheries and aquaculture resources sector, has reached a consensus for the sector to unlock this increasing potential for livelihood improvement and income generation to uplift communities and attain Vision 2030.

Conventional Tillage

By Vimbai Ruvengo

The primary objective for tillage is to create a seedbed with a fine tilth to encourage germination and crop establishment. Conventional tillage normally follows one of the three procedures;
- Ripping >Discing >Rolling and/or Harrowing>Planting
- Ploughing>Discing >Rolling and/or Harrowing >Planting
- Chisel Ploughing> Discing>Rolling and/or Harrowing>Planting

1. Deep Primary Tillage

Primary tillage is designed to eliminate compacted soil layers. Operations such as Ripping, Ploughing or Chisel Ploughing are normally recommended after every 2 or 3 seasons of soil use or on virgin land.

Ripping (Subsoiling) - Rippers or subsoilers break up compacted soil at a depth of between 30 cm -90 cm, so as to improve drainage and aeration. They have a slanted tine or sharply angled design that helps lift and shatter the subsoil so that any compacted layer is broken up. Soil should be reasonably dry when it is ripped. Ripping wet soil does not shatter the subsoil, it smears and seals the soil onto the ripper tine. Smeared surfaces prevent air, water and roots moving through the soil.

Ploughing - The mouldboard plough is oblong-shaped to cut and turn over the soil as well as bury surface residue. It is rarely used in shallow topsoils as it brings up less fertile subsoil. However, it is used successfully where hard setting or crusting occurs to bring up swelling or shrinking clay subsoil to improve topsoil structure.

Chisel Ploughing - Chisel ploughs are used to shatter but not turn or move the soil. They work on the same principle as rippers but in the top 30 cm of the soil. The soil must be dry to moist otherwise, the plough will smear and seal the soil surfaces.

2. Secondary Tillage

Discing – The practice breaks up soil clods and surface crusts hence improving granulation and surface uniformity. It is always performed shallower than ploughing, at a depth of 10-15 cm.

Discing is beneficial for provoking weed growth, managing previous crop residues by chopping and incorporating them into the soil, and perfectly mixing the soil and lime.

Seedbed Finishing

Harrowing and/or rolling are two seedbed finishing operations that can be employed. They are carried out on fields to follow the rough finish left by ploughing operations to break up and smoothing out the surface of the soil.

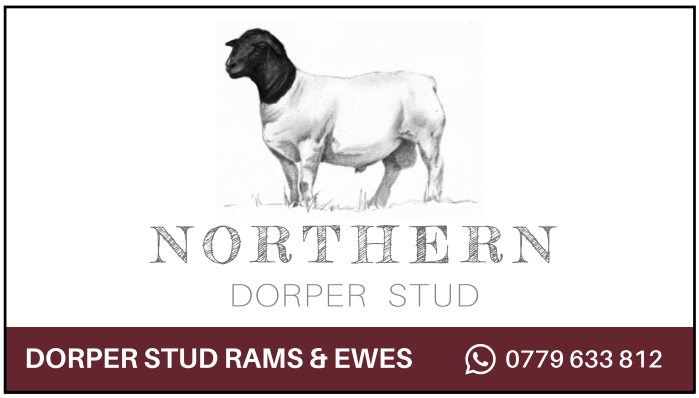
Rolling – A roller is used to flatten land or break up large clumps of soil. Flatness is important at planting because it is the only practical way to control average seed planting depth without laborious hand planting of each seed; it is not practical to follow an instruction of (for example) 1-cm planting depth if the contour of the seedbed varies by 2 cm or more between adjacent spots. This is why breaking up of even small clods/lumps, and well-levelled spreading of soil is important at planting time.

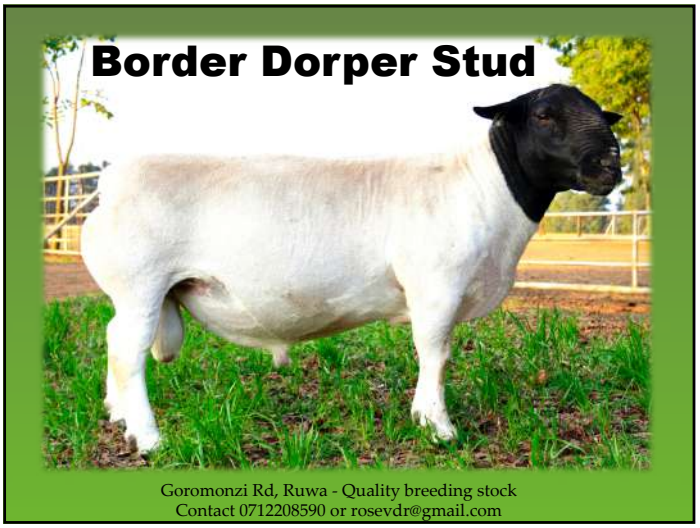
Harrowing – It is a very shallow soil cultivation that disturbs the whole surface of the soil at a depth of 6 cm. It is also used to remove weeds on the soil surface and to cover seed after sowing.

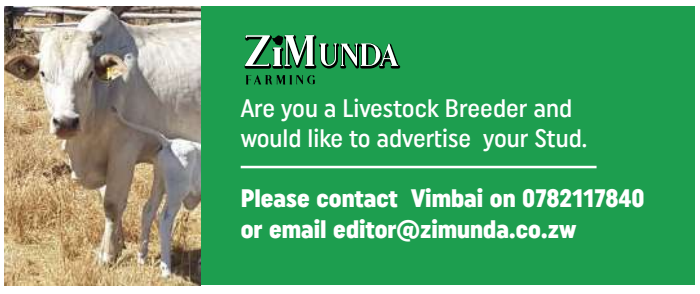
To roll or to harrow - Whilst harrowing usually follows rolling, it is important to note the following

- Where harrowing provides a very fine tilth, or the soil is very light so that it might easily be wind-blown, a roller is often added as the last of the set.
- Rolling in wet conditions will compact soil. So if the ground is still a little wet, start by harrowing with a light vehicle and leave rolling until the soil has dried out more.

Breeders Corner







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