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# Agribusiness

## Magazine



## SHIFTING GEARS FROM PRICE TAKER TO PRICE MAKER

**LIVESTOCK  
PRODUCTION: WHAT  
CAN GO WRONG?**

**WATER  
HARVESTING  
GUIDE**

**11 KEYS TO SUCCESSFUL  
AND PRODUCTIVE MAIZE  
FARMING**





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# Livestock Production: What Can Go Wrong?



The Voice of Short-Term Insurers and Reinsurers in Zimbabwe

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**D. Mbarwe**

The article is an extraction from the recent Insurance Council of Zimbabwe sponsored webinar. Presentations by Rawlings Kofi and John Chirindo.

Agriculture sector plays a key role in the economy of our country. Zimbabwe has a huge potential in livestock sector and the rising levels of human population are putting pressure on farmers to produce more food.

Despite the fact that we have a huge potential, there are challenges facing the business of livestock production, especially at farm level. So, in the presentation I will discuss

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more on these challenges or problems and the next presenter will cover on Risk Management Strategies.

We shall group the problems or factors into two: Production and Business. There are of course other factors that may directly or indirectly affect your business such as government policies but we won't dwell much on that.

Let's start by looking at the **Production factors**  
A lot of things can go wrong when raising livestock for the market. Well, the assumption is that

you intend to or you are already into production for business. You are keeping animals for selling after they reach maturity age.

Most of the production factors result in low productivity thus affecting the bottom line or your expected return from your investment.

- Diseases.
- Poor genetics
- Poor Nutrition and Feeding
- Theft
- Business issues
- Market research is key.

**Risk Management Presentation by John Chirindo.**

John Chirindo is an Agronomist with experience in Risk Management.

**Risk Management Process**

- Risk Identification

- Assess Risk (Frequency & Severity)
- Plan Response Strategy ( Accept, Mitigate/ reduce , Transfer to third part or Totally Avoid)
- Implement Strategy
- Monitor Performance

The starting point is to identify the risk, assess then analyse. When analysing risk, it is ranked in order of occurrence and severity. A response strategy is then planned which may mean accepting the risk when you are able to contain it

**Are you a beef farmer?  
Make sure you have insurance!  
*The steaks are high!!***

for example if you are a dairy contractor you buy cattle and sub-contract them to farmers to raise them on their farms and later get the milk from them, or you may need to mitigate the risk. An example of mitigating risk include frequently monitoring the health of your animals by engaging experts such as veterinarians for early detection or hygiene monitoring

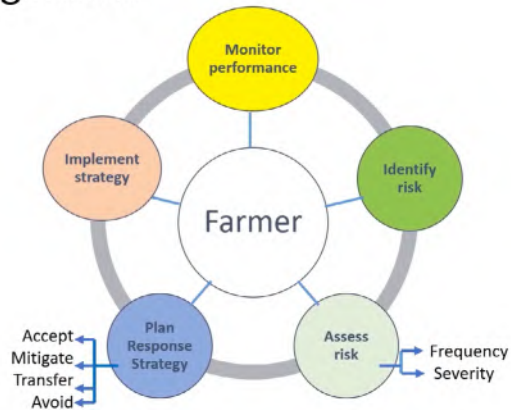
You can also transfer the risk to insurers. Another way it to totally avoid the risk, e.g., if you a pig farmer you can avoid risk by just buying weaners instead of starting at furrowing stage

After deciding on the course of action you then implement and monitor the outcome. Transferring risk involves: price covers, traditional insurance, index covers, and financing markets. Avoiding, reducing, dividing and containing risk are ways to control risk. An example of dividing risk is, when you have 100 cattle and divide the risk of diseases by building several cattle pens to reduce spreading diseases.

**Watch the Full recorded webinar**

<https://www.youtube.com/watch?v=4A9YfX-kOEy4>

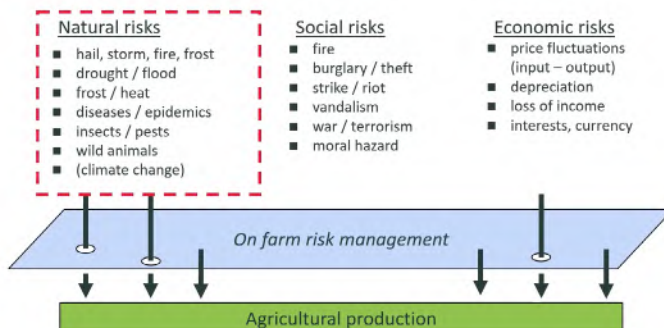
## Risk management



## Risk Management Strategies



## Risk categories











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# A guide to rainwater harvesting and conservation

**D. Mbarwe**

**I**N MANY FARMING AREAS, readily available water is in short supply. Although the total annual rainfall in an area may be enough to sustain farm needs, it is often distributed very unevenly so that long dry periods are interspersed with periods of intense rainfall. In many cases, a crop is unable to use a high proportion of this water, as much of it is lost through run off or leaching. This may also cause soil erosion and loss of soil nutrients.

The techniques described in this article aim to maximise the available water through water harvesting and conservation. Water harvesting techniques gather water from an area termed the 'catchment

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area' and channel it to the cropping area or wherever it is required. Conservation techniques conserve water within the biomass and the soil by reducing run-off and keeping the water where it falls, as much as possible.

## Principles of Water Harvesting and Conservation

In deciding which techniques to use to make more efficient use of the available water, it is important to consider how crops receive or lose water. Crops receive water through rainfall, irrigation and stored soil water. They lose it through run off, evaporation and drainage.

Some key principles on effective water management are:

### Use rainwater effectively.

In many climates, rainfall is distributed unevenly in intense downpours that cannot be readily used by a crop. Storage techniques (such as external catchments or roof top collection) increase the availability of water in the drier seasons. They also harvest water from a wider area making more water available to the crop. Measures can also be taken to avoid rainwater running off the surface during intense rainfall (explained below):

### Make effective use of soil water reserves.

*....continued on page 10*



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....continued from page 8

The soil stores water from rainfall providing a reserve that is available to the crop.

How much water is available depends on the soil type and the rooting system of the crop.

Sandy soils hold much less water than clay or silt soils, so crops will require watering more often. Deeper rooting crops, such as grasses or cereals will exploit soil water reserves more effectively than shallower rooting crops such as vegetable crops and therefore can be grown in drier periods.

Good cultivation practices (e.g. not ploughing too deep or when the soil is wet) that result in a soft, friable soil will also promote deep rooting and efficient use of soil water reserves.

### Take measures to avoid run off

Run off is where water is not absorbed by the soil but runs across the surface away from where the crop can use it.

Structures such as contour schemes, terracing, pits and bunds can reduce run-off. Run off is more likely to occur on silty or clay soils where



Surface runoff

the surface has been subjected to intense rainfall then baked in the sun to form a crust or cap.

Adding mulch to break up the intensity of rainfall, or adding manure, compost or incorporating green manure residues will reduce the tendency of the soil to form a crust.

### Avoid wasting water through evaporation

Water that evaporates directly from bare soil is wasteful as it is not being used for productive plant growth. It is desirable to maintain full ground cover for as much of the time as practically

possible.

Applying mulch to the soil will also reduce evaporation considerably. Use of drip irrigation and irrigating in the evening will also reduce the amount of water lost through evaporation.

### Reduce water losses through drainage

When water drains out of the soil, not only is it wasted but essential mobile nutrients such as nitrogen are also washed out. This is more of a problem on light sandy soils.

Adding organic matter in the form of compost, manures or plant

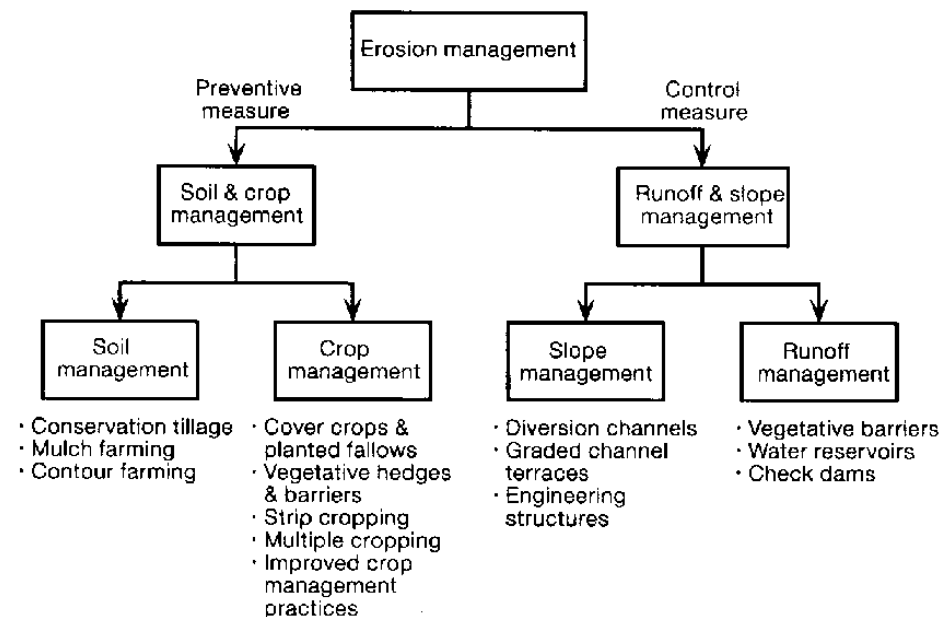
residues will eventually increase the amount of water a soil can retain, but this will only have an effect if it is added over a longer period of years. Most drainage occurs during the heavy rains, especially if the soil is left bare. Growing a cash or cover crop during this period reduces these losses, as the roots lift water and nutrients back from deeper to shallower soil profiles.

### Plan your irrigation

Irrigation is one way of supplementing water from rainfall and soil reserves, but can waste large amounts of water if not used carefully. A key way of making the most of the water supply is to only irrigate when necessary.

Many people irrigate on a regular basis whether the crop needs it or not. If water is scarce, irrigation should be restricted to the most critical periods such as germination and fruit set. Drip irrigation makes much better use of water than overhead systems as it is targeted to the roots rather than sprayed up into the air.

Different techniques will be suitable in different contexts - a technique that is successful in one area may not be in



another. It is important that these techniques are locally adapted and developed to suit specific conditions.

### Contour Farming

Contour farming refers to field activities such as ploughing and furrowing that are carried out along contours rather than up and down the slope. They conserve water by reducing surface run off and encouraging infiltration of water into the crop area.

For all contour systems the first step is to determine a contour guideline. This can be done using the "A frame method" From this, parallel contour guidelines

can be drawn up.

A number of water harvesting techniques are based along contours including: contour ploughing; contour ridges; stone lines; grass strips and terraces. The technique used depends on the steepness of the slope, soil type, conditions, crops grown and other factors such as the availability of labour.

### Planting Pits

Planting pits are a very simple form of free-standing water harvesting structure that are easy to construct. They consist of small pits in which individual or small groups of plants are sown. The pits catch

*Runoff management*

run off and concentrate soil moisture around the roots. Normally the pits are 10-30 cm in diameter and 5–15 cm deep and are spaced about 1 m apart.

The earth removed from the holes is piled in a half moon shape along the lowest edge of the pit. Before planting, compost or manure is added to the pit to improve soil fertility and structure.

Planting pits are particularly successful in areas of low rainfall (350–750 mm) and are suitable for crops with low water demand such as sorghum or millet. They are more suitable for heavier clay soils, which tend to form a cap and have poor infiltration. As digging the pit reduces the depth of soil, they are not suitable for shallower soils. They are only suitable for gentle slopes (less than 2% gradient).

### Earth Basins

Earth basins are designed to collect and hold rainfall and are easy to construct by hand. They are square or diamond shaped basins with earth ridges on all sides. Runoff water is channeled to the lowest point and stored in an infiltration pit. The lowest point of the basin might



be located in one of the corners (on sloping land) or in the middle (on flat land). Earth basins are usually used for fruit crops and the seedling is planted in or on the side of the infiltration pit.

The size of the basin depends on local rainfall and the water requirements of the trees. They are larger on flat land and smaller on sloping land. They are usually 1-2 m long, though sometimes basins of up to 30m are constructed. Grass can be planted on the bunds for reinforcement. Manure and compost can be added to the basin to improve fertility and water-holding capacity.

Earth basins are suitable

in arid and semi-arid areas, with annual rainfall amounts of 150mm and above. Soils should be deep, preferably at least 1.5 - 2m to ensure enough water holding capacity. The slope can be from flat up to about 5%. If earth basins are constructed on steep slopes they should be small.

### Semi-Circular Bunds

Semi-circular bunds are earth bunds formed in U-shapes on a slope. The uppermost tips of the U lie on a contour so that run off is collected in the lowest section of the U.

A shallow pit is sometimes also dug in this section to help concentrate moisture.

*Planting pits*  
Image. researchgate

Their size varies from small structures (radius 2m) used for fruit trees or seedlings to very large structures (radius 30m) used for rangeland rehabilitation or fodder production.

Bunds are constructed by digging out earth from within the area to be enclosed and piling it up to form the bund. They should be constructed in layers of 10-15 cm, with each layer compacted before the next is added to ensure that they remain stable. They are easy to construct and reduce soil erosion.

### Cover Crops/Green Manures

Cover crops are grown to protect the soil from leaching, erosion and to improve soil fertility.

They build up organic matter in the soil, improve soil structure, suppress weed growth and increase soil fertility through nitrogen fixation. They also, reduce fluctuations in temperature and improve soil moisture. Legumes, such as beans and peas, or grasses are often used.

They cover the ground surface between a wide-spaced perennial crop, such as young fruit trees and coffee between rows



of grain crops such as maize. Cover crops are often combined with mulching.

Cover crops can be a source of food, fodder and mulch and may provide some cash income. However, they may also provide a refuge for rodents and pests. The cover crop should be of a slow growing variety to minimize competition for water and nutrients with the main crop. It should be planted as soon as possible after tillage to be fully beneficial. This can be done at the same time as sowing the main crop, or after the main crop has established to avoid competition.

Cover crops are not suitable for dry areas with annual rainfall of less than 500mm, as they might compete for water with the main crop.

Under such conditions it might be better to keep the weeds and natural vegetation as cover. They may not do well under conditions of low phosphorous.

### Mulching

Mulching means covering the soil between crop rows or around trees with a layer of loose material such as dry grass, straw, crop residues, leaves, manure or compost.

*Cover crops/  
green manure*

This helps to retain soil moisture by limiting evaporation, suppressing weed growth and enhancing soil structure, reducing runoff, protecting the soil from splash erosion and limiting the formation of crust. In addition, mulching reduces fluctuations in soil temperature which improves conditions for micro-organisms. It is commonly used in areas affected by drought and weed infestation.

Mulch can be spread on a seedbed or around planting holes and it can also be applied in strips. Alternative row mulching is sometimes preferred to full mulching, because it reduces the fire risk. It is most effective if applied at the start of the rains, as it intercepts and increases water take-up, but it is frequently more practical to mulch towards the end of the rains when grass is available. When crop remains are used for mulching nutrients are released more slowly, so that more manure or fertilizer has to be applied.

Weeds can be a problem if some grass species are used and mulches can provide a possible habitat for pests and diseases. Use a mixture of fast and slow decomposing material and break large pieces of crop residue



*Mulching*

before application.

Grass should be dried before applying as this reduces the chance of it rooting. The mulch layer should not be too thick; otherwise the soil underneath heats up. If lots of straw is used this can lock-up nutrients in the soil. The mulch can be covered with a layer of soil to protect it against wind.

### **Drip Irrigation**

Drip irrigation can conserve water especially when used in conjunction with roof top harvesting. The principle is very simple: water seeps slowly out of small holes in a pipe on the soil surface. Holes are normally located close to plants so that the water is targeted directly to the root zone.

Drip irrigation comes in many forms, but at its simplest, can be constructed by puncturing a piece of garden hose at intervals and connecting this to a water supply. The end furthest from the header tank should be closed off. For smaller areas the pressure from a header tank should be more than adequate to operate the system. Larger areas that require a longer length of tubing may need to be divided into sections and irrigated at different times. Separate sets of tubes with different hole spacing may be needed to match different crop spacing.

The system should include a simple wire mesh filter between the storage tank and the drip irrigation pipes. This mesh requires regular

cleaning as it may get clogged up with algae. A small petrol pump can be used for larger areas, but this will add a fuel cost, will need servicing and is easily stolen.

The key advantage of a drip irrigation system is that water is targeted directly to the root zone so applications can be closely controlled. This considerably reduces the amount of water lost through evaporation compared to sprinkler systems. It also avoids problems of disease encountered from wetting the surface of the leaves and, because only a small area of the soil is watered, the area for weed control is far less than with sprinkler systems

The system requires considerable work to set up, but once this is done, irrigation is relatively easy. Therefore it is more likely to be used on smaller areas of high value crops that require regular watering.

### Conservation Tillage

Conservation tillage refers to a type of agriculture where soil cultivation is kept to a minimum. It aims to reduce the negative effects of conventional tillage such as soil compaction, formation of pans,



disturbance of soil fauna and moisture loss. The two main features that distinguish conservation tillage systems from conventional tillage systems are minimum cultivations and permanent soil cover.

Minimal cultivations vary in type. In a 'no till system' the land is prepared without the use of a conventional plough. In a 'minimum tillage' system, prong-based implements or hand hoes are used to open the soil just enough to allow a seed to be planted.

Minimal cultivations reduce water losses because of a reduction in soil disturbance from tillage.

In the long term the soil structure is improved. Less surface compaction and smearing at depth from the shares of the plough should increase rooting depth and there-

fore the drought tolerance of crops.

Permanent soil cover is commonly achieved by leaving crop residues on the ground as mulch after harvest (rather than incorporating them as in conventional tillage) or using cover crops or green manures between cash crops. This can reduce water loss and soil erosion from run off and prevent capping from heavy rainfall. Seeds or plants have to be sown or planted directly into mulch using a prong based implement or hoe. Leaving crop residues on the soil can, however, increase the build up of pests and diseases.

Leaving large amounts of straw type trash on the soil can also result in nitrogen being 'locked up' in a form that is not easily available for subsequent crops. Certain residues can have allelopathic effects (especially

*Drip irrigation*



rye or vetch), which reduce germination of weeds but also subsequent directly sown crops for a period of up to six weeks.

There are many advantages and disadvantages to be considered in conservation tillage systems. In practice, many farmers have found that it takes several years before the advantages are realised so it should be considered a long-term project.

### Water Harvesting From External Catchment

Water harvesting from external catchments involves diverting runoff water from an area that is not cropped to the area where crops are grown. Water is stored in a simple reservoir structure and can be applied to the crops when

it is needed. The flow of water from the reservoir into the cropped area can be controlled using tied bunds that can be built up or dismantled as required.

The external catchment area should not be cultivated and may include rough grazing areas, roads or homesteads. Ideally the soil should have a low infiltration rate in order to maximise runoff and therefore vegetation should be restricted to a minimum.

The stored water will be lost gradually through evaporation and seepage, this can be reduced on silt or clay soils by capping the soil using puddling boards (used to encourage flooding in rice cultivation). This technique is a much larger scale operation than the others and

requires considerable labour to implement. It also requires a large area of uncultivated land, so is not suitable for densely populated areas. Construction may be on a community scale, and agreements need to be put in place to ensure that the management of the scheme and rights to access water are clearly defined. Always consult relevant authorities!

### Roof Top Harvesting

Roof top harvesting is a simple technique that can store large amounts of water from the rainy season for later use in the dry season. Although frequently used for domestic use, the stored water can also be used for small scale growing of high value horticultural crops which can be particularly drought

*Rooftop water harvesting*

sensitive. It works well in conjunction with drip irrigation described above.

The technique is simple - run off from sloping roofs is collected in plastic gutters then diverted through a down pipe into a storage tank. Covering the tank with some sort of temporary opaque cover (e.g. tarpaulin or black plastic) is essential to prevent the growth of algae that may clog up the system, and also the build up of mosquito larvae.

The height of the tank will also influence the operation and building.

A tank at ground level is easier to build and may have a larger storage capacity, but when water levels in the tank are low, the low output pressure may restrict operations. A pump may be necessary to allow irrigation systems to work, which is an added expense in fuel and maintenance. Raised tanks, just below roof level, have the advantage of a greater head of pressure but require more structural work to build and this may also restrict the size of the tank.

**Source HDRA**



*Conservation tillage involves minimal soil disturbance*



# AMP Group achieves prestigious FSSC22000 certification

**Associated Meat Packers** (AMP Group) became the 11th Zimbabwean company to achieve the prestigious FSSC22000 certification this week, an award that recognises companies committed to continually improve the management and control of food safety within its operations.

A team of international representatives carried an extensive audit of AMP Group's processing factory to ensure that the prerequisite systems and requirements to eliminate and prevent food hazards and to ensure food quality compliance to international best practice standards.

"Receiving this award was

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a key milestone for the Group. It reinforces our commitment to provide our customers and consumers quality meat that is processed from a factory that meets global safety, hygiene and quality requirements," said AMP Group CEO, Lester Jones.

FSSC2200 incorporates ISO22000 of 2018 and ISO22002 of 2009 management systems with sector specific prerequisite programmes and additional FSSC2200 requirements. It is recognised by the Global Food Safety Initiative (GFSI), an organisation

that oversees food safety measures and certification around the world. Meeting GFSI Benchmarking Standards showcases the highest standards globally and leads to international food industry recognition and acceptance.

"The need for safe, affordable, quality products for the growing population of Zimbabwe is rising. Customers and consumers are becoming more discerning and selective about how best to nourish their families. As a result of this FSSC22000 accreditation, the public can be assured that they are buying from a world class processing factory when they choose us and any one of our

Texas Meats retail outlets," added Jones.

In addition to the commitment to provide safe, nutritious and nourishing food, the company's ambition towards achieving continuous development has resulted in this distinguished accolade. "The team has done a commendable job in putting the livelihoods of communities at the centre of our operational excellence strategy. We look forward to growing from strength to strength," concluded Jones.

### **Associated Meat Packers (AMP Group)**

Associated Meat Packers (AMP Group) is a Zimbabwean company that is part of Inncor Africa Limited, which is one of Zimbabwe's largest organisations with diversified interests in Zimbabwe and other African countries. Founded in 2003 as Associated Meat Packers, the business is committed to consistently providing the highest quality protein (meat) to the Zimbabwean people. The AMP Processing Factory located along Coventry Road in Harare has the capacity to cut and process over 75 head per day - on a single shift. In addition to the flagship



AMP Factory Shop which is annexed to the Processing Factory, AMP Group supplies quality meat to the nation through its countrywide network of 43 strategically located Texas Meats and Texas Chicken, Texas Meat Market outlets.

### **Contact:**

Associated Meat Packers  
Corporate Communications  
+ 263 242 772 712 / 33

*Left - CEO Lester Jones consulting with De-boning Supervisor Dzawanda*



## CHICK MANAGEMENT GUIDE

Successful poultry enterprises are those with efficient management practices at all levels. Good chick management ensures optimum production by adult birds. Mistakes made at this stage are sometimes difficult to correct or cannot be reversed at all.

This article gives recommendations to ensure better chick survival and growth.

### Before delivery of chicks

- Clean and disinfect cages or floor brooding area. Clean the building interior,

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attached service areas and equipment.

- Check to make sure equipment is working properly and is adjusted to the right height. The correct number and type of equipment needs to be determined for each incoming batch of chicks. Any shortfalls will be detrimental to the chicks.
- Remove all the old feed from bins, hoppers and troughs. Disinfect and allow them to dry before

new feed comes.

- Place a thick layer (~5 - 10 cm deep) of absorbent litter from untreated wood-shavings, cotton hulls or chopped / soft grass. Place rat / mouse poison where it will not be consumed by chicks

### A day before chick arrival

- Set the heating system at 35-36°C at chick level
- Check water system. Adjust to proper

....continued on page 22

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for locations & contact details

....continued from page 14

height for the chicks. Disinfect and flush the water lines.

- Position the waterers and feed troughs to ensure that birds have access to feed and water within 2-3 metres.

### Day of chick arrival

- Make sure the waterers are full and the whole system is operational. Check brooder temperatures
- As the chicks are placed, trigger water cups or nipples to encourage drinking. In some situations such as small-scale production units, drinking troughs will be used instead of water cups or nipples. It will be necessary under such situations to ensure that chicks are able to drink as soon as they arrive.
- Encourage drinking before eating. It is necessary to make sure that water is visible to the chicks especially if nipples and water cups are used.
- When the chicks have been drinking for 3-4 hours, feed may then be given. The feed may be placed on paper, which will be suitably placed in the cage, or on the floor. Feeders must be op-



erated at the highest level.

- Lighting at high intensity must be provided for the first week.

### Brooding Management

Brooding refers to the early growing period when young chicks are unable to maintain body temperature without the aid of supplemental heat. Poultry rearing comprises brooding and subsequent growing period until sexual maturity (for layers) or until the birds reach slaughter weight (for broilers).

There are 3 systems for brooding chicks and these are described as follows;

#### Spot brooding:

No surrounds, brooding zone is well lit.

#### Whole house brooding:

Hot air system in conjunction with fans and false ceiling.

#### Brooding in surrounds:

Heater placed above chicks and the birds are kept close to the source of heat by surrounds, which are gradually expanded as the chicks grow.

Any combination of the above systems can be used.

### Temperature management

Young birds out of the hatchery are unable to maintain constant body temperature without supplementary heat. Thus,

the brooder house or facility has to be well heated to maintain a constant temperature of between 35°C - 37°C in the first week. Temperatures that are higher or lower than this range often result in pasty vents due to over-brooding and increased chick mortality, respectively.

Suggested brooder temperature regime are summarised as follows:

- 1st week 32 – 35 degrees Celsius
- 2nd week 27 – 32 “
- 3rd week 21 – 27 “
- 4th week 15 – 20 “ (ambient temperature)

Artificial heating is provided in a number of ways as shown in the table below. Infrared light bulbs can be used but these will only cater for small numbers of chicks, usually 1 per 50 is a common figure used.

Red light also assists in suppressing any problem of cannibalism that may occur. Normal light bulbs (60W or 100W) will not supply enough heat. High chick mortality rates have been associated with the use of such bulbs.

The best indicator of temperature is the behaviour of the chicks. A prudent poultry keeper is one who will not always be walk away after taking tempera-

**Heat sources for brooding chicks**

Type	No. of Chicks	Advantages	Disadvantages
Gas Pancake	1000	Simple, achieves the required temperature. Not labour intensive and can easily be moved	High fire risk. Gas costs are high and not always available. Expensive to install. Fragile
Modro (coal powered)	>1000	Cheap to run. Can be used for cooling and heating	Colder at end of house. Fixed in one place. Needs a generator or electricity for the electric motors. High maintenance costs
Charcoal Burner (mbaura / imbaula)	300	Cheap to run and easy to make. Can be moved	Uneven heat. Produces smoke. Fire risk.
Electric Bar heater	200	Can easily be moved, simple	Cost of electricity, small brood
Infra red lamp	200	Simple, provides red light which calms down chicks, heats directly onto chicks	Expensive, fragile, small brood

ture readings from a thermometer without taking time to observe the birds themselves. There can be a wide range of temperature variation between chick height and a person's head height; therefore the bird may not share your perception of the right temperature. Often it may be necessary to take an empty sack and lie down on it so that you may feel the temperature at the level of the chicks.

When conditions are too hot, the chicks move away from the heat source, the chicks will pile up around the perimeter of the brooding area. This may result in death as a result of heat prostration or piling up. If the temperatures are uncomfortably low, the chicks will huddle

close to the heat source. If the birds are unable to locate the heat source, they obey the natural instinct to get their backs against the mother hen.

They therefore crawl under the other chicks. This action, if taken by a large number of chicks, leads to bunching and crowding with accompanying evils of smothered chicks and diminished thrift in the entire flock. Comfortable chicks will spread out uniformly throughout the brooding area without any incidence of huddling.

It is not advisable to move birds from brooding houses to growing and finishing houses as the stress resulting from the move will almost certainly induce respiratory diseas-

es, coccidiosis, or both.

### Management of ventilation

Proper ventilation is important in all phases of poultry production. It is the means by which oxygen is supplied and waste products of metabolism such as heat, carbon dioxide, moisture and heat are removed. Control of odour is a special challenge during cold season brooding. This is because in winter the producer is confronted with the need to conserve warmth by reducing ventilation thereby letting the birds live in high ammonia level conditions, or increase ventilation rate which drops the temperature in the poultry house.

High ammonia levels (>25 ppm) decreases broiler growth rate and feed conversion, cause breast blisters which lead to downgrading of carcasses and high condemnation. Feed additives that bind ammonia and other noxious gases are available in Zimbabwe.

Poor ventilation has been implicated in the occurrence of water belly or ascites. A possible cause of birds coughing is could be insufficient or poor ventilation. In an effort to provide proper ventilation, all caution should be taken to avoid drafts as these will lead to lowering of



temperature. If there are drafts, chick will huddle in groups to get away from the spot where cool air enters the heated area.

### Other general recommendations

- Always provide water-soluble vitamins and minerals during the first 3 to 5 days to alleviate stress and boost the immune system of the birds. Never use antibiotics during stage as this will compromise the health status of your birds.
- Always check the mortality charts and ask to see the day's dead birds. This reduces the opportunity for theft by staff.
- During the brooding phase, there will be vaccination to be carried out. This should be done in consultation with a veterinarian for the type, method and days to be done.
- If a poultry attendant is responsible for more than one flock, the younger birds should always be attended first.

**Source: Poultry Production Manual- University of Zimbabwe.**



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# SHIFTING GEARS FROM PRICE TAKER TO PRICE MAKER

**R. Kofi**

Agricultural commodity prices are notoriously volatile. The negative effect of price volatility is that revenue may not be predictable, thus creating a clear dilemma for farmers. Production agriculture is usually associated with;

- Price takers and not price makers.
- Selling produce at the lowest possible price in the market.
- Flooded markets.
- High costs of inputs.
- No influence on the product beyond the farm gate.
- Low farm income.

Unfortunately, the above conditions have been accepted in the farming community and many are

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used to it. The words of Albert Einstein have proved to be true; 'Insanity is doing the same thing over and over and expecting different results.' The situation will remain the same unless there are significant changes in the farmers' approach to the business of agriculture.

#### **What is it that farmers can do to shift their gears from price takers?**

Change doesn't happen in one day, just like the common adage 'Rome wasn't built in a day.' But small steps by local farmers now will make a big difference in gaining control over produce prices in the market. If you are a farmer, you

must be asking yourself HOW?

In this article, we unpack practical ways which, when adopted, will greatly help you in this requisite migration from price taker to price maker.

We shall adopt the following definitions; Price taker - accept the prevailing market price and sell each unit at the same market price. Price maker - able to influence the market price and enjoy pricing power.

#### **Strategy**

Where there is no strategy, hope becomes the default substitute for business tactics. Hope is however not a good strategy. Mapping out strategic objectives helps you to run scenarios and

consider contingencies should things go wrong.

A good strategy can be, for example, not to go into price wars with competitors but to improve your product and service. It is not a good strategy to price your goods low to increase your market share or sales. If this happens, and you are not the cost leader in your industry, a competitor with the lowest marginal costs that can sustain low prices for a longer period will kick you out of the market.

### Invest in storage facilities

Most smallholder farmers produce common crops, in the same area, and sadly, this is done almost at the same time; the planting and harvesting happen in the same period, leading to market flooding, which many times, prices fall to the lowest point. Investment in storage facilities enables farmers to sell at a time when the prices are high.

Farmers without storage infrastructure can make use of a warehouse receipt system where after harvesting, they can deposit a commodity in a certified warehouse and then be issued with a warehouse receipt.

The system reduces pressure on farmers to sell immediately after a harvest, when prices are normally low. While the produce/ commodity is in the warehouse, the farmer can monitor prices and sell when it is favourable, often resulting in increased profit. It also allows sales to continue over time from one harvest to another, thus stabilizing prices.

### Value addition

Selling your produce without adding value puts your business at the mercy of the market. Farmers get a very small percentage per every dollar that is paid by the consumer. The larger chunk goes to other players in the value chain. Price makers see beyond the farm gate. They study and address consumer pain points. Do your farmers want ready to cook covo? Why don't you prepare it for them, then add a few cents to your price? Are you selling economy quality cattle at a low price? A price maker would fatten first before selling. Sell one at the economy price to raise money for fattening the rest.

Research on new products that you can bring to the market. Start with products that consumers already know, such as



baobab fruits that can be processed into baobab fruit drinks. Other value-added products include mango ice creams. The new value-added products can sell at a higher price.

### Unique Packaging

An increase in sales can be achieved by differentiating your packaging from the traditional one. It improves product appeal and gives you an advantage to slightly price your product higher than others. Consumers tend to overlook price when a product is neatly and uniquely packaged. It's psychological. It's also easier to get a shelf space in retail outlets because of product uniqueness, thereby eliminating middlemen.

### Finding an alternative market

There comes a time when produce is flooded in your local area but

in low supply in other regions. For instance, regions such as Matabeland are likely to fetch high prices for crops due to climatic conditions not favouring cropping. If you can find low-cost transport to distribute and supply veggies in that area, you can get good selling prices.

### Reduce Production Costs

There has been a surge in input prices of late. While farmers cannot control the prices of inputs, they can control their response and devise means to reduce their costs of production. This in turn helps you to become a price maker. The following points are a guide on how you can reduce production costs;

#### **Strategic purchases of inputs.**

Always do a price and quality comparison between reputable suppliers before purchasing farm inputs. Check for reviews from fellow farmers to get more information about the product you are interested in.

#### **Negotiate for bulk discounts.**

Purchase your inputs at once, or go for combined purchases with other farmers to qualify for discounts. You can also



join farmer organizations that have favourable arrangements with input suppliers.

#### **Invest in technology.**

Precision agriculture helps you to produce more for less, and it has been reported that it increases yield by 11% while reducing costs by 9%. Such technology includes GPS systems, drip irrigation systems, smart farming and artificial intelligence systems. Migration to renewable energy such as wind and solar reduces the costs of energy.

#### **Maintenance of farm machinery and equipment.**

Prioritize keeping farm machinery and equipment in a good state to keep operating costs at a minimum.

#### **Adopt integrated farming systems.**

Integrated Farming Systems is a well-accepted sound strategy for

harmonizing joint management of land, water, vegetation, livestock and human resources.

A good example is intercropping. As one of the alternative ways in the agricultural intensification program, the intercropping system is suitable for multiplying agricultural products in less productive areas. Not only can the system increase the harvest amount per year, but it can also maintain soil fertility by restoring organic matter. Intercropping system gives more benefit than monocropping does. It can reduce production costs due to the efficiency of land use. Intercropping soybean and maize is advantageous. It is associated with a greater total intercrop yield, higher land equivalent ratios greater than 1.0, indicating greater productivity per unit area and a greater percentage of the land saved, which

could be used for other agricultural purposes. Farmers can also integrate crops, pigs, and fish production. Crops such as maize and soya will make feed for pigs, and the waste from pigs will be utilized as feed for fish and also in biodigesters for biogas energy.

### Sell directly to consumers

Opportunities to buy food directly from farmers, in urban and rural areas, have increased considerably. Advancement in technology and improved access to the internet has made this possible. Selling prices are higher if selling directly to consumers. Farmers who market goods directly to consumers are more likely to remain in business than those who market only through traditional channels. The starting point? Open a social media account, create a profile and an online shop. You can also offer delivery services as your business grows.

### 'Farm to sell' don't 'farm and sell'

The 'farm and sell', go into production because of other reasons and is not based on the market. Then the 'farm to

sell' run market-driven ventures. They look at what the market wants and then manipulate their available resources to meet what their buyers or consumers need. This is the price makers' approach, starting with the market.

I encourage you to keep on improving your farm business and to think big, the sky is not even the limit. Keep working hard and be innovative, leave the 'me too' group.





# 11 KEYS TO SUCCESSFUL AND PRODUCTIVE MAIZE FARMING

By Dr. John Basera

Increasing maize yield levels per unit area (productivity) is the major driver as far as achieving food surplus is concerned in Zimbabwe. Improving maize productivity has immense benefits to the farmer and the nation at large. Basically, what high productivity level means is that, a farmer will be producing more for less in terms of fewer resources (variable costs) and less land area, which has positive implications on enterprise profitability and sustainability. At farm level, increasing yield per unit area helps re-

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duce cost of producing a ton of maize grain. This article gives an account of the 11 fundamental keys to achieve better yields. The 11 points are enunciated by Good Agronomic Practices (GAPs) principle, and it is our belief that this can significantly change the maize crop farming landscape for the better. It can be done!

### 1. Start with a well-conditioned soil

Soil pH is an excellent chemical indicator of soil quality (acidity/alkalinity) and its ability to avail nutrients to the crop. A well-conditioned soil has high Fertiliser Use Efficiency (FUE). Liming generally 'sweetens' acidic soils by correcting pH to optimum levels. The optimum pH range for maize is 5.5 to 6.5 based on a Calcium Chloride scale.

- Lime reduces availability of toxic elements in the soil such as aluminum and manganese.
- Liming improves

....continued on page 33

the soil physical structure, resulting in good crop emergence and stand, greater root proliferation and an improved nutrient uptake.

The importance of soil conditioning in the regards of nutrient uptake efficiency/FUE can be explained in the table below:

NPK uptake efficiency vs pH levels

pH level	4.5	5.0	5.5	6.0	6.5	6.8
Nitrogen	30%	43%	77%	89%	100%	100%
Phosphorus	23%	31%	48%	52%	100%	100%
Potassium	33%	52%	77%	100%	100%	100%

Key

	Low pH (Acidic)
	Optimum pH (Slightly Acidic)

It is therefore important to maintain or condition soils to optimum pH levels (5.5 to 6.5), for maize. This can be achieved by liming following recommendations from soil analysis results.

## 2. Start on a well-prepared seedbed

Thorough land preparation is essential in maize if the crop is to be grown productively and profitably. In fact, successful crop establishment is centered on good land preparation. Conventional land preparation should target the following aspects:

- To loosen the soil and to form a fine

tilth-this aids good seed-soil contact and emergence

- To control weeds and start on a weed free seedbed
- To conserve moisture and improve drainage and water movement in the soil.

It is recommended that depth of tillage should be altered periodically

to avoid plough pans or compacted zones developing. This will affect water infiltration, root development, and yield. Once in every 3 years, a farmer must come in with a ripper or chisel plough to break the pans. Tillage should also aim to retain and incorporate previous crop residues which aids Soil Organic Matter build up.

conservation tillage aims at minimizing soil disturbances and leaves at least 30% of previous crop residues on the soil surface after planting. It may include the use of tines, chisels and then followed by direct seeding equipment. It may also entail the use on zero till planters to sow seed directly without tilling the land. This has been shown to have significant advantages: improved moisture retention, rainfall/irrigation absorption (due to protective litter on the soil surface) as well as minimized erosion.

However conservation Tillage is mostly suited to soils with at least 25% clay content in the top 30cm zone. Soil structure and fertility must be good and balanced, pH must suit the crop to be grown, sub-surface compaction must be eliminated first; are the other prerequisites before adopting this concept.



## 3. Start with the right seed variety

On the other hand, conservation tillage proce-

Several studies have indicated that choosing the right seed variety contributes significantly to increased yields per unit area. Choosing the right seed variety suitable for one's cropping system and region is like choosing a spouse, if you do it correctly, it's rewarding, but if done wrongly, you regret with tears and losses. In fact, a maize bumper harvest begins with choosing the right hybrid seed variety. Farmers should always select hybrids which couple high yielding ability and good defensive agronomic traits that make them adapt to the current climatic and biotic conditions. Productive farmers target the right variety for their ecologies and use only certified seed for assurance of performance. SC 727, SC 719, SC 637, SC 633, SC 649, SC 608 and SC 529 are top end yielders and have demonstrated high yielding ability in farmers' fields. Selecting the right hybrid seed is one of the most important management decisions a farmer can make in a season.

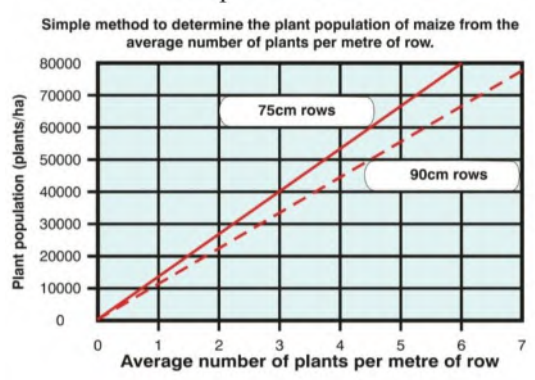
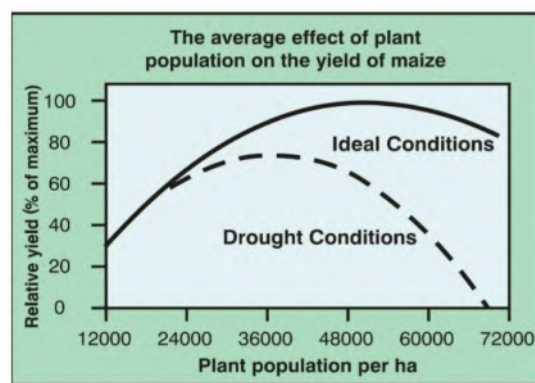
#### 4. Aim to achieve an optimum population and even stand

One of the most critical factors in achieving higher yields is establishing

an optimum population that allows a hybrid to maximise its yield potential. A good start for the crop offers the best opportunity for higher yields. Farmers are encouraged to always aim to achieve optimum population levels depending on varieties, rainfall and nutrition related conditions. Farmers are recommended to follow practices that will enhance stand establishment. Adjust seeding depth according to soil conditions and monitor planting depth periodically during the planting operation and adjust for varying soil conditions.

- Always make sure the planter is well calibrated and in good working condition.
- Inspect and adjust the planter to improve crop stand establishment.
- Operate planters at speeds that will optimize seed and fertilizer placement. Uneven emergence affects crop performance because late emerging plants cannot compete with larger, early emerging plants.
- In high potential/irrigated environments, a final stand of 50-60 000 plants per Ha can be targeted on most varieties from

the 500 series to 700 series, whereas population densities of 37-44 000 plants per Ha are recommended in low rainfall potential areas.



#### 5. Available phosphorus

The rate of growth of a maize crop is dependent

on Phosphate reserves. Deficiencies retard growth, giving stunted growth and low yields. Ideally, 30-50 parts per million (mg/kg) of available Phosphate is considered adequate for successful maize production. Available Phosphate is also affected by pH and in such a case, lime must be applied to correct acidity first, then straights such as Single Super Phosphate, should be broadcasted and incorporated prior to crop establishment.

## 6. Time of planting

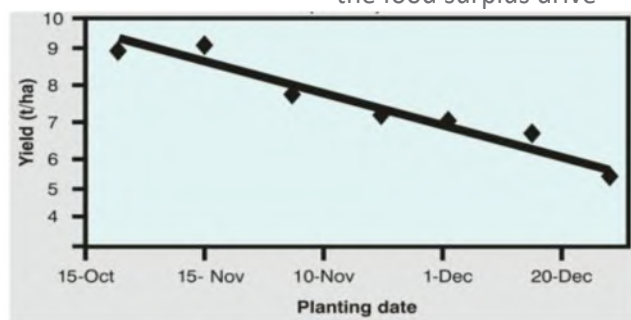
The time of planting has a major effect on the yield of a maize crop. For a summer maize crop, early planting at the beginning of the rainy season is advisable, as yields decrease with late planting and this is primarily due to decreasing daily Heat Units (HU) as the growing season progresses. It is advisable to always plant with the first effective rains, generally equivalent to at least 35mm rainfall received within three days. After the first week of November, the yield loss is above 100-120 kg per hectare per each delayed week. Maize growth rate responds well to high daily temperatures experienced in October, November and December. At least 40% of the HUs

are experienced during these three months, so it is critical for farmers to plant their crop as early as possible to capitalise on the HUs.

Generally, a maize crop that is planted before the main rains start have more vigorous root system and hence beneficial to plant early. Planting early also lengthens the growing season. If irrigation is available, planting can commence as early as the first week of October.

the growing season. The national annual maize yield loss as a result of weeds is substantial. Generally, failure to control weeds during the first five weeks of the crop cycle leads to a 50% yield reduction. If a farmer fails to control Shamva grass throughout the growing season, yields can be reduced by 57-80%.

Fall Army-worm is proving to be a menacing pest, which threatens farmer productivity and the food surplus drive



## 7. Weed and pest control

It is important to start with a weed free field especially for the first 10-12 weeks of a maize crop cycle as this is the period when more than 60% of the available nutrients are used/required by the crop. So, competition from weeds must be kept to a minimal or to null. Weeds during this period have a dramatic effect on yields.

It is generally advisable to maintain a weed free maize field throughout

which the country is in. Farmers should scout fields every 2-3 days and make spraying decisions early and with the appropriate registered pesticide.

## 8. Soil Organic Matter (SOM) build up

SOM exerts numerous positive effects on soil physical, biological and chemical properties. SOM increases soil fertility by providing cation exchange capacity and acting as reserve of plant nutrients, especially

nitrogen (N), phosphorus (P), and sulphur (S), along with other micro nutrients, which are slowly released upon Organic Matter mineralization. As such, there is a significant positive correlation between Soil Organic Matter content and soil fertility and ultimately yield. Tillage should therefore aim to retain and incorporate previous crop residues which aids Soil Organic Matter build up.

### 9. Moisture management

Due to climate change, water is increasingly becoming a limiting factor to yields. High yields of maize often in the excess of 11 ton/Ha can be achieved with irrigation. Where irrigation is available, higher yields can be obtained through early crop establishment before the onset of the rains.

Supplementary irrigation applied during extended mid-season dry spells can lead to substantial yield increases. Irrigation can also be applied to minimize yield losses due to terminal droughts. Thorough land preparation also aids moisture conservation.

### 10. Address soil fertility issues

Fertiliser programs for individual lands must be adjusted in accordance with the respective soil fertility status. Achieving high maize yields requires an excellent soil fertility management program which is centered on adequate timing and placement of Nitrogen, Phosphorus, Potassium and other micro-nutrients. Basal dressing should be applied at or before planting, while top dressing should be applied between 4 to 8 Weeks After Crop Emergence. Split applications of top dressing fertilisers are recommended in lighter soils (with clay content of less than 25%) i.e. sandy and sand loamy soils.

### 11. Never underestimate the value of crop rotations

We can make a strong case that adopting crop rotation enhances crop yields. This is because crop rotation improves soil properties and greatly reduces risks associated with numerous weed, disease, and pest carryovers.

#### Parting shots

The most important ingredient farming requires is personal involvement-how






























































































































much-do you invest in your farming enterprises? The best fertiliser a farmer can have are his footmarks in the fields. Be a crop doctor, who observe the crop regularly and know what the crop requires. The crop should dictate what happens on the farm. The crop must call the shots!

Always have the stability and consistency in yield growth. This is a key fundamental which makes the farming enterprises sustainably profitable. It can be done!

Plan, Prepare, Procure, Plant, Pray-the 5Ps.



## Crop Planting Calendar (Zimbabwe)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beet Root												
Brinjal (egg plant)												
Broccoli												
Butternut												
Cabbage												
Carrots												
Cauliflower												
Chillies												
Green beans												
Green mealies												
Lettuce												
Marrow (baby)												
Onion												
Peas												
Peppers												
Potato												
Squash												
Squash (germ)												
Squash (marrow)												
Tomato												
Water melon												

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	1	2A	2B	3	4	5
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PAN 413		✓	✓	✓	✓	✓
PAN 4M-23	✓	✓	✓	✓	✓	✓
PAN 53	✓	✓	✓	✓		
PAN 7M-81	✓	✓	✓	✓		
PAN 12 (yellow)	✓	✓	✓	✓		

Pioneer Hybrids	Natural Region					
	1	2A	2B	3	4	5
P2809W		✓	✓	✓	✓	✓
P3506W		✓	✓	✓	✓	✓
PHB 30G19	✓	✓	✓	✓	✓	✓
PHB30G21	✓	✓	✓	✓		
P3812W	✓	✓	✓	✓		
PHB 30B50 (yellow)	✓	✓	✓	✓		



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## Farm your own meat - Zimbabwe urged

by Alfred Tembo

Farmers urged to diversify the enterprise into more climate smart oriented investments as a responsive measure to reduce global warming.

Commercial mushroom farmer, Augustine Songore says Zimbabwe is highly equipped to farm quality mushroom for domestic consumption and the regional market.

“We should do away with the long mainstream idea that developed into a tradition where every meal should be accompanied by a chunks of beef or goat meat. We have mushroom

### More Information

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which is more nutritious and organic at the same time,” said Songore also Gamsky Ventures, Managing Director.

“Mushroom farming optimises the use of water and can hydroponically be recycled during production.

“Special growing houses can be developed using solar systems therefore harsh climatic conditions in a way can be manipulated to produce mushrooms.

“Basically, mushroom farming use less space

and less water in drought climates and create some economic value beyond expectation,” Songore explained.

Apart from offering training programs in button and oyster mushrooms, oyster colonised kits, button compost making, developing growing house plans, market intelligence, button and oyster product, Songore has over the year emerged as one of the country’s major producer of mushroom for the local market.

“I encourage farmers to acquire knowledge and farm their own white meat. To date I have trained over

200 farmers from across Zimbabwe, this is interesting in that knowledge is preserved and shared with those that are passionate,” He said.

In a new development, Gamsky Ventures, “is working on construction more sustainable water and electricity saving growing houses, which uses hydroponic evaporative cooling, system.”

Expansion of Gamsky Ventures would create more opportunities for export, food processing and distribution.

“We are at an advanced stage of opening mushroom markets in all the towns across Zimbabwe, such that we also become a market to our farmers.

“We are also looking at meeting demand of our export market. Further more we are considering drying excess and also make some gourmet soups for our domestic and regional market,” Songore said.





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# The Agribusiness Expert Answers



## Q How to reduce aggression in pigs?

### A

#### Optimise regrouping

- Mixing pigs helps to optimise group formation and allows precision feeding. Disadvantages such as stress, aggression and disease spread can level out the benefits.
- Avoid regrouping when possible. If needed, then regroup pigs as young as possible. The older and heavier pigs are, the more likely that growth will be reduced and injuries occur.
- Try to keep the number of unfamiliar pigs per pen as low as possible. The higher the familiarity, the fewer the fights. Caution: Do not put one or two unfamiliar pigs in an established group.

#### Careful selection of sows

- Aggressiveness is heritable. Careful selection of the sows can thus reduce aggression in the population.
- Score gilts on aggressiveness (e.g. 0 not aggressive – 5 aggressive) and take this score into consideration when selecting replacements.

#### Co-mingling litters pre-weaning

- Co-mingling, or socialisation, involves putting two or more litters together before weaning. This increases pigs' abilities to resolve dominance relationships quickly with limited long-term aggres-

sion.

- Let litters co-mingle a few days before weaning (by removing barriers between crates) to reduce stress at weaning.

#### Pen conditions

- When space is limited, pigs cannot properly retreat. Limited space also increases repeated fights between the same pigs, as fights may be interrupted.
- Providing plenty of space at mixing allows pigs to establish their hierarchy quickly.
- Provide an obstacle behind which a pig can hide its head (e.g. straw bale) as this can substantially reduce injuries. Enrichment material occupies pigs and keeps them from continued fighting. Caution: items can also be a resource to fight over, increasing aggression.

#agribusinesstalk

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D	S	C	M	A	N	U	R	E	P	H	O	A	E
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T	R	U	O	T	N	O	C	S	N	P	T	N	I
O	A	A	E	R	O	S	I	O	N	L	R	O	S
C	A	T	C	H	M	E	N	T	N	A	O	R	P
E	P	R	O	P	O	R	T	I	O	N	O	G	I
C	A	N	M	C	R	E	V	O	C	T	F	A	T
T	R	R	M	R	O	B	O	G	N	I	T	N	S
I	D	O	T	T	P	N	A	H	N	N	O	I	M
L	R	A	P	H	P	O	T	S	O	G	P	C	A
L	D	T	M	S	O	E	E	R	I	G	O	N	T
A	W	A	T	E	R	R	P	S	O	N	E	R	T
G	O	O	I	O	R	D	R	I	P	L	S	T	E
E	R	E	S	E	V	O	I	R	O	P	N	E	R

- PROPORTION
- ORGANIC
- MANURE
- DAM
- DRIP
- CONTROL
- ROOFTOP
- EARTH
- WASTAGE
- CONTOUR
- EROSION
- CATCHMENT
- TILLAGE
- RESEVOIR
- MATTER
- PLANTING
- BASINS
- WATER
- PITS
- COVER
- CROPS

*online version*

C	S	A	I	H	C	R	A	E	S	E	R	S	O
A	T	S	N	T	R	A	N	S	F	E	R	N	V
V	I	V	S	A	I	E	M	P	L	O	Y	E	E
O	M	R	U	M	V	D	L	E	I	Y	C	T	R
I	I	W	R	E	R	U	S	N	I	S	S	S	I
D	N	E	A	H	A	I	L	B	L	I	T	E	F
R	G	E	N	D	I	S	E	A	S	E	S	V	T
R	E	D	C	N	R	Z	C	P	K	D	L	R	D
I	R	A	E	R	T	I	K	R	S	R	I	A	A
S	A	Y	S	U	M	S	A	T	C	P	C	H	M
K	F	M	E	E	S	M	O	R	R	E	N	T	A
S	L	U	H	O	S	R	R	C	O	S	U	S	G
C	E	C	L	I	M	A	O	W	P	T	O	O	E
N	W	N	V	G	N	I	R	A	H	S	C	P	H

## There are 5 differences between these pictures. Can you spot them?

See answers on Agribusiness Talk social media handles





## Experience the magic of solar energy.

- ❑ Low maintenance costs
- ❑ No Electricity Bills
- ❑ Renewable Energy Source
- ❑ Affordable
- ❑ Increased farm income
- ❑ Enables off season and supplementary irrigation

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