

PULA IMVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS



Improve food security with maize and masa

NIXTAMALISATION IS A SPECIAL WAY OF PREPARING MAIZE AND OTHER GRAINS LIKE SORGHUM, TO ENHANCE ITS NUTRITIONAL VALUE AND MAKE IT MORE VERSATILE FOR COOKING AND BAKING.

This process produces nixtamal – a more nutritious, flavourful and easily processed product which is then milled to make dough or flour for various maize-based food products.

THE PROCESS

The maize is soaked, washed and hulled – the outer covering of the maize is softened and washed off. This process is believed to remove up to 90% to 97% of the aflatoxins from the maize. Once washed, the grain is called nixtamal. This is ground, minced and processed with water to form a maize dough called masa with which various products can be made (see **Figure 1** on page 2). The mixture can also be dried and later pounded into flour to be used in breads and baking.

BENEFITS

The nixtamalisation of maize is agro-processing that provides several benefits over unprocessed maize:

- It is easily ground.
- It increases available protein and micronutrient content.
- Flavour and aroma are improved.
- Starch is more readily digestible.
- Mycotoxins are reduced.

THE DANGER OF MYCOTOXINS

Mycotoxins are naturally occurring toxins produced by moulds (fungi) and can be found in many foodstuffs, including maize. Maize can become contaminated in the field and during storage. Exposure to mycotoxins occur by directly eating infected food, and it can lead to various diseases in humans and animals.

Since maize is a staple food in South Africa, it is of particular interest to learn more about a process that can eliminate the problem – nixtamalisation.



YOU CAN DO IT TOO

- Put the maize kernels in a pot for boiling and completely cover it with water. Please note: Never use an aluminium pot – only cast iron or stainless steel.
- Add two tablespoons of slaked lime, which has already been dissolved, in hot water for 2 litres of water. Slake lime is calcium hydroxide, which can be bought at pharmacies – this is different from agricultural lime.
- The maize and water are brought to the boil and boiled for ten to 15 minutes. Don't overcook the maize because if you completely dissolve the skin, the maize will absorb the water. This will completely gelatinise the starch and the maize won't be good for masa.
- After ten to 15 minutes, remove the pot from the heat. Allow it to cool overnight or for at least eight hours or more.
- In the morning, you will see the colour has changed and the husks are loose. Pour the maize into a colander and wash it in fresh water, while rubbing it through your hands to remove most of the husks. Now this grain is called nixtamal.
- The nixtamal can be used either cooked as whole kernels or ground to make a dough called masa, a sticky wet mixture that can be used in various ways.
- To make masa, the kernels can be pounded into a soft dough or processed in a food processor. If it's not combining into a soft dough, add one to two tablespoons of water at a time until it combines into a thick dough.
- The batches can take about four to five minutes each in a food processor before a nice dough forms. If the dough is too wet, it is difficult to handle.
- Once you dry out the dough, it can be used in any way, following a recipe.

Please note: Work responsibly with slaked lime. Make sure there is good ventilation so that the fumes are not inhaled. Do not place your hands directly in the lime water. Pour the soaked and steeped grain into a colander sieve and rinse well – stir with a wooden spoon or wear gloves when washing the lime off the kernels. Rinse the grains very thoroughly. Unprotected exposure can cause severe skin irritation or lung damage. Slaked lime is caustic and must be used with care.

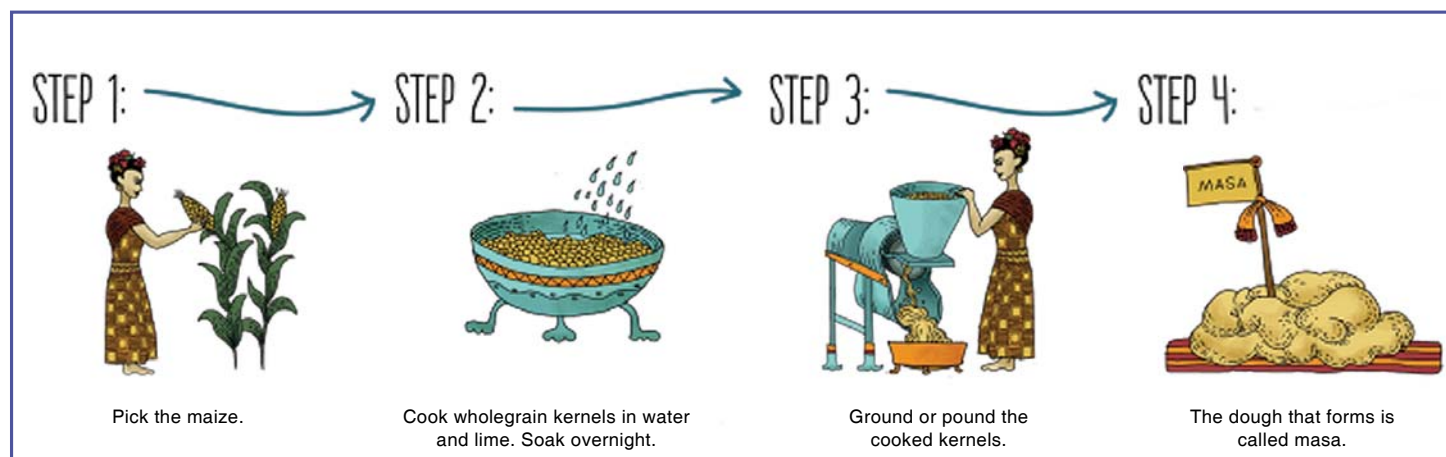
LET'S START AT THE BEGINNING

Grain SA Farmer Development has always looked for ways to encourage farmers to add value to their grain, both for household use and for the marketplace. For some years now, the Grain SA team has been exploring and educating maize farmers about the possibilities offered through a process called nixtamalisation.

The earliest experiments done by the Grain SA team were a steep learning curve – holding workshops with several well-known cooks and caterers from Grain SA study groups. The team noted that this initiative was causing great excitement among the farmers and rural women, who had their eyes opened to amazing new possibilities offered to them by processing the maize kernels to produce masa, the versatile dough produced through nixtamalisation.

PARTNERSHIPS IMPROVE POSSIBILITIES

It soon became clear that this was an avenue worth exploring. The team immediately started looking for partners to assist them in transferring this exciting knowledge. The Department of Science and Technology, which has been supported further by the now

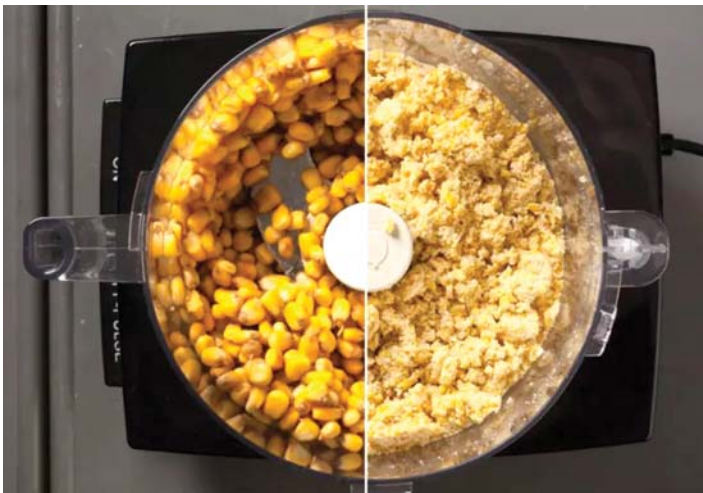


The process of nixtamalisation.

Source: <https://latortilleria.com.au/>



Grain SA presents many courses to teach farmers and women in rural areas about the process of nixtamalisation.



Maize kernels are transformed into masa.

Source: <https://www.americastestkitchen.com/cookillustrated/science/789-articles/feature/transforming-corn>



A variety of products can be made from this dough – steamed bread, fortified porridge, pancakes, snacks and even yoghurt.



Selling baked goods from the versatile dough creates a possibility of earning extra money.

Department of Science and Innovation (DSI), showed a lot of enthusiasm. The first courses that were developed, were rolled out with support from the DSI early in 2018.

With the understanding that this was an important innovation in the agricultural bio-economy, Grain SA's Research and Farmer Development departments jointly further collaborated with Dr JW Swanepoel and Dr Alba du Toit of the Centre for Sustainable Agriculture, Rural Development and Extension at the University of the Free State (UFS) to further investigate the agro-processing opportunities that the nixtamalisation process has to offer.

To date, the Grain SA/DSI collaboration has enabled the rollout of almost 500 training courses, teaching approximately 6 000 course attendees the theory and practice of nixtamalising maize and using it for human consumption. More research is also underway at the UFS to refine recipes, create marketable products and further investigate shelf life, packaging and possible business models to pilot various types of businesses in collaboration with rural women.

SUMMARY OF PROJECT TO DATE

To date, through the project, the following deliverables were achieved:

Baseline study: Baseline information on processing methods, current knowledge and skillset within communities was collected and analysed.

Research and development: The following has been completed:

- The current nixtamalisation recipes were refined and a new recipe book was developed.
- Further development took place and many more products were developed – thus the scope of products was expanded.
- Many other tests were conducted, such as the nutritional content, cost-effectiveness, tastiness and shelf life of the range of products.
- Additional processing methods to improve the nutrient content and utilisation of crops to the community were developed.
- Four detailed and applicable business models for start-up businesses were developed.

Capacity development: Beneficiaries were trained in the processing methods that were developed.

Intended provinces where training sessions will be presented, are Mpumalanga, Limpopo, the Free State and North West. ■



**JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR**

FARMER OF THE YEAR

Here are the 2023 nominees

IT IS THAT EXCITING TIME OF THE YEAR AGAIN WHERE THE NOMINEES FOR THE GRAIN SA FARMER OF THE YEAR COMPETITION HAVE BEEN IDENTIFIED FOR 2023.

These competition nominees represent the thousands of grain farmers in this programme who work hard every single day to provide for their families – farmers who are slowly building their businesses as well as those working towards building a sustainable commercial farming business.

All nominees have shown growth in their farming operations through inputs from the Farmer Development Programme. Their hard work will be acknowledged at the event on 20 September at the Day of Celebration. This event is a highlight on the Grain SA calendar and

marks the recognition of excellence in the production of grain, showcasing the tireless efforts and dedication of our remarkable farmers.

It is important to remember that the main goal of this competition is not winning; it is about celebrating the learning, growth, development and hard work of the thousands of farmers in the Grain SA Farmer Development Programme. It is meant to be a source of motivation and inspiration to all to continuously work towards bettering ourselves to achieve our goals – irrespective of how big they are.

If you have been nominated for this competition, you are doing something right and setting an example for others of what can be achieved. With that said, here are the 2023 nominees. ■

PULA INVULA EDITORIAL TEAM

NEW ERA COMMERCIAL FARMER OF THE YEAR



Dwaalkraal Trust
Region: Sannieshof
Farm: Dwaalkraal



Botlhale Tshabalala
Region: Lichtenburg
Farm: Driehoek



Lethiwe Derrile Mthethwa
Region: Dannhauser
Farm: Milnedale



Luvuyo Mbutho
Region: Kokstad
Farm: Altona, Swartberg



Paul Motlokoa
Region: Sasolburg
Farm: Sachen Weimar



Petrus Tsotetsi
Region: Kestell
Farm: De Bult, Kestell



William Raphoto
Region: Lichtenburg
Farm: Lareystryd

POTENTIAL COMMERCIAL FARMER OF THE YEAR



Kopano Lentswetshipi
Region: Lichtenburg
Farm: Weltevrede



Philane Khoza
Region: Bergville
Farm: Dukuza



Simon Shabangu
Region: Carolina
Farm: Welgevonden



Zoliwe Nombewu
Region: Tsolo
Farm: Gotyibeni

SMALLHOLDER FARMER OF THE YEAR



Amos Mahlangu
Region: Carolina
Farm: Brakspruit



Nkosinathi Hadebe
Region: Newcastle
Farm: Eastborn, Osizweni



Siphesihle and Sipiwe Mahlinza
Region: Utrecht
Farm: Goedehoop

SUBSISTENCE FARMER OF THE YEAR



Beauty Gumbi
Region: Paulpietersburg
Farm: Uphuzane



Busisiwe Msibi
Region: Volksrust
Farm: Ukuthanda
ugukhanye CPA



Mzolisi Lennox Silimela
Region: Mthatha
Farm: Baziya A/A
Makaula



Ndinda Mkhonza
Region: Hereford
Farm: E166A,
Hereford East



Tebego Jele
Region: Dannhauser
Farm: 0937 Annerdale

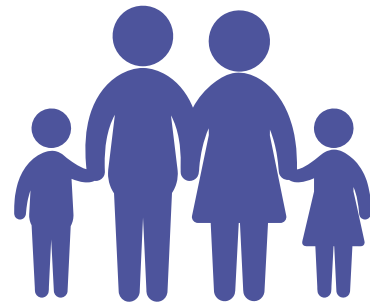


Thabisa Mthwayi
Region: Maclear
Farm: Hlankoma AA,
Mdeni, Qolweni



Thulisile Mazibuko
Region: Bergville
Farm: Dukuza Mantesheni

Protect your family legacy



IT IS A BLESSING WHEN A FATHER CAN FARM WITH HIS SONS OR SONS-IN-LAW AND LATER EVEN WITH HIS GRANDSON. BUT WHAT WILL HAPPEN WHEN HE PASSES ON OR IS JUST NOT FIT ENOUGH TO REMAIN IN CHARGE OF THE FARMING OPERATIONS ANY LONGER?

Although family enterprises offer a significant contribution to the South African economy, it is regrettably so that approximately 85% of family farming businesses do not survive to the third generation. This fact was reported on 5 May 2022 by Farming Portal.

THE IMPORTANCE OF SUCCESSION PLANNING

Yolandi Kruger, director and agricultural advisor at Dunamus Agri, says the average lifetime of a family farming business is 24 years. When this kind of business is carried over from the first generation (father) to the second generation (children), the likelihood of success is 30%. When it is transferred from the second to the third generation (grandchildren), the chances of surviving decrease to a mere 10%.

The main reason why this happens, is a lack of succession planning. This term refers to a business strategy that is used to pass the leadership roles down to someone else in the business.

In the case of family farming, leadership roles should be passed down to another member of the family when the initial leader/patriarch is stepping down.

According to Investopedia, succession planning ensures that the business continues to run smoothly and without interruption after important people move on to new opportunities, retire or pass away. Succession planning is a good way for family farming companies to ensure that operations are fully prepared to promote and advance all

family members involved – not just those who are at the management or executive levels.

It is vital that the initial leader/patriarch starts to plan his scaling down or retirement well in advance so that the necessary provision can be made. The initial leader/patriarch plays the most important role here, as he has the biggest share in the farming business.



A family-run farming operation cannot be allowed to fall flat once the patriarch is not involved anymore.



FAMILY FARMERS FEED THE WORLD

As family farming feeds the world, it is a sad fact that succession planning is not properly done in many family farming enterprises. As much as 70% of the world's food products are produced by family farmers, whose activities are crucial to combat hunger and malnutrition.

Furthermore, family farming generates well-being. Approximately 40% of the world's households depend on family farming for their livelihoods.

From the above, it is clear that a family-run farming operation cannot be allowed to fall flat once the patriarch is not involved anymore. Therefore, certain conditions should be put in place before the next generation takes over. This process cuts out most of the preventable conflict.

Dr Johan Beukes from Authentic Living Learning says proper boundaries should be in place to protect family relationships. In a farming situation, there can be only one leader. This person should have the needed knowledge and abilities to run the farming enterprise and should also manage the farming so that the family will gain benefit over the long term.

COMMUNICATION IS KEY

Theo Vorster of Galileo Capital stresses that problems in family farming operations start when there is not sufficient communication between the involved parties. He says the different generations – father, children and grandchildren – should constantly communicate about their needs and dreams for the farming enterprise.

Kruger and Beukes agree about this and add that ineffective communication is one of the biggest obstacles, as well as one of the biggest sources of conflict in a family farming operation.

Communication implies that regular conversations take place to discuss the financial status of the enterprise. Everyone involved in



A grandfather and his grandson look at the farmland while sharing dreams about the future of the family farming enterprise.



the farming enterprise should be aware of the risks of the business. Matters that involve the farming business, such as succession planning, should also be discussed. During these meetings, proper minutes should be taken to use as future reference.

FAMILY STRUCTURE

Many farming families draw up and use a family structure to assist them in doing successful succession planning. This family structure provides an essential foundation for any effective family farming enterprise. It is critical to guarantee that the farming operation will survive different generational transitions.

The family structure should be a 'living' document that is revised on a regular basis. If the family members do not agree about the format of the family structure, professionals should be approached to assist.

The family structure should contain the following elements:

- **Succession plan:** The closer the older generation comes to handing over, the more important succession planning becomes. It is normally a very emotional process. The succession plan in the family structure should include personal financial elements as well as business elements. The more precise this is planned, the greater are the chances of success.
- **Management succession:** Every family farming business encompasses a unique management philosophy. It is important that this philosophy should be described well in the family structure. How should day-to-day decisions be made? Who makes these decisions? Who will be the successor? All these questions should be addressed in the family structure.
- **Ownership succession and transferring of assets:** A family farming operation owns valuable assets, which can be divided into three categories – land, implements and livestock, and farming enterprises. The transfer of these assets from one generation to another should be well understood and planned. Answer questions such as the following: Do the family have rights on certain of the assets? How will the assets be divided?
- **Estate planning and wills:** Estate planning makes provision for taxes, liabilities and other expenses when the leader/patriarch passes on. It is important to calculate the liquidity of the family farming when he passes away to ensure that there will not be any cash shortages that will affect the farming.
- **Jobs to family:** Sort out who is regarded as family, e.g., will in-laws be regarded as family? Furthermore, formulate criteria with regards to the appointment of family as well as disciplinary codes.
- **Shareholding:** Who is entitled to own shares and to whom may it be sold?
- **Advisory council:** Who may serve on the board of directors? How should voting be handled? How will decisions be made?

Remember: 'A farm is more than land and crops – it is a family's heritage and future.' (bluehost.com). ■

KARINA MULLER,
PULA IMVULA CONTRIBUTOR



PULA IMVULA

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A programme that is changing lives



Farmers get together to network and learn

GRAIN SA hosted a farmers' day celebration on 2 June in Legolaneng in Limpopo for study group members in the region. The purpose of the event was to foster engagement and strengthen relationships among key stakeholders in the agribusiness and services sector. The programme included talks on effective farming practices, fertiliser application and disease surveillance.

Jerry Mthombothi, regional development manager at the Mbombela office, emphasised the significance of essential farming practices, while Thobeka Manyathi from Kynoch discussed the importance of using accurate sampling techniques for precise application of NPK fertilisers before and during planting.

Lawrence Mataha from the Forestry and Agricultural Biotechnology Institute (FABI), in partnership with the Department of Science and Innovation (DSI) and Grain SA, discussed their collaborative effort focussed on a disease surveillance initiative. The objective of this project is to identify and gain a deeper understanding of the occurrence of significant diseases in South Africa. Through this partnership, they combine their resources, expertise and knowledge to conduct extensive surveillance activities.

According to Nolo Bakwa, the communications intern at Grain SA, who attended the event, the day was an opportunity for farmers to network, learn from experts and stay updated on the latest agricultural practices.

'It also fostered a sense of community among study group members. The farmers' day celebration concluded on a positive note, inspiring everyone to continue supporting and promoting the growth of developing farmers.'



Legolaneng Study Group members with Jerry Mthombothi (in the middle).



These excited study group members enjoyed the farmers' day immensely.

Study groups report GOOD YIELDS

THE month of June is always a busy time for summer cropping farmers – many of whom are still busy harvesting and marketing their crops.

During the period of 1 to 21 June, the Grain SA team connected with twelve study groups. Here is the feedback from the various chairpersons:

- Good yields were reported by the **Njijini Study Group**, with most farmers who have already removed the maize from their fields.
- At the **Barberton Study Group** members discussed the important role of soil – soil health, soil depths and effective depths for cropping.
- The **Amandangane Study Group** has harvested much better yields. As their fields are not fenced, the maize had to be removed before it was dry – so they are waiting for it to dry before threshing.
- The **Salubindza Study Group** discussed soil and agriculture, soil types, fertility sources of nutrients and production potential. Farmers were encouraged to start preparing for the next season.
- Farmers from the **Bizana Study Group** were forced to harvest as early as May due to livestock invading the maize fields and damaging their crops. Yields there are not good at all – attributed to late planting because of heavy rains.



The chairperson of Njijini Study Group, Mr Zembe, with some of the harvested crops.



At Sheepmoor Study Group, soil pH was explained, and farmers were taught about the value of liming and why soil samples should be taken.