

Oja! Farms: Pioneering soya bean products for human consumption

By *Claudi Nortjé*

Jannie and Martin Cloete are fourth generation farmers who farm Bonsmara cattle and maize in the heart of the Mpumalanga Highveld. In 2007, they introduced soya beans as a rotation crop on their farm Leeuwpootjie, to benefit soil health. They opted to cut out the middleman by establishing their own processing plant in a bid to pioneer soya bean products fit for human consumption.

Their revolutionary approach to soya bean processing is a first in South Africa and allows them to provide a cheaper meat alternative without skimping on high protein content. Soya is also known as a rich source of various vitamins and minerals, making it ideal for staving off malnutrition on a global scale.

Worth their weight in gold

Soya bean production at Leeuwpootjie is still relatively small, with only 100ha

planted to soya in the last year. In the Mpumalanga region, the planting period of soya beans starts in October and can last until December, depending on rainfall. The harvesting period usually falls between April and June.

They have been applying no-till on their farm for more than ten years to decrease soil erosion and increase the overall health of the soil. After harvesting, the soya bean residues are left behind as roughage for their Bonsmaras. This way, the manure of the cattle can add much-needed organic matter and beneficial micro-organisms to the soil. Feed is scarcer in the winter months, which means that soya bean residues are worth their weight in gold when added to the animals' diet.

An ongoing learning process

"Compared to maize, the insurance costs of soya beans are almost double. We are also in the midst of a national sclerotinia

outbreak, which is one of the most destructive soya bean diseases in South Africa. Currently, there are no chemicals available to control outbreaks and no cultivars that are disease resistant. It is by no means easy to farm soya bean plants in South Africa, and we have a long way to go to catch up with what the Argentinians and Brazilians are accomplishing."

Soya bean cultivars selected for regional use have been successfully tested and trialled over several years to determine how they respond to daylight length, temperature during growing and disease challenges. Cultivar selection is usually influenced when these parameters are added to potential yield. The continuous introduction of new technology and cultivars has had a positive effect on average yields.

"We experiment with different cultivars and keep those that produce high yields under various climatic conditions. Cultivars that do well here may not do so well in other parts of the country, so it is an ongoing learning process when it comes to increasing our yields.

"The primary reason we farm soya beans is because it is an excellent rotation crop when used in conjunction with maize. Soya beans allow farmers to use fertiliser containing less nitrogen when growing maize, which aids the growth of microbes in the soil. Ultimately, if you use maize and soya beans in rotation it benefits the environment and allows you to save on input costs," he adds.

Processing of soya beans

After harvesting, the soya beans are stored and sifted before being roasted. Instead of extracting the oil and removing the outer parts, they use the entire bean. By not removing the outer layer, the soya beans retain their 36% protein and 18% oil content, of which 12% is polyunsaturated fat.



Soya beans undergoing processing at Oja! Farms.



Jannie and Martin Cloete's soya bean processing facility on their farm in Mpumalanga.



Oja! Farms processes soya bean products for human consumption. Their revolutionary approach to soya bean processing is a first in South Africa.

Humans cannot eat soya beans in its raw form as it contains protease compounds that inhibit protein digestibility. However, thermal processing destroys these protease compounds, making soya beans safe to consume. While other processing units may opt to heat soya beans using a regular oven, Jannie finds that this method burns the outside of the beans before the inside has even started to cook.

To prevent this from happening, they roast their beans in a specially designed oven that utilises microwave technology to heat the beans to approximately 150°C. "This oven allows the soya beans to be cooked from the inside out. The roasted beans therefore have the same outward appearance as raw beans. This unique process results in a dry bean with a nutty taste."

The plants are normally harvested when their moisture content is 13%. However, the moisture level of the beans will drop slightly while being stored, which then influences the amount of time the beans need to be roasted to achieve moisture levels fit for packaging. The roasting process usually takes an hour.

Along with roasting soya beans, they also make soya nuts at their processing plant by soaking the beans in water after it has been sifted and then roasting it until the taste and texture resembles that of a peanut. They outsource most of the packaging, design and seasoning of their products.

Diversifying the product range

Soya beans in South Africa are mostly processed for animal feed and oil, seeing as it is more profitable. However, a small percentage of soya beans are also used for human consumption. Traditional soya products on the market, such as soya mince, have a characteristic flavour that consumers have become well acquainted with. These products are normally produced by using the dry by-products of the soya bean after the oil has been extracted. By using the whole bean, the taste of their soya products differs vastly from that of traditional soya products.

"The soya nuts are packaged in small packets to be consumed as an on-the-go snack and comes in an assortment of flavours. The dry, roasted soya beans can be used in stews and soups or can even be milled and used in smoothies, gravies or in your morning cereal," Jannie explains.

They have kept the modern consumer's needs in mind when it comes to taste, convenience and nutrition by introducing snack bars, and also offer boxed meal-kits, which allow for the integration of their dry, roasted soya beans into traditional South African dishes such as bobotie and biryani.

Spreading the word

Seeing as soya beans have not really been utilised in this manner on a commercial scale in South Africa before, customers are hesitant to try something new. In a bid to advertise and introduce people to

Oja! Farms' products, Jannie says they do a lot of demonstrations on how to prepare their roasted soya beans while giving onlookers an opportunity to taste the finished product. They are also involved in several feeding schemes and have recently joined forces with the non-profit organisation, Solidariteit Helpende Hand.

Jannie explains that 100g dry, roasted beans can deliver 500ml soup, which equals two cups containing 18% protein – this adds up to just over R1 per cup without adding extras such as onions and vegetables. When compared to the protein content and price of other meat products available, you will not find a cheaper source of protein.

"This is a source of protein we should utilise to not only benefit farmers, but also for the sake of food security. Where farmers are usually paid around R6 000/ton for soya beans, they could theoretically earn R12 000/ton by cutting out the middleman.

"I think that to remain profitable, future farmers will have to start processing their own crops or settle for farming a lot more hectares per year. However, by processing their own crops, they will have the opportunity to buy other farmers' produce and continue making their own products if their own harvest underperforms due to drought or pests," he concludes. 🌱

For more information, phone Jannie Cloete on 079 142 9198 or visit www.ojafarms.co.za.