

A green tree frog is perched on a large green leaf, facing left. The frog has a bright green head and back with yellow and white markings on its sides. The background is a blurred green foliage.

Agri
About

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Sustainable agriculture for the future

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No 147

Cover photo: Chris James

Water

Reducing water contamination

Optimal Irrigation Practices

Precision Irrigation

Indigenous crops

Integrated Food and Energy Systems

Transforming rural spaces

All creatures, great and small

Agri Mpumalanga Jongboer van die Jaar
Agri Noord-Wes Jongboer Finaliste

The Trusted Home of Agriculture
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Editorial

In agriculture, water is more than a resource; it is a lifeline. This month, *AgriAbout* dives into the urgent call for water conservation—highlighting efficient irrigation methods and thoughtful practices aimed at reducing contamination and promoting long-term sustainability.

As global pressures mount, South African farmers continue to innovate. Within these pages, you'll find grounded strategies for smarter irrigation, paired with stories that highlight not just technical insight but the passion and perseverance behind it. Our contributors explore actionable approaches to managing water in ways that respect both yield and environment—a balancing act that defines modern farming.



Water is only one thread in this issue's broader tapestry. We also examine the transformation of rural spaces, the importance of technology transfer, and the promise of integrated food systems. These themes reflect agriculture's shifting landscape, where community development, data, and collaboration converge to forge resilient solutions.

In celebrating people who make this evolution possible, we introduce the finalists of the Agri Northwest Young Farmer of the Year, and profile the winner of the Agri Mpumalanga Young Farmer Competition. Their stories brim with innovation and heart—evidence that the next generation of farmers is not only ready to lead but eager to preserve the land and inspire change.

Don does not miss one particularly memorable feature: the heartfelt tale of Chris James of Vreemdeling Farm in the Soutpansberg. His love for macadamias—and all creatures, great and small—paints a vivid picture of farming as a lifestyle infused with care, curiosity, and quiet stewardship.

In every story, this edition reminds us: conservation isn't a constraint, it's an invitation—to think differently, to farm differently, and to embrace the future with courage.

Enjoy the read, and may it spark fresh conversations that ripple across fields, farms, and hearts.

Chris

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Agri Mpumalanga Jongboer van die Jaar wenner:

Hendy-Hein Mathews:

Veerkrachtigheid met 'n Hart vir Vee

Hendy-Hein Mathews is tydens die onlangse Agri Mpumalanga 2025 jaarkongres as wenner in die Jongboer van die Jaar Kompetisie aangewys – 'n prestasie wat sy toewyding aan volhoubare landbou en sy passie vir kuddebestuur beklemtoon.

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Wanneer 'n mens met **Hendy-Hein Mathews** gesels, klink sy verhaal soos 'n boer wat met harde werklikhede geworstel het, maar steeds gekies het om te glo, te groei en te boer met toewyding. Nou reeds meer as elf jaar op die **Janvos-landgoed** naby Bethal in Mpumalanga, dien hy, met die morele bystand van sy vrou, **Shandré**, en hul twee kinders, as **kuddebestuurder én mede-melkerybestuurder** – en sy lewenspad tot hier was enigiets behalwe eenvoudig.

“Jy kan my maar **Hendy** noem – dis wat my familie gebruik,” sê hy met 'n warm glimlag oor die telefoon, en dis duidelik dat familie en plaaslewe in sy wese verweef is.

Van Droogte tot Volharding

Alhoewel Hendy uit vyf geslagte boere stam, was sy kinderjare op die familieplaas **Graslaagte** naby Lichtenburg gekleur deur droogtes en finansiële spanning. Toe die laat 1980's die boerdery onhoudbaar maak, moes sy gesin noodgedwonge pad gee, en die negatiewe assosiasie met landbou het hom laat glo dat sy toekoms elders lê. Maar die grond het hom bly roep. Ná matriek in 2005 volg 'n tydperk van verskeie werke: bankdiens, wildbedryf,



en hoenderboerdery in sy eie tyd – alles terwyl hy nadink oor sy roeping. Uiteindelik behaal hy 'n **BSc en Honneurs in Geografie en Omgewingsbestuur**, wat vandag 'n stewige grondslag vorm vir volhoubare landboupraktyke en ekologiese verantwoordelikheid.

'n Passie wat Herontdek is

Hoewel hy eers teen boerdery gekant was, het Hendy stilweg sy eie **Afrikaner-kudde** begin opbou – aanvanklik bloot as stokperdjie. Die draai kom toe hy werk op 'n voerkraal in Delmas kry, en later by Janvos begin. Vandag is vee nie net sy werk nie – dis sy passie, sy vreugde en sy fokus.

“Ek eet, slaap en droom beeste,” sê hy. “Dié roeping was altyd in my – dis nie iets wat jy aanleer nie, dis wie jy is.”

'n Holistiese Benadering tot Kuddebestuur

Hendy bestuur tans:

- 'n **Boran-kudde**, aangepas vir die strawwe winters van die Hoëveld,
- 'n **Holstein-melkery**, wat op die TMR-stelsel werk (Totale Gemengde Rantsoen),



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† Makrosikliese laktoon. †† Sulfonamiede



- en **vleismerino-skape** as deel van diversifikasie.

Die melkery gebruik volvoer, aangesien natuurlike weiding onvoldoende is. Holsteins lewer die kernproduksie, met 'n bietjie Jersey-melk wat bygevoeg word vir verbeterde bottervet. Die genetiese materiaal word sorgvuldig gekies – van topgehalte internasionale bronne.

In die Boran-kudde is drie afdelings sigbaar: 'n kommersiële komponent met kruisteling vir speenkalwers; 'n opteelkudde; en 'n stoetafdeling. Die diere is optimaal vir die streek se ruvoer – en dit is hierdie aanpasbaarheid wat volhoubaarheid verseker.

Mense maak die Verskil

Hendy glo dat **werkers 'n sleutelrol speel** in suksesvolle boerdery. "As mense die waarde van hul werk verstaan – veral omdat ons met lewende diere werk – dan neem hulle eienaarskap." Hy streef daarna om nie net positief leiding te gee nie, maar ook verantwoordelikheid toe te vertrou.





**Baie geluk, Hendy-Hein Mathews
Janvos Landgoed, Bethal
Agri Mpumalanga Jongboer Wenner
Ermelo Diereklíníek stap graag
die pad vorentoe saam met jou.**

Dr Renaldo Lloyd

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Boeraaaah!

HENDY-HEIN MATHEWS IS 'N AGRIABOUT JONGBOER WENNER!



Tatolo Mabyua, Suretha Francis en Hendy-Hein Matthews

Streek: Agri Mpumalanga

Boerdery: Janvos Landgoed, Bethal

Die Janvos Borankudde het in 2007 met vier koeie begin en staan vandag trots met 'n stoet van meer as **500 koeie** en **550 verse**.

Met fokus op wetenskap en gevorderde teeltagnieke soos embriospoeling en in vitro-bevrugting, is hulle nou 'n toonaangewende naam in die bedryf.

Hul kudde is onlangs as finalis benoem en hul koei, Izebo Zambi 5, is bekroon as die Platinum-vleisbeeskoei tydens SA Stamboek se **2025 Elite-toekennings**.



Risiko, Groei en Realisme

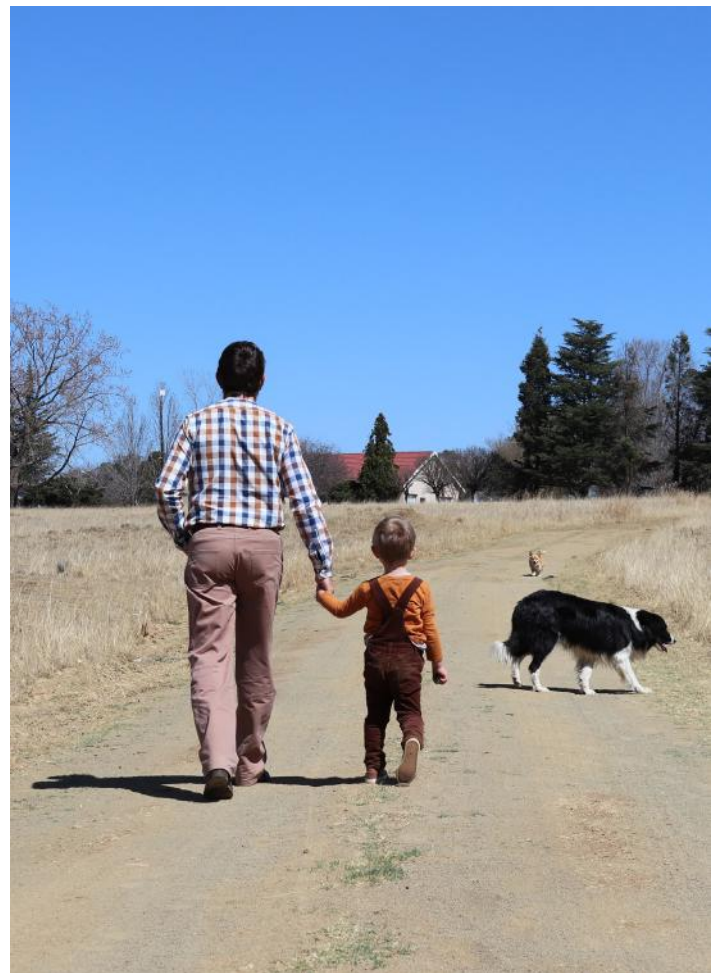
Hoewel Hendy nie terugdeins vir groei nie, glo hy nie in roekelose uitbreiding nie. "Die natuur, politiek en ekonomie is onvoorspelbaar – as jy nie buffer het nie, kan een swak jaar alles kelder." Die kern is om met visie én versigtigheid te boer.

Sy deelname aan die **Jongboer van die Jaar-kompetisie** het hom genoop tot introspeksie. "Ek het besef ek wil beter boer – ek wil anders dink, nuwe oplossings vind, en nie net op die status quo staatmaak nie."

'n Wenner wat Inspirasie Gee

AgriAbout wens Hendy-Hein Mathews hartlik geluk met sy aanwysing as **Agri Mpumalanga se Jongboer van die Jaar**. Sy verhaal is dié van volharding, aanpasbaarheid en diep oortuiging – 'n boer wat nie net sy plig doen nie, maar sy roeping leef.

'n Spesiale woord van dank aan **Mnr Robert Davel**, wie se vriendelike en waardevolle ondersteuning aan AgriAbout tydens die dekking van hierdie wenner waardeur word.



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At BKB we value the importance of trust. Trusting that the rains will return and that the land will produce for those who nurture it. Knowing that trust cannot be bought, but rather earned over time through our actions and our commitment to you, through the good times and bad. We take pride in the relationships we have built with generations of clients, each underpinned by integrity and bound through a look in the eye and the shake of a hand.

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Agri Noord-Wes Jongboer van die Jaar 2025 Kompetisie Finaliste

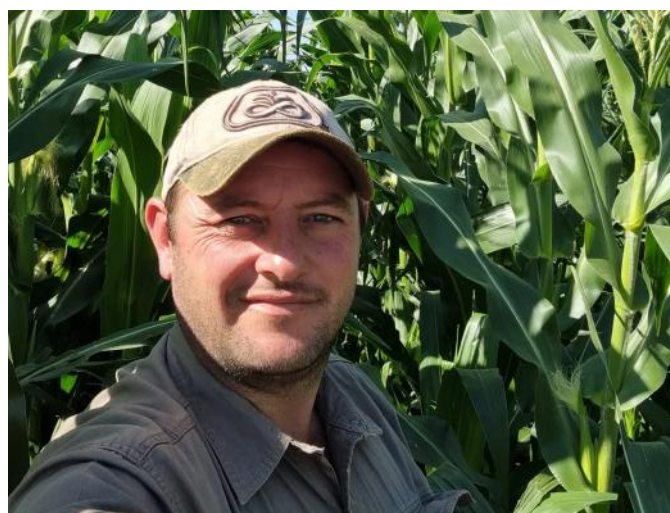
Dwarsdeur Suid-Afrika word streekskompetisies jaarliks gehou as deel van die groter **Jongboer van die Jaar-kompetisie**, wat uitloop op 'n nasionale byeenkoms waar streekweners meeding om top-toekennings. Die **Agri Noordwes** kompetisie vorm deel van hierdie waardevolle inisiatief, en bied 'n platform vir jong boere in die streek om hul leierskap, innovasie en toewyding ten toon te stel.

By AgriAbout dek ons graag hierdie streekskompetisies met die doel om ons lesers bekend te stel aan die unieke tipes boerderye, klimaatstoestande en uitdagings wat in verskillende dele van die land voorkom. Deur die lens van inspirerende jongboere verkry ons insigte oor moderne landboupraktyke, gemeenskapsbetrokkenheid en die toekoms van volhoubare produksie.

Hierdie maand stel ons met trots drie finaliste bekend: **Hardus du Plessis, David Pitout** en **William Harvey** – jongboere met uiteenlopende agtergronde, maar 'n gedeelde strewe na uitnemendheid. Hul stories, filosofieë en praktyke vorm die kern van wat dit beteken om vandag 'n suksesvolle jongboer in Suid-Afrika te wees.

Die streekswenner sal op **28 Augustus 2025** aangekondig word tydens **Agri Noordwes se jaarlikse kongres**. Ons wil hiermee **ons hartlike goeie wense aan al drie finaliste oordra** – mag julle deelname nie net jul boerdery verryk nie, maar ook jul impak in landbou versterk.

Laastens wil die AgriAbout span ons **spesiale dank betuig aan Marelize Fritz** vir haar **vriendelike, uitstaande ondersteuning aan AgriAbout** tydens die saamstel van hierdie dekking – haar toewyding is onontbeerlik in die sukses van hierdie projek.



NWK

Baie geluk!



HARDUS DU PLESSIS
WOLMARANSSTAD



DAVID PITOUT
KOSTER



WILLIAM HARVEY
TLAKGAMENG (PIET PLESSIS)

**NWK WENS DIE BOERE HARTLIK GELUK
MET HUL NOMINASIES VIR DIE
SANTAM LANDBOU / AGRI NOORDWES
JONGBOER VAN DIE JAAR
KOMPETISIE EN WENS HULLE
BAIE STERKTE TOE.**

**BAIE DANKIE VIR JULLE LOJALE
ONDERSTEUNING.
ONS IS OPREG TROTS OM
HIERDIE PAD SAAM JULLE TE
KAN STAP!**



Agri Noord-Wes Jongboer van die Jaar Finalis:

Hardus du Plessis:

Jongboer met 'n Plan

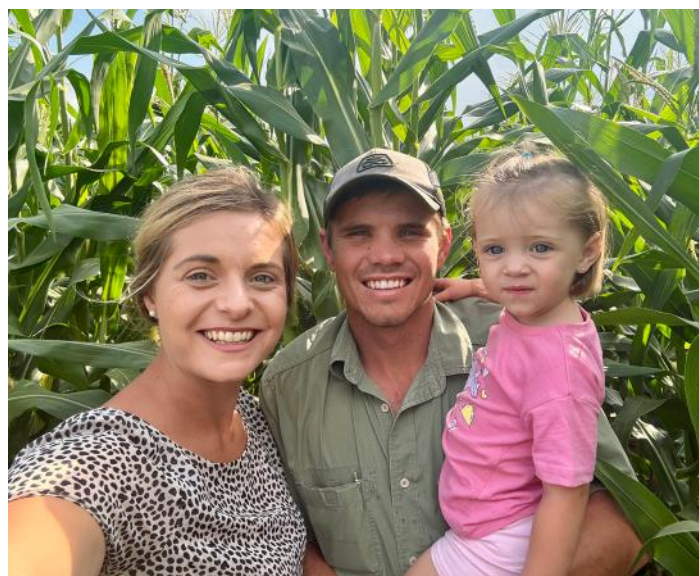
Hardus du Plessis (29) boer voltyds in die Wolmaransstad-omgewing op die familieplaas Rietkuil. Hy is getroud met Bernelee, en saam is hulle ouers van 'n tweejarige dogtertjie, Lana. Vir Hardus is boerdery nie net 'n beroep nie – dit is die hartklop van sy lewenswyse en 'n roeping wat reeds sedert sy kinderdae vorm aanneem.

Die plaas Rietkuil is 'n familieonderneming waar Hardus, sy pa en twee broers elkeen 'n unieke rol vervul. Hierdie spanwerk vorm die ruggraat van die boerdery se daaglikse funksionering en besluitneming.

Veelvlakkige Boerdery met 'n Toekomstige Fokus

Die du Plessis-boerdery beslaan drie hoofvertakings, waarvan saaiboerdery die grootste deel vorm. Hierdie gewasse sluit mielies, sojabone en sonneblom in. Die tweede grootste vertakking is die kommersiële

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beesboerdery, en die kleinste maar strategies belangrike komponent, is die lêhenboerdery.

Hardus dra die verantwoordelikheid vir die algehele beplanning en koördinerings van die boerdery. Van insetbestuur tot tegnologie-integrasie — elke aspek van produksie word met fyn oorleg deur hom hanteer. Hy is sterk gefokus op doeltreffendheid en seisoenale vooruitbeplanning.

Met die oog op die toekoms is Hardus besig om die lêhenboerdery uit te brei. Hy beoog ook die oprigting van 'n voer-

aanleg wat voerkoste drasties sal verminder en terselfdertyd die beesvertakking se volhoubaarheid sal bevorder. Hierdie praktyk beklemtoon sy entrepreneurshouding en langtermyn visie.

Tegnologie as Bondgenoot

Vir Hardus is moderne boerdery onlosmaaklik gekoppel aan tegnologie. Hy gebruik seksiebeheerde planters om saad en kunsmis optimaal te benut, sowel as grense om insetkoste te beperk. Satellietbeelde word gebruik om lande weekliks te monitor, terwyl werktuie dopgehou word vir tegniese doeltreffendheid.

In die beesvertakking verseker radioverbinding tussen werkers gladde kommunikasie — 'n eenvoudige maar kragtige voorbeeld van goeie bestuur. Hierdie tegnologie-gedrewe benadering help om risiko te verminder en produktiwiteit te verhoog.

Betrokkenheid en Leierskap

Buite die plaas speel Hardus ook 'n aktiewe rol in georganiseerde landbou. Hy is lid van Agri Noordwes en die Wolmaransstad Boerevereniging, en neem deel aan die



Korttermynversekering

*Baie geluk
Hardus Hardus du Plessis
Agri Noord-Wes Jongboer van die jaar finalis
Ons verseker jou met trots.*

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Vaalbank Studiegroep. Sy betrokkenheid strek verder as net landboubesprekings – as voorsitter van die Rietkuil Plaaswag dra hy by tot plaasveiligheid en brandbestryding in die streek.

Hierdie vlak van betrokkenheid wys dat Hardus boerdery nie slegs sien as 'n ekonomiese aktiwiteit nie, maar as 'n manier om tot die breër gemeenskap by te dra.

Filosofie en Beginsels

Hardus glo dat sukses nie per toeval kom nie — dit verg energie, toewyding en 'n onwrikbare strewe na uitnemendheid. Sy leuse, "Om gemiddeld te wees is nie 'n opsie nie," som sy filosofie bondig op. Hy sien boerdery as 'n besigheid wat met passie en dissipline bestuur moet word.

Hy beskou die volgende as sleuteleienskappe vir 'n gesonde boerdery:

- Boerdery moet met 'n besigheidsperspektief bestuur word, maar sonder passie sal dit nie slaag nie.
- Deeglike beplanning, gevolg deur

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Baie Geluk

Hardus du Plessis van Wolmaransstad wat benoem is as een van die 2025 Jongboer finaliste.

Met 'n jongboer soos jy klop die somme vir die toekoms.

STERKTE & GELUKWENSE

Hardus Du Plessis



Van die hele span by **TerraTill Horsch** wil ons jou hartlik gelukwens met jou benoeming as 'n finalis vir boer van die jaar. Dit is 'n ongelooflike prestasie en getuienis van jou toewyding, innovasie en passie vir die landbou.



- toegewyde uitvoering van daardie plan.
- Deursettingsvermoë en vasberadenheid in die aangesig van uitdagings.

Uitdagings en Aanpasbare Oplossings

Volgens Hardus is klimaatverandering een van die grootste bedreigings vir moderne boerdery. Korter plantvensters en hoër temperature beïnvloed onkruidbeheer en die doeltreffendheid van chemiese middels. Verhoogde insetkoste maak saai boerdery 'n risiko-volle onderneming, en die wisselende vleispryse bring onsekerheid in die beesvertakking se bemerking.

Maar Hardus glo nie in stil sit nie. Hy stel praktiese oplossings voor:

- Wisselboustelsels verhoog landbou se veerkragtigheid teenoor klimaatspanning. Verskillende gewasse kan op verskillende tye geplant word, wat produksie versprei.
- Belegging in gevorderde planttoerusting verhoog die planttempo en benut reënvensters beter.
- Presisieboerdery optimaliseer hulpbronbenutting en verminder



vermorsing. Seksiebeheer by planting is veral nuttig om saad en kunsmis akkuraat toe te pas.

- In die beesvertakking gebruik hy kruipvoer om die bemarkingsvenster van kalwers te verleng, wat meer beheer oor vleispryse bied.

Hierdie oplossings toon Hardus se vermoë om komplekse uitdagings met strategie en tegnologie aan te spreek — altyd met die einddoel van volhoubaarheid en groei.

'n Jongboer met Groot Drome

Die inskrywing vir die Jongboer van die Jaar-kompetisie volg op 'n nominasie deur sy boerevereniging — 'n eer wat hy met dankbaarheid en trots aanvaar het. Vir hom is die kompetisie 'n geleentheid om sy boerderypraktyke krities te evalueer en nuwe perspektiewe te bekom.

Sy raad aan jong boere of nuwelinge in die landbou is eenvoudig maar kragtig: **W-E-R-K**. "Met harde werk, toegewydheid en slimplanne kan 'n beginboer 'n sukses maak van enige iets," sê hy.

Hardus du Plessis is meer as net 'n boer. Hy is 'n jong leier met visie, tegnologiese ingesteldheid, en 'n dryfkrag om nie net sy eie boerdery te verbeter nie, maar ook die toekoms van Suid-Afrikaanse landbou mee vorm te gee.



Agri Noord-Wes Jongboer van die Jaar Finalis:

David Pitout:

Bou aan Boerdery met Besigheidssin

David Pitout (39) is 'n boer met 'n ongewone agtergrond en 'n uitsonderlike visie. Gebore op 21 Junie 1985, is hy getroud met Charlien, en saam is hulle die trotse ouers van Coenrad (12). David se pad tot voltydse boerdery was alles behalwe konvensioneel – van konstruksie tot korporatiewe kommunikasie en uiteindelik na landbou, waar sy passie ware vorm aangeneem het.

Van Projekbestuur tot Plaasbestuur

David het sy B.Sc.-graad in Konstruksiebestuur aan die Universiteit van Pretoria voltooi en twee jaar in die konstruksiebedryf gewerk. Daarna het hy vyf jaar in die kommunikasiesektor deurgebring, onder meer as Kliënte Projekbestuurder op MTN se hardeware projekte. Gedurende dié tyd het hy ook sy PPM-kwalifikasie in Projekbestuur behaal – 'n vaardigheid wat vandag 'n belangrike rol speel in sy benadering tot boerdery.

Die roepstem van landbou was egter sterk, en David het elf jaar gelede besluit om voltydse te begin boer op die plase Vlakvarkpan en Rhenosterfontein in die Koster-omgewing. Hy het intussen sy eie grond gekoop en huur ook aansienlike dele bykomende grond vir produksie. Hy dien as direkteur in die familieboerdery, en oorsien daagliks sy bedryfssportefeulje met 'n streng oog vir detail en doeltreffendheid.

'n Divers Boerderymodel met 'n Groeistrategie

David se boerdery is veelvlakkig en dinamies. Die grootste komponent is die saaiboerdery, met mielies, sojabone en sonneblom as

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hoofgewasse. Die tweede grootste vertakking is sy transportbesigheid, wat primêr graanverskuiwing vir NWK hanteer. Die kleinste – maar strategies belangrike – deel is die kommersiële beesboerdery, wat hy beoog om uit te brei deur genetiese optimalisering.



Om elke afdeling professioneel te bestuur, het David twee jaar gelede Blitsem Boerdery (Pty) Ltd gestig. Hierdie onderneming bestaan uit drie vertakings:

- **Blitsem Graan**
- **Blitsem Transport**
- **Blitsem Vee**

Die visie agter hierdie struktuur is om elke vertakking as 'n selfstandige entiteit te bestuur, wat sinergisties bydra tot die oorhoofse sukses van die moedermaatskappy. Hy beoog om later spesialisbestuurders aan te stel om dié afdelings op 'n hoë vlak te hanteer.



Hartlik geluk met die benoeming as finalis

David Pitout

Agri Noordwes 2025

Jongboer van die Jaar

AECI Plant Health word trots geassosieer met jou boerdery.

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David se langtermyn doelwitte sluit ook in die oprigting van nuwe besigheidseenhede vir die produksie van voer, meliemeel en landbou-onderdele – ’n stap in die rigting van waardetoevoeging en vertikale integrasie.

Tegnologie en Presisie op Elke Hektaar

Elke hektaar onder David se bestuur word doelbewus beplan. Hy gebruik gevorderde tegnologie soos grondevaluasie, kartering en presisieboerdery om saadpopulasies en bemestingsvlakke te optimaliseer. Hierdie benadering verseker dat elke stuk grond volgens sy potensiaal benut word – ’n praktyk wat in ’n veranderende klimaat en ekonomiese landskap al hoe belangriker word.

Betrokkenheid in Organisasies en Gemeenskap

David is nie net aktief op die plaas nie – hy is ook sterk verbind tot georganiseerde landbou en gemeenskapsontwikkeling. Hy is lid van Agri NW en die Koster Studiegroep, waar hy die familieboerdery se sekundi is. Gedurende die afgelope ses jaar was hy intens betrokke by NWK se Jongboer-/Beginnerboer-projek.

Sy toewyding is op verskeie maniere beloon:

- Sonneblom Boer van die Jaar
- Sojaboon Boer van die Jaar
- Drie keer as Mielieboer van die Jaar

David is tans ook voorsitter van die Kaallaagte Brandvereniging, en hy dien as diaken in sy kerk. Sy betrokkenheid in die breër gemeenskap is ’n verlengstuk van sy oortuiging dat boerdery nie

in isolasie plaasvind nie – dit is verweef met die samelewing se welstand.

Beginsels wat Werk

Vir David is sukses geskoei op beplanning, kommunikasie en kalmte. Hy sê: “Selfs met die beste beplanning is daar uitdagings – dis hoe jy daarop reageer wat tel.” Hy beklemtoon dat spanwerk en samewerking essensieel is: geen boer kan op eie houtjie volhoubare sukses behaal nie.

Sy siening sluit aan by sy raad aan jongboere: raak betrokke by georganiseerde landbou, leer van ander, en bou saam aan ’n sterker toekoms.

Toekomsvisie en Leierskap

David se boerdery is nie net ’n onderneming nie – dit is ’n strategiese platform waar hy sy vaardighede in projekbestuur, tegnologie, spanleiding en langtermynbeplanning integreer. Hy is ’n boer wat nie net op vandag fokus nie, maar wat bou vir môre.

Sy leuse is kenmerkend van sy ingesteldheid: “Ons kan nie omstandighede of die omgewing verander nie, ons kan net die wyse waarop ons reageer verander.” In hierdie woorde lê ’n filosofie van aanpasbaarheid, dryfkrag en doelgerigtheid.

David Pitout is ’n jong boer wat die bouplanne van boerdery met kennis, ervaring en passie hanteer. Van korporatiewe strate tot grondpaaie hy bring die beste van twee wêreldes saam in ’n model wat vir volhoubaarheid en groei ontwerp is.



Agri Noord-Wes Jongboer van die Jaar Finalis:

William Harvey:

In Geloof en Vasberadenheid Geanker

William Garret Harvey (39), boer voltyds in die Molopo-distrik naby Piet Plessis/ Tlakgameng. Hy is getroud met Reinette, en saam is hulle ouers van vier kinders: Nathan (12), Haley (10), Caleb (8) en Abigail (5). Vir William is boerdery nie net 'n loopbaan nie – dit is 'n roeping geanker in geloof, familie en 'n diep liefde vir die natuur.

**CLICK HERE
to read article
in English**

'n Plaaslike Leier met Wye Verantwoordelikheid

William is al sedert 2009 betrokke by die boerdery op die plaas Uitzoek, en het sedert 2016 die voltydse leisels oorgeneem na die afsterwe van sy pa. Die oorgang van handlanger tot direkteur het sy betrokkenheid verdiep, en vandag is hy aktief in alle fasette van Harvey Cattle Ranches, waar hy met trots en toewyding sy familie se nalatenskap voortbou.

Hy het sy B-Agric graad in Diereproduksiebestuur aan die Universiteit van die Vrystaat verwerf, en bring dié akademiese kennis, sowel as praktiese ervaring, na die bestuur van 'n komplekse en gefokusde beesproduksiemodel.

Gespesialiseerde Beesboerdery met 'n Toekomsvisie

Harvey Cattle Ranches is hoofsaaklik gespesialiseer in die produksie van beesvleis, en beskik oor 'n klein aanvullende braaikuiken boerdery. Die boerdery het oorspronklik met 'n kruising van Nguni, Tuli, Boran en Brahmaan beeste gewerk, maar William het in die afgelope dekade oorgeskakel na die Bovelder ras – 'n beesras wat by uitstek aangepas is vir die Suid-Afrikaanse omgewing en uitstekende vleisgehalte lewer.

Die boerdery lewer speenkalwers, slagdiere vir die mark, en aanteeldiere vir kommersiële boere. Tans is sy fokus daarop gerig om die koeie in optimale kondisie te kry vir die komende kalfseisoen – 'n proses wat onder meer afhanklik is van hoëdruk beweidingspraktyke, waardeur groter troppe vir beperkte tye in kleiner kampies wei. Hierdie metode het positiewe effekte op grondherstel,



grasgroei en biodiversiteit, en vorm die ruggraat van William se volhoubaarheid strategie.

Tegnologie en Data-gedrewe Besluitneming

William benut tegnologie op verskeie vlakke van sy boerdery. Hy gebruik 'n dragtigheidsskandeerder, rekenaarprogram vir kudde data en 'n naspeurbaarheidstelsel om akkurate besluitneming te ondersteun. Hierdie tegnologieë verseker nie net beter reproduksiebestuur nie, maar dra ook by tot die optimalisering van bemarking en diergesondheid.

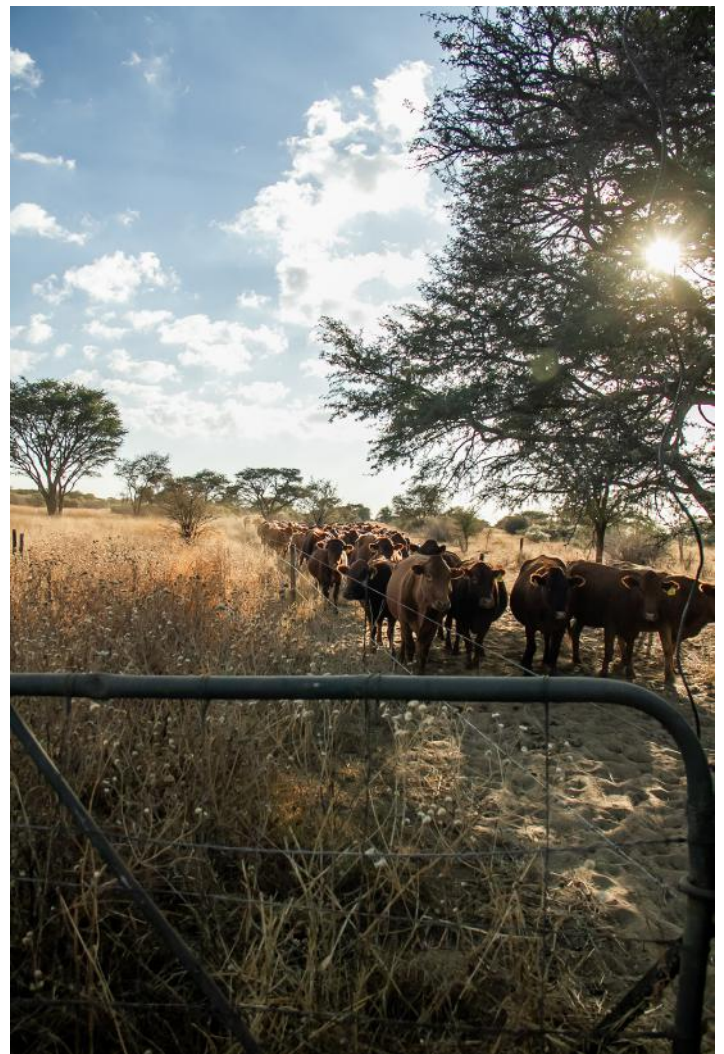
Gemeenskap, Organisasies en Leierskap

William is 'n aktiewe lid van Agri NW en Agri Tlaskgameng. Sy betrokkenheid strek ook na die Piet Plessis Laerskool, waar hy dien as ondervoorsitter van die beheerliggaam. Boonop dien hy al vyf jaar as klub kaptein van die Tlaskgameng Tennis Klub, wat getuig van 'n sterk verbintenis tot gemeenskapsontwikkeling en leierskap.

Vir William is georganiseerde landbou 'n hoeksteen van sukses. Hy glo dat samewerking en vertroue in landbou-organisasies noodsaaklik is om huidige uitdagings te oorkom.

Geloof, Filosofie en Leefwyse

As boer het William 'n duidelike lewensfilosofie – 'n geloofsgebaseerde benadering tot boerdery en besluitneming. "Ek kan my nie indink hoe dit moet wees om in al die slegte en goeie tye



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te boer sonder die Here wat krag, wysheid en aanmoediging vrylik gee nie," sê hy.

Hy identifiseer drie kernbeginsels vir sukses:

- **Geloof** as grondslag vir alle besluite.
- **Tydsberekening**, wat geld spaar, vrede bring en effektiewe uitvoering moontlik maak.
- **Ondersteuning**, verkry van die regte mense op die regte tyd, wat help om uitdagings te oorkom.

Uitdagings in die Veeboer Landskap

Weerstoestande bly William se grootste bekommernis – 'n faktor waaroor boere min beheer het. Die vleisbedryf ondervind boonop druk van biosekuriteit-kwessies soos bek-en-klousee, uitvoerbepelings, afhanklikheid van voerkrale, en ekonomiese onstabieleit.

Volgens William is daar geen eenvoudige oplossing nie, maar 'n **positiewe gesindheid, oopkop denke** en vertroue in landbou besluitnemers is ononderhandelbaar. Net so belangrik is die vermoë om met veerkragtigheid en kreatiwiteit nuwe oplossings te identifiseer en te implementeer.

'n Kompetisie wat Selfrefleksie Beklemtoon

William was oorspronklik skepties oor die Jongboer van die Jaar-kompetisie, maar 'n goeie vriend het hom oortuig om deel te neem. Die geleentheid vir introspeksie en groei het vir hom die grootste



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William Harvey is voorwaar 'n besondere mens, en ons wil hom graag gelukwens met die nominasie as Agri Noord-Wes Jongboer van die Jaar Finalis. Baie dankie vir jou lojale ondersteuning by ons besigheid.





AGRI MOLOPO BOERE - UNIE

wens vir

William Harvey

**hartlik geluk met sy
benoeming as finalis van die
Agri NW Jonboer van die jaar
kompetisie.**

**Ons Boere-unie staan bankvas
agter jou en jou gesin.**

Jy maak ons trots!



Kantoor: 082 387 7686

E-pos : agri.molopobu@gmail.com

Erkenning aan William Harvey

Finalis: 2025 Jong Boer van die Jaar-kompetisie

Die Bovelder Bees Studiegroep is trots om William Harvey van Harvey Cattle Ranch geluk te wens met sy benoeming as finalis in die 2025 Agri-Noordwes Jong Boer Kompetisie.

William is 'n toewyde boer met 'n moderne benadering, 'n passie vir volhoubare boerdery, en 'n sterk betrokkenheid by sy gemeenskap. Sy leierskap en werksetiek maak hom 'n waardige kandidaat.

Baie geluk, William – jou prestasie is uitsonderlik en welverdiend!



waarde ingehou, en hy is dankbaar teenoor Agri NW vir die platform. Hy het nooit daardie besluit betreur nie, en sien dit as 'n belangrike stap in persoonlike en professionele ontwikkeling.

Raad aan Jong boere

William se raad aan mede-jongboere is diep gewortel in praktiese wysheid: "Omring jouself met kundige mense wat jou visie en drome deel – mense wat jou sal uitdaag om beter te wees. Wees optimisties, positief en oopkop. Dis wanneer geleenthede opduik, planne beraam word en drome realiseer."

Hy beskou die boerdery nie net as 'n beroep nie, maar as 'n groot voorreg. "Stap in geloof," sê hy, "en geniet elke oomblik daarvan."

Boerdery as Hoeksteen van Suid-Afrika

Vir William is landbou 'n sleutel rolspeler in Suid-Afrika se ekonomie en werk sektor. Hy glo dat jong boere, met hul vars idees en tegnologiese ingesteldheid, 'n nuwe era in landbou vorm gee – een waarin tradisie, tegnologie en geloof saamwerk om volhoubare groei te verseker.

William Harvey is 'n selfgedrewe boer wat met toewyding, integriteit en spiritualiteit 'n nalatenskap bou in die Molopo. Hy is 'n leier in sy gemeenskap, 'n vakman op sy plaas, en 'n inspirasie vir jong boere regoor die land.

Conservation of Water with Optimal Irrigation Practices

Fanie Vorster

ARC-Natural Resources and Engineering

Good quality water is a resource that is becoming scarce to an alarming extent. However, the demand for it for domestic, industrial, agricultural, and recreational purposes is rising constantly.

South Africa is a country that is prone to drought conditions due to its location relative to the global prevailing winds, as well as its topography. Eighty percent of annual rainfall occurs during a period of 4-5 months. The water quality of most open water sources is questionable, as it is degraded by some form of pollution to some extent.

Approximately 60% of the annual stored run-off in South Africa is being utilized for irrigation purposes. Therefore, it is imperative that irrigation practices be implemented

that enhance optimal water use, without contributing to degradation of the water quality.

Which factors influence the efficiency of irrigation water use?

One of the most important ways to increase the water use efficiency of an irrigation system, is to ensure that the application of the water is as uniform as possible on the field. However, there are environmental-, system-, and management factors that have an influence on the application uniformity of the water. These factors need to be managed properly to achieve the optimum application uniformity for the specific irrigation system. Environmental factors are typically the influence of wind on overhead irrigation systems, or soil characteristics on drip



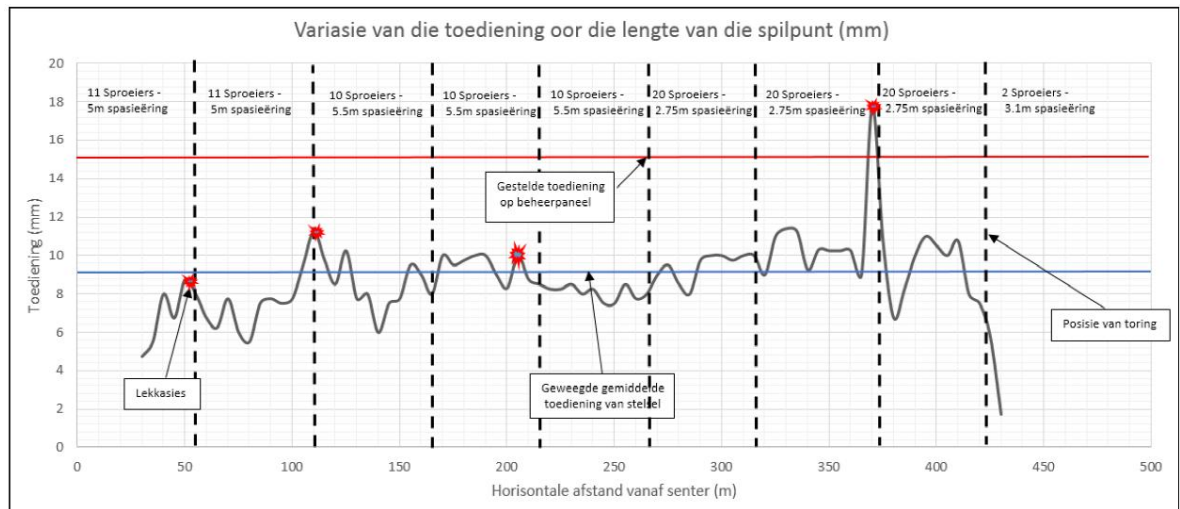


Figure 1: Show the results of an evaluation done on the centre pivot in the photo. Leakages affected the uniformity of water application negatively, as can be seen on the graph. The red dots are actual leakages observed during the evaluation. The red line is the set application (15mm); The blue line is the weighted average application of the pivot, obtained during the system evaluation (9mm); The black line is the actual application measured along the length of the centre pivot during the evaluation, showing considerable variation.

irrigation systems. It needs to be considered at the system design stage, because it could have an influence on the irrigation system choice. It also needs to be considered to some extent during operation and management of the irrigation system.

The system factors are mainly addressed in the design of the irrigation system. For example:

- the design operating pressure and flow rate determines the pump capacity,
- the flow rate and allowable friction loss determine the pipe diameter,
- the operating pressure and topography determine the pipe pressure class,
- the infiltration rate of water into the soil, determines the maximum application rate of the system.
- the clay percentage, water holding capacity of the soil and soil/root depth have an influence on the total system capacity.

The farmer as end user of the irrigation system can ensure his system applies water as uniformly possible, by performing a few simple routine management tasks on a regular basis. It consists of the following inspections and measurements and comparing the results with the design parameters:

- Measurement of the pressure:
 - Just downstream of the pump,

- Up- and downstream of the filter-bank (in the case of micro -and drip irrigation)
- At every hydrant (the block or lateral inlet pressure). The pressure at every hydrant should be adjusted such that the emitters are operating at the prescribed design pressure.

- Measurement of the nozzle size of sprinklers:
 - Wear and tear due to solid particles in the water causes the nozzle size to increase over time. The result is that the sprinkler delivery increases while the pressure drops, which affect the application uniformity negatively. It also has a negative effect on the hydraulics of the entire lateral / block. As a norm sprinkler nozzles should be replaced when 5% wear and tear occurred. (5% wear results in a 10% increase in flow rate). A special tool was made to measure nozzle size. However, a drill bit, with the size of the nozzle before any wear occurred can also be used.
- Measurement of the total flow volume through the system with a flowmeter in a specific time:
 - The result should be compared with the volume (m³) of water that should be applied by the system on the same



Figure 2: Measurement of the operating pressure of a sprinkler

area (m²) to obtain the desired water application in mm.

- Measure the water delivery of drippers and micro sprayers.
- Visual inspect for leakages.
- Visual inspect for blockages.
- Visual observation of excessive wind losses.
- Visual inspect the crop regarding non-uniform growth (wave-form, poor growth), in certain rows or sections of a row.

The values that are obtained with the

measurements, should be compared with the system design specifications and norms. Where necessary, remedial action needs to be taken.

These basic actions can be done by the farmer; however, it is recommended that an irrigation system should be evaluated every 3 years by specialists to determine whether the system is still performing according to the design specifications. This would help to save input costs, increase the yield, and conserve water.

Inquiries: vorsters@arc.agric



Figure 3: Measuring the pressure downstream of a hydrant

Key strategies to reduce water contamination in fruit and veg

Loandi Richter-Mouton: Department of Plant and Soil Sciences,
University of Pretoria

Professor Lise Korsten: Department of Plant and Soil Sciences
and co-director of the Centre of Excellence in Food Security,
University of Pretoria

Water is essential at all stages of food production, from irrigation to food processing to washing fruit and vegetables before we eat them. Crops and livestock need it to grow, but water can also be contaminated by pathogens (any organism that causes disease), heavy metals, and chemicals.

These can be considered a potential food safety hazard when they enter the food chain. For example, contaminated irrigation water can transfer pathogens like *Escherichia coli* to fruit and vegetables. Eating these raw and without washing them properly can lead to severe stomach cramps, diarrhoea, nausea and fever. We are a team of researchers from the University of Pretoria and the Water Research Commission in South Africa who have investigated bacterial pathogens in water sources for the past 20 years. We've developed ways to help determine whether water is of good quality when used before and after harvesting fresh produce.

With about 40 years of combined experience, we are also identifying potential hotspot environments for contamination. We're currently tracking multi-drug-resistant bacteria in South Africa's water and assessing the implications for food safety. We have also analysed the

complete supply chains of fresh produce using microbiological methods to investigate what contaminants might be circulating in vegetable production and contaminated irrigation water. Our research is focused on ensuring that the food reaching consumers' tables does not pose hidden health risks. Over the years, we've learnt these key lessons:

- Harvesting rainwater from roofs is a good idea in water-scarce rural South Africa. However, if tanks aren't cleaned regularly, this water can be contaminated by microbes (microscopic organisms that cause disease). The slimy layer building up in water holding containers can provide a favourable environment to enable microorganisms to survive and multiply, including potential pathogenic ones that can affect human health.
- Surface water sources, such as rivers and dams, often contain high levels of *E.coli* and multidrug-resistant bacteria. These can be transferred onto vegetables during irrigation. This creates a potential health risk for anyone eating the vegetables without proper washing with safe water.
- South Africa's current water quality guidelines have not been developed to test for contamination by multidrug-resistant bacteria and emerging pathogens. They mainly focus on indicator organisms such as *E.*

coli typically associated with faeces. Polluted irrigation water affects food quality. To address these problems, farmers, academic researchers and the government must collaborate to develop new water quality standards. These must reflect local conditions and emerging threats. This is crucial for protecting the food system and to ensure that our food is safe.

Where contamination begins and how it can be stopped

It starts at upstream activities such as wastewater from non-functional municipal sewage systems contaminating water. Such water can affect downstream farming when used for irrigation. Pathogens can attach to plants and survive, and cause build up over the season to levels that can cause a concern at farm level. Small-scale farmers, who supply much of the fresh produce in informal markets, face major problems in accessing clean irrigation water. Even if water looks clean, it can contain hidden contaminants that compromise food safety. Safe water, tested and treated to remove such hazards, is essential to prevent this. However,

surface water sources (rivers, lakes, ponds) are often the only available water for crop irrigation, livestock production and domestic use. But in many areas, these water sources have been contaminated by partially treated or raw sewage that's been released into the environment.

Our research has found that smallholder farmers' irrigation water has transferred *Salmonella* and *E.coli* to soil and fresh produce.

Things can also go wrong at retail level. Once fruit and vegetables reaches informal markets, its safety can vary widely depending on the vendor and the practices being followed, such as putting spinach in dirty water to keep it fresh looking and prevent it from wilting. Research has also found the presence of bacterial pathogens with expanded antimicrobial resistance profiles on fresh produce at the point of sale. Further, that multidrug-resistant potentially pathogenic bacteria were present throughout spinach production, even on commercial farms where similar contaminated irrigation water was being used.



There are also threats at home. Roof-harvested rainwater contained *E. coli* and *Enterococcus*, which can transfer to vegetables watered from the tank.

What can be done about the problem?

Our research highlights the pressing need for more real-time data and context-specific water quality guidelines. These need to go beyond indicating *E.coli* levels, to also identifying other potential threats such as *Salmonella* and clusters of *E. coli* that produce Shiga-toxins. These can cause severe illnesses such as hemorrhagic colitis and hemolytic uremic syndrome, where blood clots damage the kidneys, potentially leading to kidney failure.

We are currently tracking antibiotic resistance in rivers. Our aim is to turn this research into practical actions for safer irrigation, better hygiene, and reduced antibiotic resistance. This will help protect South Africa against food safety hazards.

In areas that are known to have poor water quality, continuous surveillance and testing must be set up. Without this surveillance, contamination could go unnoticed, potentially affecting consumers. Food also needs to be monitored, and samples taken to see if it's free of these pathogens.

Water is essential to all life. Ensuring its safety requires strong collaboration between government, scientists, farmers, and communities. Overall, South Africa needs a comprehensive food safety policy and to be involved in implementing a continental food safety agency and framework for more aligned regulation and control.

The team currently leading the research are Professor Lise Korsten and Dr Loandi Richter-Mouton (University of Pretoria) and Dr Eunice Ubomba-Jaswa and Dr Samkelisiwe Hlophe-Ginindza (Water Research Commission).

Source

[Decades of South African research reveal key strategies to reduce water contamination in fruit and veg](#) originally published in **THE CONVERSATION** July 1, 2025: Republished under a [Creative Commons — Attribution/No derivatives license](#).

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Water usage in farming: What we can learn from indigenous crops

Agreement Khoza and Ayabonga Toko

Department of Agricultural Economics, Extension, and Agribusiness,
University of Fort Hare

South Africa is facing serious challenges in farming. Water is becoming more limited, rainfall is unreliable, and the effects of climate change are hitting smallholder farmers the hardest. But the good news is, we don't need to rely only on water-hungry crops like maize and wheat. There are traditional crops that can grow well even when water is scarce, and these include bambara groundnuts, cowpeas, and amaranth amongst others. These crops contain essential nutritional and medicinal value and play a vital

role in minimizing malnutrition, moreover, the likes of bambara groundnut are termed a complete food. However, policymakers and researchers have overlooked them due to factors such as undefined value chains and cultural biases. These crops are called indigenous or underutilized crops. They have been part of South African diets and farming systems for generations. Today, they can offer real solutions for water conservation, better nutrition, and stronger household food security.



Bambara groundnuts



Amaranth

Why water matters in farming

Water is one of the essential production inputs that is vital for crop growth, and other farm activities. Most of the current staple crops, such as wheat and maize, require a lot of water and are sensitive to drought. Yet there is an escalating demand for these crops due to the growing population. This then necessitates the need to sustainably meet the current demand without depleting the limited available water resources. Hence, as droughts become more frequent, it is becoming clear that we need to shift to climate-resilient farming systems, especially those that use water more efficiently. Efficient water use in agriculture means doing more with less: less rainfall, less irrigation, and less pressure on already stressed water resources.

Characteristics of indigenous crops

Crops like bambara groundnut, amaranth, cowpeas, sorghum, and African leafy vegetables are naturally suited to South Africa's dry conditions. They require less water, fewer chemical inputs, and can still produce healthy harvests and yield high quantities.

Here are some key benefits:

- **Drought tolerance:** These crops can survive in dry areas where maize might fail.
- **Low input needs:** They grow well without fertilizers and pesticides.
- **Short growing cycles:** Some mature quickly, allowing farmers to harvest more than once a year.
- **Small space:** Certain indigenous crops can yield high quantities in a relatively small space.
- **Good nutrition:** They are rich in protein,

fibre, iron, and other nutrients.

For example, bambara groundnut can be grown in two seasons in areas with short rainy periods. It matures in three to six months and stores well, making it useful during times when other food is scarce.

Simple irrigation ideas for water-saving farmers

Many small-scale farmers do not have access to expensive irrigation systems. However, there are easy methods that can save water while still growing a healthy crop of Indigenous foods:

Mulching covering the soil with dry grass or leaves keeps the ground cool and moist.

Intercropping: Growing indigenous crops with other plants helps retain soil moisture and improves overall yields. These low-cost methods help farmers grow food with much less water.

"Poor man's food" to climate resilience

Unfortunately, indigenous crops are still often viewed as old-fashioned or "poor people's food." However, this perception is gradually shifting due to growing awareness of healthy eating and the importance of nutritious diets for a better quality of life. It should be noted that these crops are nutritious, affordable, and climate-smart, perfect for today's water-stressed world. What needs to be done is to ensure that people, especially the youth, need to learn about the benefits of these crops and their cultural significance. This stems from various studies that found that awareness of these indigenous crops is mainly distributed among older people.

A better future with less water

Water conservation is not just about saving water; it is about growing food differently. Returning to resilient, water-efficient indigenous crops and combining them with smart irrigation methods, can help farmers survive the droughts, protect our environment, and feed our families. It is time to rethink what we grow and how we grow it, our future depends on it. Efforts to address water scarcity should not rely solely on the development of new, scientifically bred crop varieties it also requires revitalizing interest in indigenous crops.

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Precision Irrigation: Farming Smarter, Not Wetter

Water is the lifeblood of agriculture—and in South Africa, where nearly 60% of the nation's water supply is directed toward farming, conservation is no longer optional. Amid growing climate instability and frequent droughts, precision irrigation has emerged as a powerful strategy. This data-driven approach

helps farmers minimise water use while improving crop health and yield, creating a more resilient food system.

What Is Precision Irrigation?

Precision irrigation refers to the controlled and localised application of water tailored to a specific crop's needs, soil conditions, and



environmental factors. Unlike conventional irrigation methods that often apply water uniformly, precision systems ensure each plant receives the ideal amount of water at the ideal time.

Core concepts include:

- Site-specific application using real-time data
- Sensor-based monitoring with soil probes and weather stations
- AI-powered scheduling platforms and mobile dashboards for remote management

TECHNOLOGY AT THE FOREFRONT

Drip Irrigation Systems

Deliver water directly to the root zone, reducing evaporation and improving uptake. Ideal for vegetables, orchards, and vineyards.

Soil Moisture Sensors

Sensors track volumetric water content and trigger irrigation only when thresholds are met, preventing overwatering and encouraging healthy root development.

Smart Platforms and AI Integration Tools like Farmonaut's Jeevn advisor use satellite data, weather modelling and predictive analytics to automate irrigation scheduling—allowing farmers to grow smarter.

Remote Monitoring via Apps Dashboards give farmers control over irrigation zones from any location. Alerts for dry zones, leaks or anomalies offer peace of mind and save valuable time.

LOCAL SUCCESS STORIES

Nikwaflora Nursery, Western Cape

RainPoint's system triggers 45-minute watering cycles when soil moisture dips below 40%. This has led to healthier Cuca melons, reduced water consumption, and improved yields.

Smallholder Trials in Limpopo Participating farmers saw 30–50% water savings and crop yields boosted by 20–25% after adopting drip irrigation and smart sensor feedback.

Benefits of Precision Irrigation

- **Water Efficiency:**
Up to 50% savings through targeted application

- **Improved Yields:**
Healthier crops and up to 25% more output
- **Cost Reduction:**
Less labour, water, and fertiliser
- **Environmental Impact:** Reduced runoff and erosion with better nutrient control

Challenges & Considerations

- **Upfront Costs:**
High setup costs may require financial planning
- **Training:**
Farmers must learn to interpret data and manage systems
- **Integration:**
Compatibility with existing infrastructure is essential

Conclusion

Precision irrigation represents a vital step toward more sustainable farming. With proven results from local farms and global innovation accelerating, South African producers have a real opportunity to maximise every drop—boosting production, resilience, and profitability.

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BRICS leaders must take a courageous step on trade policy

Wandile Sihlobo

The BRICS Summit took place in Brazil 6 and 7 July 2025. There are many themes on the minds of the political leaders in this group, but one aspect that is certainly important for all is easing trade friction within this group. For the long-term sustainability of BRICS, there must be a stronger economic ambition that ties the grouping together beyond its political and geopolitical alignments.

Across all BRICS countries, researchers, policymakers, and businesspeople have been attempting to adapt and address the

restrictions caused by the U.S. Liberation Day tariffs, and there remains profound uncertainty about the path ahead, as the 90-day pause comes to an end this coming week.

However, what the BRICS countries have not reflected on is also the prohibitive tariffs they place against each other, which limit intra-BRICS trade.

The blame, while correct, cannot be placed solely on the U.S. for its higher tariffs; the BRICS countries should also consider taking a serious look inward and assessing how





investments.

approximately US\$15.7 billion in 2024.

The ideas of this path have long been documented in the business arm of this grouping, the BRICS Business Council Forum's various annual reports. Still, few of these ideas have made their way into the political groupings' resolutions in a manner that profoundly changes the economic engagement landscape amongst these countries. The current environment necessitates such a strong approach.

Consider the South African agricultural sector, which, due to the lack of a trade agreement, faces higher tariffs in attractive BRICS member countries such as China. To name a few, South African macadamias face a 12% import tariff in China. The wine industry faces between 14%-20% in China, and many other products. In addition to higher tariffs, exporters also face phytosanitary barriers. I am singling out China here, but the same can be said about India, another major agricultural importer within BRICS.

For South Africa, agriculture is one of the key strategic industries for driving economic growth and revitalising rural communities. Notably, the sector cannot grow robustly without an expansion into new export markets. Already, the South African agricultural industry exports roughly half

But the BRICS countries account for a small share of these exports. Roughly two-thirds of South Africa's agricultural exports go to the African continent and the EU.

While China has signalled optimism and an intention to lower import tariffs for various goods from Africa, there is no demonstrable evidence of the actual path of implementing this, along with the timelines. Currently, it primarily serves as a political statement.

The BRICS grouping should then build on these political statements, and argue for a proper framework that technocrats and business can start refining, which can be launched in the next Summit in India as the BRICS trade agreement, which would encompass the agricultural sector, as this grouping is a big market, accounting for roughly half of global agricultural imports, but filled mainly by non-BRICS members.

The U.S. authorities' tough trade stance necessitates this approach to trade policy, and for the BRICS countries to expand the avenues for trade for their domestic businesses and alleviate the current friction within this group.

This economic ambition of deepening trade is vital for the long-term sustainability of BRICS.

Integrated Food and Energy Systems for Climate Change Mitigation and Improved Food Security

Manoshi Mothapo, Zikhona Buyeye and Primrose Magama
ARC-Natural Resources and Engineering

South Africa continues to face the dual challenges of food insecurity and the impacts of climate change, particularly in rural communities that rely on agriculture for their livelihoods. Rising temperatures, prolonged droughts, and erratic rainfall patterns are placing immense pressure on water availability, energy access, and food production systems. To address these challenges, integrated food and energy systems (IFES) have emerged as a holistic approach to building climate resilience,

improving food security, and promoting sustainable resource use.

The IFES is designed to implement practical, community-based solutions that combine biogas energy generation, rainwater harvesting, and sustainable agriculture through drip-irrigated vegetable gardens under shade net. The project has been rolled out in six provinces of South Africa: Masibekela and Sibange Villages in Mpumalanga, KwaMbane in Eastern Cape,

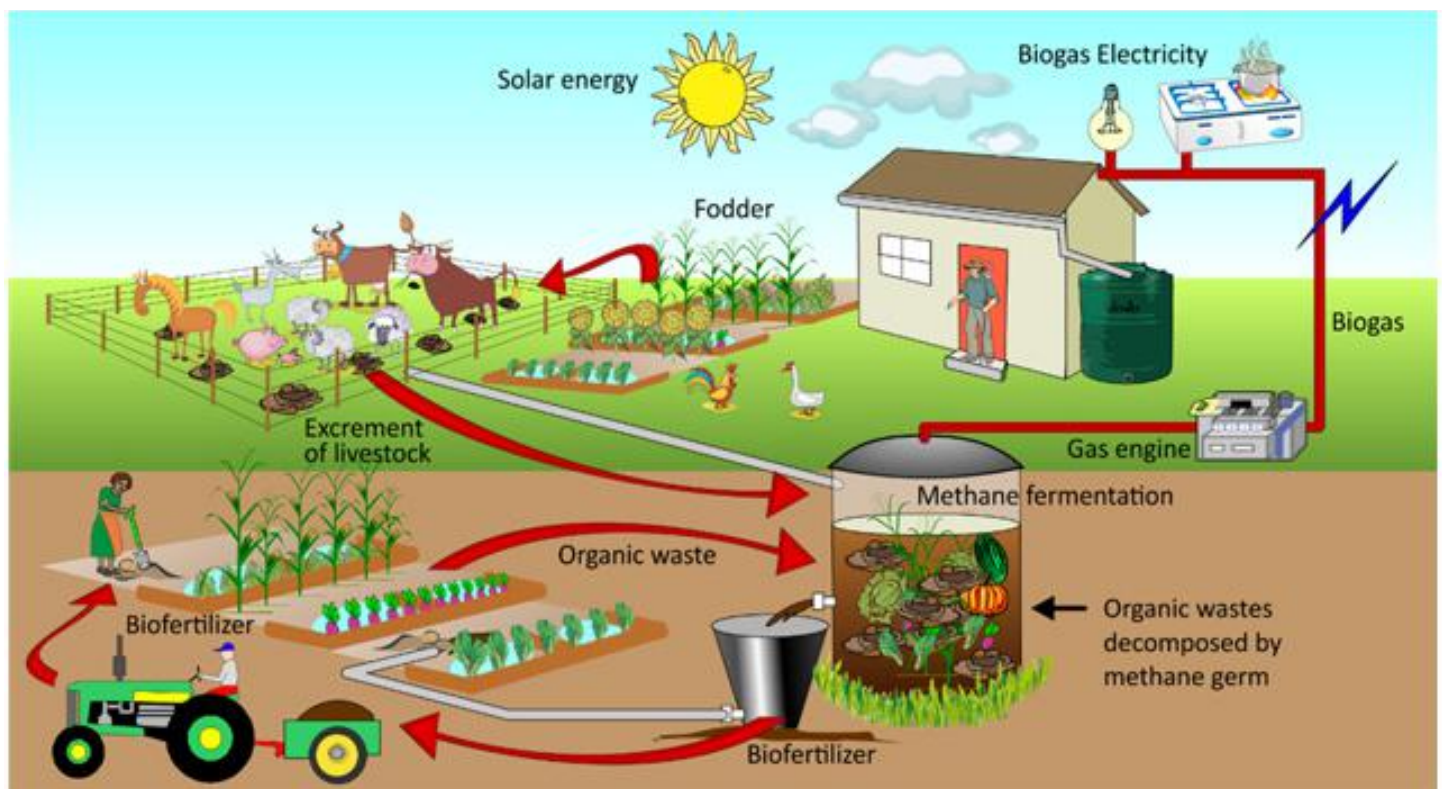


Illustration of the IFES implemented in rural communities.



Complete biogas digester connected to the gas stove

Gunjaneni Village in Mtubatuba, KwaZulu-Natal, Masia Village in Limpopo, Rooifontein Trust in Thaba Nchu, Free State; and Mokasa 1 and Mokasa 2, and Lokgabeng villages in Taung, Northwest.

The figure below illustrates the interaction between the core components of the system: the biogas digester, rainwater harvesting system, and drip-irrigated vegetable garden. The closed-loop model exemplifies a sustainable nexus between food, energy, and water.

Farmers received training in the operation, maintenance, and benefits of the integrated systems. Farmers were also supported with agricultural inputs, technical advice, and monitoring visits to ensure successful system adoption.

SYSTEM COMPONENTS

Biogas Digester

The biogas system installed in each project site consists of a 6 cubic meter (m³) dome-shaped



Mixing cow dung with water for feeding the digester



Operational gas stove. Status at 18 months post installation, indicating well fed biogas digester with good pressure.



Rainwater harvesting system connected to booster pump

digester designed to process livestock manure and kitchen waste to produce methane gas. The gas is used primarily for cooking and heating, significantly reducing dependence on firewood and paraffin. The digester supports the anaerobic decomposition of organic material, resulting in two main outputs: clean, combustible gas and nutrient-rich slurry. The slurry is an effective organic fertilizer that is reused in vegetable gardens to enhance soil fertility and crop productivity.

Rainwater Harvesting System

Each household was equipped with a 5000-liter storage tank that captures and stores rainwater from rooftops. The water is primarily used for household cleaning, feeding the digester and irrigating the vegetable gardens. The rainwater harvesting system is equipped with filtration to ensure clean storage, and booster pump for use when the water level is below 25% capacity for irrigation purposes.

Vegetable garden with drip irrigation system

To enhance local food production, each project site maintains a 72-square-meter vegetable

garden equipped with a drip irrigation system. The system is powered either by gravity from the tank or a booster pump, depending on the level of water in the storage/rainwater tank. Crops grown include spinach, tomatoes, carrots, onions, peppers, lettuce, beetroot and other vegetables vital for household nutrition. As part of encouraging income generation from vegetable gardens, households sell the surplus produce to the community. The use of drip irrigation conserves water by delivering it directly to the plant roots and reduces weeding and disease incidence due to minimal water contact with foliage and soil surfaces.

Impacts areas

- **Reduction in greenhouse gas emissions and deforestation**

The project has contributed to climate change mitigation by capturing methane from decomposing organic waste through biogas digesters. This not only prevents the release of a potent greenhouse gas into the atmosphere but also replaces traditional cooking fuels like firewood and paraffin. As a result, there has been a noticeable reduction in deforestation and indoor air pollution, promoting healthier households and ecosystems.



Vegetable garden fitted with drip irrigation system. Status at 14 months post installation.

- **Improved soil fertility and reduced chemical dependency**

Application of bio-slurry from the biogas process has enhanced soil fertility in household gardens. The organic fertilizer improves soil texture, moisture retention, and nutrient content, leading to healthier and more productive crops. This has reduced the need for chemical fertilizers, lowering farming costs and minimizing environmental degradation from agrochemicals.

- **Enhanced food security and nutrition**

The establishment of drip-irrigated vegetable gardens under shade net protection has enabled year-round food production. Households are now growing a range of vegetables such as spinach, tomatoes, onions, and carrots, regardless of rainfall variability. This has increased the availability of nutritious food, diversified diets, and improved household food security.

- **Increased water use efficiency**

The integration of 5,000-liter rainwater harvesting tanks and drip irrigation systems has improved water management practices at the household level. These systems provide a reliable water source during dry periods and minimize water loss through evaporation and runoff. This has resulted in more efficient use of water, essential in water-scarce rural communities.

- **Strengthened household and community resilience**

By integrating food, water, and energy systems, the project has improved

households' ability to withstand climate-related shocks such as droughts and energy shortages. The synergy among system components supports a more self-reliant and adaptive way of life, reducing vulnerability and increasing community sustainability.

- **Economic savings and income generation**

Households have reported a decrease in spending on cooking fuel and vegetables due to the availability of biogas and homegrown food. Additionally, surplus vegetable produce has provided income-generating opportunities through local market sales, supporting rural livelihoods and fostering micro-enterprise development, particularly among women and youth.

The integrated food and energy systems implemented across the six provinces in South Africa demonstrate a scalable and sustainable approach to addressing climate change challenges while improving food and energy security. The biogas digesters, rainwater harvesting system, and drip-irrigated gardens work in synergy to form a resilient rural development model that can be replicated nationwide. Continued support, community engagement, and policy integration are vital to scaling and sustaining this impact.

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Transforming rural spaces: Lambasi's inspiring community-led development

Ayabonga Toko & Natasia Qwabe,
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In a world where rural areas are often neglected, the Lambasi village in Lusikisiki, Eastern Cape, stands as a beacon of hope. Lambasi, which is located within the Ingquza Hill Local Municipality, has shown how communities can transform their surroundings with minimal cost and maximum impact. The villagers have made their area more accessible and visually appealing, proving that rural development does not have to be expensive through teamwork and creativity.

What makes Lambasi truly special is its ability to foster unity among residents to achieve shared goals. The transformation was not driven by external funding or large-scale projects, but by the collective efforts

of the community members. This sense of ownership has created a strong bond within the community, inspiring others to take pride in their environment and contribute to its maintenance. Lambasi's approach serves as a reminder that rural communities can thrive when empowered to take charge of their own development.

Lambasi residents have taken proactive steps to make their village easier to navigate. Without waiting for government intervention, they installed signs to guide visitors exploring the Wild Coast. These signs not only simplify navigation but also enhance Lambasi's reputation as a tourist destination. The scenic beauty of nearby attractions, such as the Mbotyi and Magwa Tea estate draws visitors



Magwa Tea estate



from far and wide, creating opportunities for local businesses and boosting the economy.

Thoughtful solutions for accessibility and comfort

One of Lambasi's most remarkable initiatives is the placement of roadside chairs made from natural materials. These chairs serve as resting places for travellers, particularly for elderly individuals and those with physical disabilities. In a municipality where 5.4% of the population has some form of disability, many with physical impairments, such simple solutions make a significant difference. For people with conditions such as arthritis or mobility challenges, these chairs provide much-needed relief, which highlights Lambasi's commitment to inclusivity.

In addition, these roadside chairs have become symbolic of the village's innovative spirit. Their placement along pathways encourages interaction between travellers and locals, fostering a sense of community and promoting safety for pedestrians who navigate rural roads. The use of locally sourced materials also highlights Lambasi's commitment to sustainability, ensuring that development efforts align with environmental conservation principles.

The importance of rural development

Lambasi's efforts highlight the potential for rural areas to flourish through small-scale improvements. Investing in rural development ensures better infrastructure, social amenities,

and economic opportunities for residents. Simple changes such as the installation of road signs, improving the pathways, and creating resting places can combat depopulation and attract investment while promoting sustainable development.

Rural areas often face challenges such as unemployment and limited access to resources; however, initiatives such as those in Lambasi show that these obstacles can be overcome through creativity and collaboration. Addressing basic needs such as accessibility and comfort, villages can lay the foundation for larger-scale development projects that improve living standards while preserving cultural identity and natural beauty.

Prospects for Lambasi

Looking ahead, Lambasi has the potential to enhance its appeal even further. There may already be discussions or efforts underway to develop a leisure park for children, providing a dedicated space for recreation and social interaction. In addition, the village could explore opportunities for community-led businesses, such as craft markets or eco-tourism ventures, which would celebrate local culture and natural beauty. If such initiatives are not already in place, they could significantly benefit residents by creating jobs, boosting the local economy, and attracting more visitors. These developments would not only strengthen Lambasi's position as a tourist destination but would also improve the overall quality of life of its people.



Mbotyi

Another promising prospect is to use technology to further promote tourism in Lambasi. Creating digital platforms or apps that highlight local attractions could attract national and international attention while providing an avenue for local businesses to reach broader markets. Such innovations would complement existing efforts while positioning Lambasi as a model village for rural transformation in South Africa.

A model for rural transformation

Lambasi's story serves as an inspiration for other rural communities in South Africa. It shows that with vision, dedication, and

collaboration, even remote villages can become thriving spaces. Rural areas can become more liveable and inviting for both residents and tourists by making the best use of available resources and focusing on practical improvements,

The success of Lambasi underscores the importance of grassroots initiatives in driving sustainable development in rural South Africa. Empowering communities to take ownership of their growth, policymakers can ensure long-term benefits that extend beyond infrastructure improvements to foster resilience, creativity, and pride among residents in their unique heritage.



Technology Transfer for the Utilisation of Underutilized Crops

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Underutilized crops are domesticated plant species used for food, feed, medicine, informal trading, or cultural traditions within local communities but not generally commodified or studied as part of mainstream agriculture. The five main types of underutilized food crops are fruits, leafy vegetables, root and tubers, grain legumes, and pseudocereals and millets. They frequently shine in areas like

low input requirements, compatibility with cropping systems, easy harvest and post-harvest processing, easily produced seed or propagules, and environmental tolerance. Many of them offer high-quality protein, vitamin, and mineral sources to help reduce the “hidden hunger” of micronutrient malnutrition, which impacts over three billion people globally. Consensus had been reached that underutilised crops should



Bambara groundnut



Cowpea



Pigeon pea

be mainstreamed or produced just like mainstream crops such as maize, barley and millet. The better bet of mainstreaming underutilised crops is that they are nutrient dense, implying that they can meet human nutrition requirements, especially for urban customers who prioritise eating healthy. For example, amaranth has 145 mg 100 g⁻¹ of β -carotene, whereas Swiss chard has 45 mg 100 g⁻¹ of β -carotene.

The Agricultural Research Council - Leguminous, Leafy, and Fruit Vegetables division has embarked on research for the underutilized commodity crops like Bambara groundnut, Cowpea, Pigeon pea, Amaranth, Cleome, Corchorus, Nightshade, and Okra



Amaranth

focusing on germplasm collection, diversity study, phenotyping, participatory research, adaptability study, breeding for drought tolerance and breeding for nutritional quality.

The Agricultural Research Council is still in the early stages of developing these crops. To create novel cultivars, basic agronomic characterization, breeding, and nutritional analysis are still being done. Creating cultivars that can thrive in the face of climate change and satisfy the need for sustainable and healthful meals is the main goal of the current study. Numerous obstacles have stood in the way of several initiatives, such as inadequate value chains, conservation methods, and understanding of their medical benefits.



Cleome



Corchorus



Nightshade

The Department of Agriculture (DoA) supported the projects for improvement of underutilized crops for food and nutritional value. These projects are aimed at broadening the South African food-base by developing improved crop varieties available to the local farmers. ARC in collaboration with the DoA and University of Limpopo hosted several farmers field days in the country. The first one was at ARC Loskop Research Station on the 26 February 2025, the other one at Polokwane on the 6 March 2025, Makhathini Research Station on the 20 March 2025 and Musina on the 26 March 2025 where the farmers meet each other and exchange ideas and experiences in the selection of the preferred traits of the crops according to their geographical situations.



Farmers days



Okra

The delegates from different entities attended the event including scientists, researchers, private sectors, funders, officials and most importantly the farmers. During the farmers' days, presentations were given by scientists and researchers from the ARC, University of Limpopo and DoA, after that, there were field visits.

The farmers' days are podiums to share farming ideas, knowledge sharing and opportunities to transfer experiences and skills. They strengthen collaboration between extension officers, scientists, researchers, funders and farmers with the aim of building a good working relationship among them. During field visits, farmers had an opportunity to select the varieties based on their traits of interests. The selected varieties were tagged, and they will be further advanced for breeding in the next planting season.

Conclusion

Recognizing underutilized crops by government, policy makers, academic institutions, and the international food sector would be beneficial. South Africa must create new, inclusive food systems and incorporate them as a crucial component of existing ones.

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All creatures, great and small, this macadamia farmer loves them all

Carolize Jansen

In Levubu, people still refer to the catastrophic flood of 2000, which spelled the end of avocados in the area. “The farm basically became unproductive. In 2001, I was taking out dead and dying avo trees,” says Chris James of the farm Vreemdeling (‘Foreigner’; *right*), close to Makhado (Louis Trichardt), Limpopo Province.

James has an affinity for bees, quipping that he inherited his parents’ ‘vices’ of horses

and bees. “The bees actually kept me alive in those years when I was recovering from the flood.” For 25 years, he was moving his pollinating hives at night between pumpkin, avocado, macadamia, and mango farms in a 250-kilometre radius. “I was young and energetic, so I did a day shift on the farm, and then a night shift with the bees.”

Macadamia trees, like the rich indigenous forest of the Soutpansberg Mountains,





emerged unscathed from the floods, and it became Levubu's number one crop.

"I've only got 170 hectares, of which probably 90 hectares are not arable," he says of his mountaintop farm. He's proud that his farm provides habitat for both the common grey duiker and the scarce red duiker and all manner of cats and mustelids – caracal, serval,

civet, honey badger, right up to leopards, observing: "I think there are more leopards here than people think."

Years ago, he recounts, farmers would shoot down raptors, enemies of domestic fowl, but now that is frowned upon and many raptor species have returned to the Soutpansberg Mountains. He reckons that farmers have become much more conservation-conscious.





An adult flap necked chameleon left, and juveniles after a night rescue

The morning newspaper printed on the ground

James initially studied wildlife management, and he had intended to enter academia when filial duty called him back to the farm where he grew up.

"When I walk around on the farm, I read my morning newspaper: The animal tracks left during the previous night. I know the individual groups of bush pigs that walk on my farm, I see the badger or the caracal was here, or the leopard crossed here last night."

He remarks that the easy pickings offered by orchards have, alas, turned some animals into "problem animals". "I'm talking about the monkeys, the baboons, the bush pigs, the porcupines, all the things that eat avocados and nuts. So their numbers are going through the roof. It's an overpopulation problem. I've got a sustainable use policy. I'll shoot bush buck to use and we'll allow hunters to shoot bush pig on a controlled basis."

Biodiversity in orchards a boon for chameleons

It's for the resident reptiles that Vreemdeling farm recently gained renown, and all as a result of James' approach that he calls 'greening'. "I started a practice three or four years ago of letting the grass and flowering forbs grow in the interrows. It was basically

to help the bees survive because when you've planted a single crop like a macadamia, it's a monoculture and it becomes a green desert. There's no food for the bees."

Luminescent in the light of his torch, on his nocturnal anti-theft patrols with his dogs – the unavoidable nighttime duty on many South African farms – he started seeing scores of juvenile chameleons in the grass with some adults in the macadamia trees.

In preparation for the harvest, the grass needs to be cut and baled – a death sentence for the slow-moving chameleons. An off-the-cuff suggestion to hikers on the farm to help him relocate juvenile chameleons to safety ahead of harvest turned into [a viral video](#). "There's been a lot of reaction after Barry Christie, the technical advisor of Green Farms Nut Company, to whom I deliver my nuts, posted it on a WhatsApp group. On my subsequent patrols and whenever I had people here, I said, okay, let's go and hunt chameleons and put them in my basil lands. They're safe there, it will not be slashed."

He stopped counting after a while at between 100 and 150 chameleons. "You don't see a lot of chameleons ever, you know." He hopes such actions can dispel a cultural phobia of chameleons. His staff knows his quirks: He doesn't kill snakes, not even the black



mamba that drinks at the farm dam. “We’ve had a couple of scary moments with them, but generally the mamba avoids us very successfully. They’re actually very clever at avoiding contact with people.”

Breeding bees for enzymatic resistance to chemicals

He is very worried about bee mortality on farms where they are pressed into pollination service. All beekeepers have experienced this. “Bees are being killed through spraying, while there is a shortage of them! My theory is that our losses due to poor pollination exceed our losses due to stink bug damage. I decided that I was going to try and do something about the bee problem instead of retiring.”

James is preparing a podcast series to share his experience of farming using, instead of abusing, bees. People don’t really know how

to manage bees, he observes, and Northern Hemisphere advice is of no use when working with the feisty African bee (*Apis scutellata*). In his macadamia orchards, his team still sprays the full range of registered chemicals, even neonicotinoids, but at night only, or when bees are not present. He’s fortunate, he acknowledges: He needs to spray less than farmers further down in the valley.

He breeds bees that demonstrate greater resilience to chemical sprays. It’s become his passion project. “I am selecting bees that can cope, and I breed queens from them. I keep taking the best queens every year, and I leave them under those conditions where the guys are spraying for stink bug.”

He weighs these hives every month to see which contain the most honey, an indicator of a thriving colony.



"I'm no way near the end goal. I haven't isolated immunity in any form, but I have isolated some genes showing resistance. Once I've isolated bees that cope well with those conditions, I want to make those resistant lines available commercially."

For more information:

Chris James

Vreemdeling Macadamia Farm

Barry Christie (Green Farms Nut Company): barry@gfnc.co.za

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Pictures: Courtesy of Mr Chris James.



Queen bee cells with which James hopes to breed bees more resilient to chemical sprays

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Chicken Soup with Herb Dumplings

Ina Paarman

A great way to extend one packet of soup into a one pot meal.

Serves: 4

You Will Need:

Chicken Soup

- 1 x 500 g Ina Paarman's Country Chicken Soup
- 2 cups (500 ml) water
- 2 t (10 ml) Ina Paarman's Chicken Stock Powder

Herb Dumplings

- ½ cup (125 ml) cake flour
- 1 t (5 ml) baking powder
- 1 t (5 ml) Ina Paarman's Chicken Stock Powder
- 1 T (15 ml) butter, cold
- ½ cup (125 ml) buttermilk or Amazi or plain yoghurt
- 2 T (30 ml) garlic or regular chives, chopped
- extra chopped chives for garnish



Method:

Gently heat the Chicken Soup in a medium-sized saucepan with the water and Chicken Stock Powder.

Herb Dumplings:

Sift together the flour, baking powder, and Chicken Stock Powder.

Rub the butter into the flour, then add the buttermilk and chives, and stir to form a thick dough. Do not overwork the mixture.

Gently drop heaped tablespoonfuls of dough / batter into the simmering soup.

Immediately close the saucepan with a lid and gently simmer for 10 minutes.

Serve hot, garnished with chopped chives.



Sift dry ingredients



Rub in butter



Mix to form dough / batter



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Potato, Cauliflower & Bean Curry

Ina Paarman

A mildly spiced vegetable curry in an aromatic sauce.

Serves: 8

You Will Need:

3 medium potatoes, peeled and cubed 1 cm x 1cm

1 ½ T (22,5 ml) Ina Paarman's Masala Spice

4 T (60 ml) canola oil

1 cup (250 ml) green beans, sliced

½ cup (125 ml) fresh cream or coconut milk

½ cup (125 ml) water

1 x 250 ml Ina Paarman's Cape Malay Curry Cook-In Sauce

2 cups (500 ml) cauliflower florets



Method:

Season the cubed potatoes with the Masala Spice.

In a saucepan, heat the oil to smoking point, add the potatoes, and fry until light brown and semi-cooked.

Add the green beans and fry for another two minutes.

Add the cream or coconut milk, water, and Cape Malay Curry Sauce.

Bring to a simmer.

Add the cauliflower florets and stir through.

Cover with a lid and simmer until the cauliflower is tender.

Serve with roti and Cucumber Raita.



You will need



Stir-fry potatoes



Add beans and curry sauce

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