

LANGGEWENS

RESEARCH FARM

— 100 YEARS —

A century of soil, science and seasons 1926-2026

LANGGEWENS RESEARCH FARM - 100 YEARS



Western Cape
Government



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Dr Ivan Meyer
Western Cape Minister of Agriculture,
Economic Development and Tourism

FOREWORD

One hundred years is more than a milestone. It is a testament to vision, perseverance and an unwavering commitment to serving future generations. When Langgewens Research Farm was established in 1926, the challenges facing agriculture were very different from those confronting us today. Yet the purpose has remained remarkably constant: to generate practical knowledge that enables farmers to produce more efficiently, more sustainably and with greater confidence.

Over the past century, Langgewens Research Farm has earned its place as one of South Africa's premier dryland agricultural research institutions. Situated in the heart of the Swartland, it has become far more than a research farm. It is where science meets practice, where ideas are tested under real farming conditions, and where innovation finds its way from the trial plots into the hands of producers.

The impact of this work extends far beyond the boundaries of the farm. Research undertaken at Langgewens Research Farm has shaped Conservation Agriculture, strengthened climate resilience, improved soil health, advanced livestock production systems and influenced farming practices across the Western Cape and beyond.

Its long-term research programmes have become invaluable national assets, providing answers that can only emerge through decades of patient observation and scientific excellence. This publication reminds us that the true measure of research lies not only in scientific papers or experimental results, but in the confidence it gives farmers to adapt, innovate

and build resilient businesses. Throughout these pages, we meet the researchers who asked difficult questions, the partners who invested in knowledge, and the farmers whose willingness to embrace new ideas transformed research into meaningful impact.

As the Western Cape Government, we recognise that agricultural research has never been more important. Climate change, water scarcity, food security, technological advancement and changing consumer expectations require bold thinking and evidence-based solutions.

Institutions such as Langgewens Research Farm will continue to play a vital role in ensuring that our agricultural sector remains globally competitive while safeguarding the natural resources entrusted to our care.

As we celebrate this remarkable centenary, we honour every researcher, farm manager, technician, employee, student, partner and producer who has contributed to the Langgewens Research Farm story. Their dedication has built a legacy that continues to strengthen agriculture, create opportunities and contribute to economic growth throughout the Western Cape.

While this book reflects on an extraordinary first century, it also looks confidently towards the future. The challenges may evolve, but the commitment to scientific excellence, innovation and service will continue to define Langgewens Research Farm for generations to come. May the next century be as pioneering as the first and may the research results continue to grow the economy and jobs in the Western Cape and beyond.



Dr Mogale Sebopetsa
Head of Department
Western Cape Department of Agriculture

INTRODUCTION

Every institution has a history.

Few have a legacy. Langgewens Research Farm is one of those rare places where generations of people have come together in pursuit of something greater than themselves: knowledge that serves agriculture.

For one hundred years, researchers have observed, questioned, tested and refined ideas on these fields. Seasons have changed. Farming systems have evolved. Technologies have advanced. Yet the principle upon which Langgewens Research Farm was founded has remained unchanged—that sound science must improve the lives of the people who farm the land.

This publication is not simply the story of a research farm. It is the story of people.

It is the story of visionary scientists who recognised that meaningful answers are seldom found in a single season, but through long-term commitment and careful observation. It is the story of technicians and farm staff whose dedication ensured that every trial was conducted with precision and integrity.

It is the story of partners who invested in research long before the benefits could be fully realised. Above all, it is the story of farmers who trusted the evidence, embraced innovation and transformed their own farming systems for the benefit of future generations.

As you journey through these pages, you will discover how Langgewens Research Farm evolved alongside agriculture itself—from its early focus on improving grain production

to becoming an internationally recognised centre for Conservation Agriculture, climate resilience and integrated farming systems. You will also meet the people whose passion and collaboration transformed scientific research into practical solutions that continue to shape agriculture across the Western Cape.

The Western Cape Department of Agriculture remains committed to ensuring that research continues to respond to the real needs of producers. The challenges facing agriculture today are increasingly complex.

Climate variability, natural resource management, food security, technological innovation and changing market demands require research that is interdisciplinary, responsive and firmly grounded in the realities of farming.

That is why Langgewens Research Farm remains as relevant today as it was in 1926.

This centenary is an opportunity to celebrate what has been achieved, but equally, it is an invitation to imagine what lies ahead. Every generation inherits knowledge from those who came before.

Our responsibility is to build upon that foundation and ensure that future generations inherit an agricultural sector that is more resilient, more sustainable and better equipped to feed a changing world.

May this publication serve not only as a celebration of a remarkable past, but as an inspiration for the century that lies ahead.

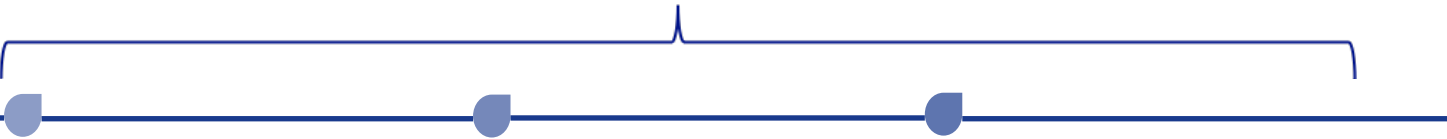
A CENTURY OF DISCOVERY





A CENTURY OF AGRICULTURE: THE CENTENNIAL TIMELINE

FOUNDATIONS AND EARLY DISCOVERIES (1920s - 1980s)



The '20s - '40s

The '50s - '60s

The '70s - '80s

THE EARLY YEARS

Langgewens Research Farm as a farm came into existence, and the first few years of research focused on a wide range of crops and animals.

TAKING THE NEXT STEPS

The 1950s and 1960s mark a period of modernisation and scientific intensification in dryland agriculture in the Western Cape of South Africa. Research during this period focused on improving crop productivity and addressing soil fertility constraints in the Mediterranean climate of the Swartland.

CONSERVATION TILLAGE GAINING MOMENTUM

Represents a period of rapid technological advancement and production intensification in the Western Cape's dryland cropping, but also combating soil erosion through the introduction of contouring, lay pastures and reduced tillage. Sheep research gains momentum.



A CENTURY OF AGRICULTURE: THE CENTENNIAL TIMELINE

MODERNISATION AND CLIMATE RESILIENCE (1990s - 2026)

The '90s - early 2000s

CONSERVATION AGRICULTURE COMES OF AGE

The dawn of a new age in crop and sheep production with Conservation Agriculture research coming to the fore. Small stock research at Langgewens Research Farm is well established.

The 2010s - 2020s

SMART AGRICULTURE

The digital age of research and climate-smart agriculture becomes the norm.

2026

INTO THE NEXT CENTURY

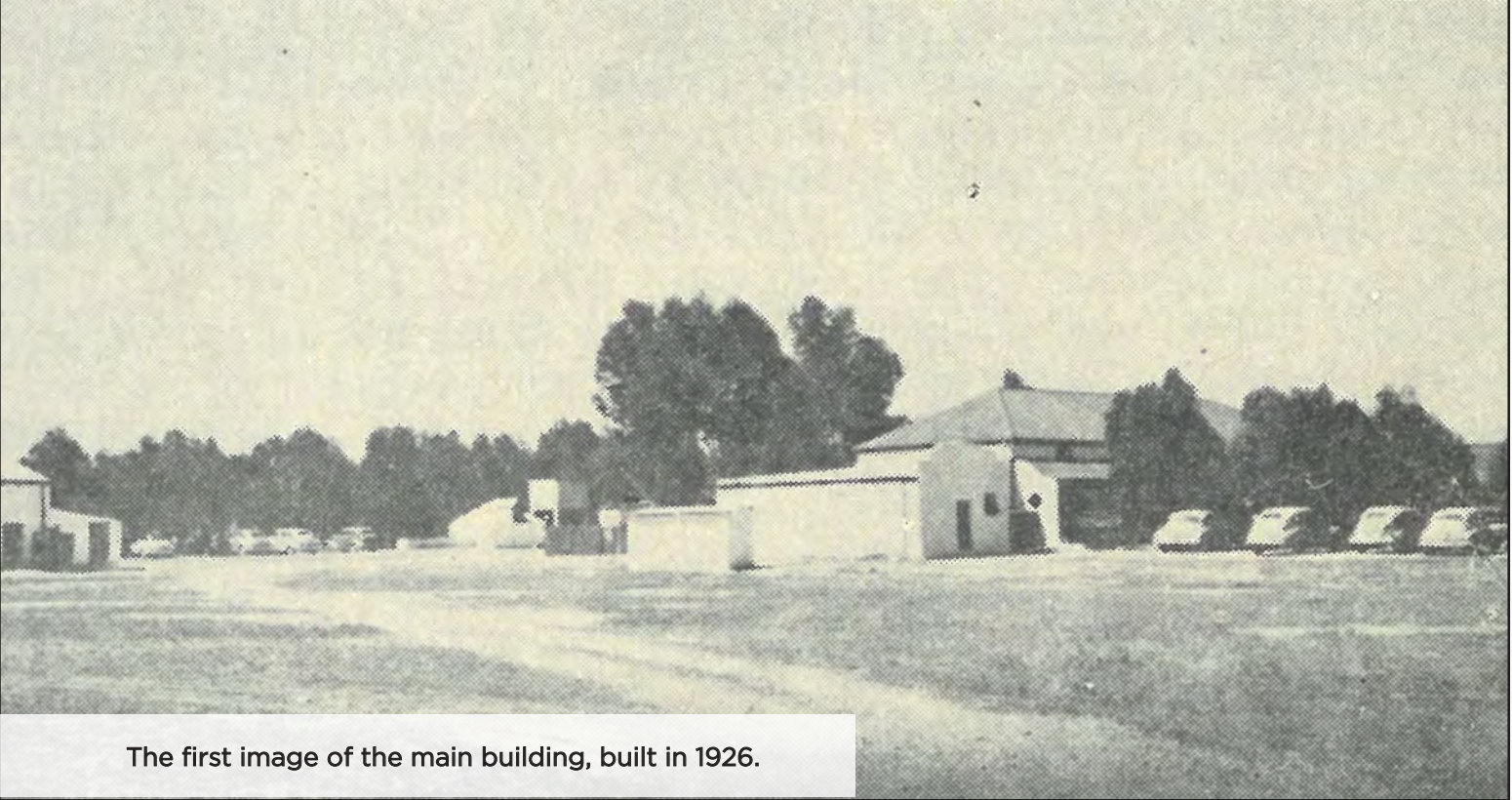
Celebrating 100 years of unbroken scientific research, serving as Africa's premier dryland winter production reference hub. Taking dryland research to the next level.



THE EARLY YEARS







The first image of the main building, built in 1926.

The '20s - '40s

Langgewens Research Farm, situated in the Malmesbury district of the Western Cape, has a rich history that reflects both its agricultural significance and its deep roots in the region's farming heritage.

Originally part of the larger farm Zoutfontein, Langgewens Research Farm was tied to the Van Aarde family, who owned the property from the early 1800s. Before them, the land had belonged to the Van der Westhuizen family, whose graves remain in the cemetery at Domania, alongside those of British soldiers who fell in earlier conflicts. In the late nineteenth century, Zoutfontein was divided into four

equal portions without subdivision: Skoonsig, Langgewens Research Farm, Rotzenburg, and the remainder of Zoutfontein with the original homestead, now known as Domania. The name "Zoutfontein" itself was derived from the brackish water of the spring on the property.

The transformation of Langgewens Research Farm into a research farm marked a turning point in the agricultural development of the Western Cape. In 1926, the Western Cape Department of Agriculture purchased Langgewens Research Farm with the express purpose of establishing a centre for scientific experimentation and farmer support.

The farm was dedicated to the testing of winter cereals, a vital crop for the Swartland region, where wheat and other grains formed the backbone of local farming. The field husbandry department initiated a series of structured experiments, which were grouped into four categories: rotation experiments, cultural experiments, variety tests and fodder crop experiments.

Rotation experiments were designed to study the long-term effects of alternating cereals with other crops, ensuring soil fertility and sustainability. These trials provided farmers with practical strategies to maintain productivity while safeguarding the land.

Cultural experiments focused on farming practices such as planting depth, spacing and tillage methods, aiming to refine techniques that would improve yields under the specific climatic and soil conditions of Malmesbury.

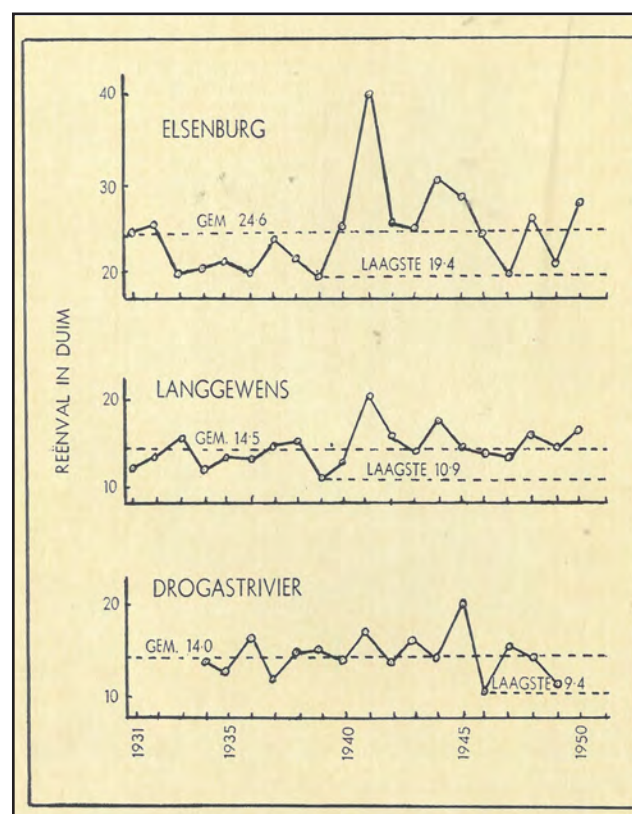
Variety tests compared different strains of wheat, oats and barley, identifying those best adapted to local conditions and offering farmers reliable options for planting. Fodder crop experiments supported mixed farming systems, ensuring that livestock could be sustained alongside cereal production, thereby strengthening the resilience of farming households.

Throughout the 1920s, 1930s, and into the 1940s, Langgewens Research Farm became a cornerstone of applied agricultural research. Its work bridged the gap between scientific investigation and practical farming, offering evidence-based recommendations that directly influenced productivity in the region.

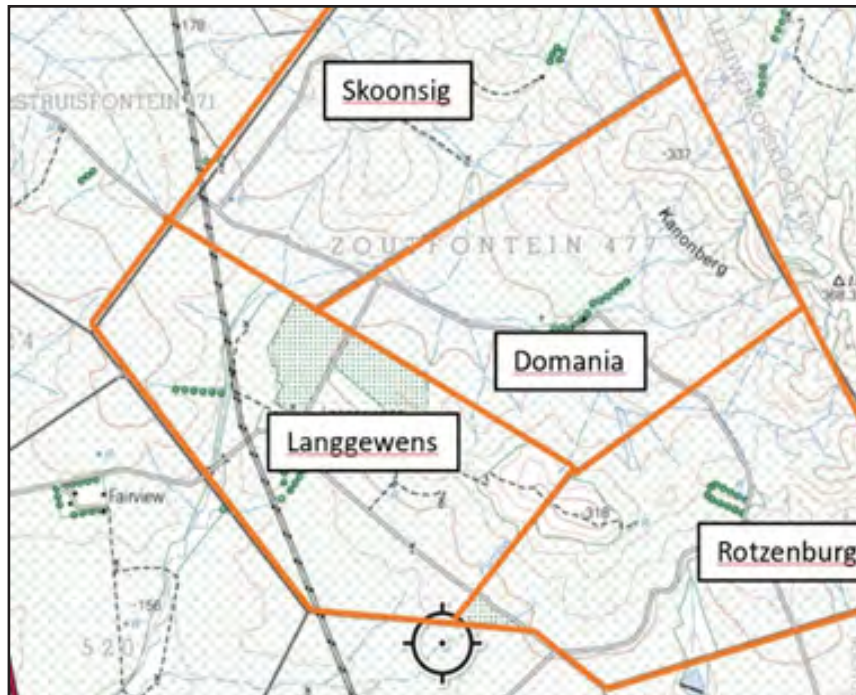
Farmers in neighbouring districts benefited from the farm's findings, which were disseminated through advisory services and practical demonstrations.

By the 1940s, Langgewens Research Farm had firmly established itself as a vital institution, laying the foundation for its enduring role in advancing agricultural innovation and supporting farmers across the Western Cape.

The farm's early decades were thus marked by a commitment to experimentation, knowledge transfer and the strengthening of farming communities, ensuring that agriculture in the region could thrive under both economic and environmental pressures.



Tracking annual rainfall on the farm sparked new insights — helping the team plan smarter strategies for agriculture and farming



A 1926 map showing Langgewens Research Farm and its neighbouring farms



An established lucerne stand forming part of an early crop-rotation trial



Wheat variety rod-row trials at Langgewens Research Farm, 1929



Slaughter lambs grazing dryland lucerne at Langgewens Research Farm

TAKING THE NEXT STEPS







From field to loaf: Bread baked from different wheat cultivars evaluated at Langgewens in 1954, illustrating the practical application of the farm's early crop research.

The '50s - '60s

During the 1950s and 1960s, Langgewens Research Farm continued to build on its earlier foundation of winter cereal experimentation.

By this time, the farm had become a central hub for agricultural research in the Western Cape.

Worries about severe topsoil loss due to frequent ploughing in intensive wheat production systems since the 1930s led to increased research interest in conserving soil.

Mid-century studies and regional surveys monitored gully and sheet erosion, and the implementation of soil conservation acts,

including contour ploughing, intensified. Research targeted wheat crop yields, soil nutrient depletion, and fertiliser optimisation under dryland farming conditions.

Higher and more reliable rainfall increases the effectiveness of intensive nitrogen fertilisation. This principle applies to volunteer pasture as elsewhere.

An experimental farm in the Swartland collected data on this. Experiment: After barley harvest, the ground was mulched with straw, and sufficient seed was present. Nitrogen (L.A.N.) was applied in April.

RESEARCH OUTPUT

A selection of research papers published between 1950 and 1969, reflecting Langgewens' early work in winter-rainfall farming, conservation, crop nutrition, wool and sheep production.

1950

*Farming in South Africa***Farming in the Winter-rainfall Area.**

J. S. Marais, B.A., Ph.D., Principal of the Stellenbosch-Elsenburg College of Agriculture.

1962

FRIDAY, OCTOBER 11, 1962

**CONSERVATION FARMING ON THE
LANGGEWENS CEREAL EXPERIMENTAL FARM.***Ground-breaking methods by E. ROOD and J. O. GLATTHAAR, showing a way forward from 1955.***DIE INVLOED VAN SOORT VAN STIKSTOFUFUNSMIS EN TYD
VAN TOEDIENING OP GROEI, STIKSTOFOPNAME EN
GRAANOPBRENGS VIR DIE STERLINGKORINGCULTIVAR.***Nuwe navorsing deur V.D. WASSERMAN en L.L. EKSTEEN, Stellenbosch-Elsenburgse Landboukollege van die Universiteit van Stellenbosch.*

1965

**Merino's and German Merino's –
HOW DOES
THEIR WOOL
DIFFER?**

1969

**EARLY GRAZING FOR WET EWES IN
THE SWARTLAND**

by L. L. EKSTEEN and S. J. JACOBS Winter Rainfall Region

CONSERVATION TILLAGE GAINING MOMENTUM







— The '70s - '80s —

The research undertaken during the 1970s and 1980s transformed Western Cape dryland agriculture into a highly productive, technology-driven sector. Crop breeding, improved nutrition, herbicide technology, pasture science and livestock genetics substantially increased grain, wool, and meat production.

At the same time, researchers began recognising the limitations of intensive conventional tillage and heavy reliance on chemical inputs.

Concerns about soil degradation, herbicide-resistant weeds and long-term sustainability stimulated new research into reduced tillage, residue retention and diversified rotations.

These investigations provided the scientific foundation for the Conservation Agriculture systems that became increasingly important in the Western Cape from the 1990s onward.

RESEARCH OUTPUT

1970

FIELD OUTBREAK OF LUPINOSIS IN SHEEP

During October, 1969 approximately 850 breeding ewes on the farm Burgersdrif, Hermon district, Cape Province, were grazed on a field of sweet white lupines (*Lupinus albus* L. cult. Pflugs Gela), many of which were bearing pods in various stages of development. The lupine plants were approximately 9 inches tall and growing amongst a variety of grasses.

Rain fell over this field on approximately the 12th and 5th day before the first mortalities occurred on October 19.

Examination of the weather records for Langgewens Station, Malmesbury, the meteorological station which is closest to the farm (20 miles), revealed that the rainfall during October, 1969 was above average - 52.2mm compared to the normal of 24.7mm*. The records have also showed that the maximum rainfall in 24 hours during the month (23.5mm) occurred on October 8.

* Normal over a 30-year period.

1985

Use of varying combinations of energy and protein sources as supplementary feed for lambing ewes. TS Brand, F Franck

Yield assessment of advanced wheat breeding lines in the Winter Rainfall Region, Marais.

1987

Initial seedling growth rates in a semi-dwarf spring wheat collection

G. F. Marais & P. S. Botma

1989

The effect of tillage on soil carbon, nitrogen and soil strength of simulated surface crusts in two cropping systems for wheat. (*Triticum aestivum*). G.A. Agenbag, P.C.J. Maree.

1988

- Leaf spot diseases on small grain cereals in South Africa. Scott, 1988

1989

- Oversummering of *Fusarium avenaceum* on *Medicago truncatula*. Smith Meyer & Ueckermann, 1989
- Preliminary note on the utilization of alkaline hydrogen peroxide treated wheat straw by sheep. — Brand, Franck, F. & Cloete, 1989

1990

- Incidence of *Fusarium* and *Diplodia* species in South African maize. Serfontein & Knox-Davies, 1990
- Effect of lupin supplementation during mating on Merino ewes. Cloete, 1990
- Control of wheat foot rot and eyespot in the Western Cape. Bester, 1990
- Rearing performance of Merino, South African Mutton Merino and Dormer ewes in relation to live mass, reproduction and pelvic dimensions. — Cloete, 1994

1991

- Isolation of *Fusarium* species from soil and wheat stubble. Klaasen, Matthee, Marasas & others, 1991

1992

- Oat grain (treated/untreated) as supplementary feed for pregnant/lactating Merino ewes. Brand, Cloete & others, 1992

1993

- Comparison of triticale vs maize grain for finishing lambs. Van der Merwe & Brand, 1993
- Aphid lethal paralysis virus as a population-limiting factor. Laubscher & Von Wechmar, 1993

- **Reaction of spring wheat cultivars to nitrogen and sulphur fertilizer (growth, yield, baking quality).** Du Plessis & Agenbag, 1993/1994

1994

- **Reproduction of Merino sheep under divergent selection for maternal values.** Cloete & Durand, 1994
- **Rearing performance of Merino, SA Mutton Merino and Dormer ewes.** Cloete, 1994
- **Rearing performance of Merino, South African Mutton Merino and Dormer ewes in relation to live mass, reproduction and pelvic dimensions.** — Cloete, 1994

1995

- **Nutritive value and digestibility of Medicago species pods/seeds for sheep.** Kotzé, Brand & Agenbag, 1995

1996

- **Effect of sowing date on wheat in Mediterranean climate.** Loubser, 1996

1997

- **Effect of soil tillage and N application on wheat yield, protein content, and yellow berry incidence.** Raath & Agenbag, 1997
- **Supplementary feed combinations for lambing ewes grazing cereal stubble.** Brand, Franck, Durand & Coetzee, 1997
- **Evaluation of fababean and lupin stubble/seed for sheep.** Coetzee, Durand, Brand, Franck & Brand, 1997
- **Intake and production of ewes grazing oat stubble supplemented with lupin seed.** Brand, Franck, Durand & Coetzee, 1997

1998

- **Pathogenicity of Fusarium species and Gaeumannomyces graminis to wheat.** Klaasen & Marasas, 1998

1999

- **Genetic variation in bread wheat quality characteristics in the Western Cape.** Barnard, 1999
- **Survey of fungal pathogens of aphids in South Africa.** Hatting, Humber, Poprawski & Miller, 1999





CONSERVATION AGRICULTURE COMES OF AGE







The '90s - early 2000s

The period from 1990 to 2010 marked one of the most significant transformations in the history of dryland agriculture in the Western Cape. Research shifted away from maximising production through intensive tillage and chemical inputs toward developing sustainable, resource-conserving and economically resilient farming systems.

This transition was driven by declining soil quality, increasing herbicide resistance, rising input costs, climate variability and the need to improve long-term farm profitability.

During this period, research increasingly embraced the principles of Conservation Agriculture, integrating crop and livestock enterprises into diversified production systems. Long-term experiments at facilities such as Langgewens Research Farm became internationally recognised demonstrations of these systems.

Herbicide-resistant annual ryegrass emerged as one of the greatest challenges facing Western Cape grain producers and SKOG moves to a new dedicated site at Langgewens Research Farm.



From soil to science: Samples prepared for testing to better understand soil properties and inform sustainable crop-management practices at Langgewens



The first commercial-size disc seeder in use at Langgewens Research Farm, built by Piket Implements, was introduced in 2016



Medics pasture emerging through retained wheat residue



A mixed cover-crop pasture shortly after germination



Freshly harvested wheat kernels



Wheat harvesting at the SKOG site

SMART AGRICULTURE







The 2010s - 2020s

The period from 2010 to 2026 has been characterised by a clear transition from simply promoting Conservation Agriculture to actively optimising climate-smart, regenerative and systems-based farming practices.

Over this time, research priorities have broadened and deepened, with increasing emphasis on improving soil health, enhancing water-use efficiency, integrating livestock with cropping systems, and reducing production risks under the pressures of climate change. At the same time, attention has been given to strengthening whole-farm profitability, ensuring that sustainability is balanced with economic viability for producers. This research has been driven by strong collaborations among the Western

Cape Department of Agriculture, Stellenbosch University, industry organisations and producer groups, reflecting a shared commitment to innovation and resilience in the agricultural sector.

Long-term trials at Langgewens Research Farm remain central to this effort, continuing to generate internationally recognised data on Conservation Agriculture and integrated crop-livestock systems.

These trials not only provide valuable insights for local producers but also contribute to global knowledge on sustainable farming, positioning the Western Cape as a leader in advancing agricultural practices that respond to both environmental and economic challenges.



Long-term conservation trials at Langgewens Research Farm, mapping a century of agricultural innovation and sustainable grain production in the Swartland



Harvesting small plot wheat trials in the Swartland area



SA Mutton Merinos graze the medics pastures of the long-term trial at Langgewens Research Farm



Monitoring local weather conditions through a dedicated weather station



Getting ready to apply agricultural remedies

RESEARCH OUTPUT

2000

- **Evaluation of a sheep blowfly trap.** J Scholtz, SWP Cloete et al. 2000
- **Supplementary feed for ewes grazing wheat stubble.** TS Brand, B Aucamp, A Durand (2000)
- **The intake and nutritional status of sheep grazing wheat stubble.** — Brand, T.S., Franck, F., Durand, A. & Coetzee, J. (2000)
- **The effects of shade and shearing date on the production of Merino sheep in the Swartland region of South Africa.** — Cloete, S.W.P., Muller, C.J.C. & Durand, A. (2000)
- **A preliminary evaluation of a sheep blowfly trap in the Western Cape.** — Scholtz, A.J., Cloete, S.W.P., Laubscher, J.M. & De Beer, E.F. (2000)

2003

- **Production of five Merino type lines in a terminal crossbreeding system with Dormer or Suffolk sires”** — Cloete, S.W.P., Cloete, J.J.E., Durand, A. & Hoffman, L.C. (2003)

2004

- **A comparison between the body composition, carcass characteristics and retail cuts of South African Mutton Merino and Dormer sheep.** — Cloete, J.J.E., Hoffman, L.C., Cloete, S.W.P. & Fourie, J.E. (2004)
- **A comparison between the carcass traits of six crossbred lamb types.** — Cloete, J.J.E., Hoffman, L.C., Cloete, S.W.P. & Fourie, J.E. (2004)
- **Comparison of six crossbred lamb types: sensory, physical and nutritional meat quality characteristics.** — Cloete, J.J.E., Hoffman, L.C., Cloete, S.W.P. & Fourie, J.E. (2004)
- **Relative performance and efficiency of five Merino and Merino-type dam lines in a terminal crossbreeding system with Dormer or Suffolk sires.** — Cloete, S.W.P. et al. (2004)

2006

- **Crop rotation effects on wheat crown rot.** SC Lamprecht, WFO Marasas et al. 2006
- **Tillage, rotation & nitrogen rates on wheat baking quality.** SH Maali, GA Agenbag (2006)

2012

- **Climate change impacts on canola production.** PJA Lombard, JA Strauss, P Greeff (2012)
- **Production response of lambs receiving creep feed while grazing two different pastures.** — Terblanche, S., Brand, T.S., Jordaan, J.W. & Van der Walt, J.C. (2012)

2014

- **Evaluating the effect of crop rotations and tillage practices on soil water balances of selected soils and crop performances in the Western Cape.** By Nina Antionette Swiegelaar. This study highlighted the major effect that the prevailing weather conditions have and that the expected advantages associated with NT most likely only come into play in dry conditions when plant water availability is limited.
- **Rotation & tillage effects on soil water balances.** NA Swiegelaar (2014)

2015

- **Crop rotation and no-till - an assessment of the 20-year-old trials at Langgewens Research Farm.** Dr Johann Strauss, Urban-Econ, in collaboration with Social Systems Scanners (SOSSCA) was appointed by the Western Cape Department of Agriculture to undertake an impact evaluation of the Swartland Crop Rotation project on the Langgewens Research Farm near Morreesburg. Recommendations to take forward: The five main recommendations

going forward include: (1) continue with the current trials at Lanngewens; (2) investigate new cultivars and alternative crops; (3) develop new parallel research trials for sandy areas (i.e. Sandveld); (4) investigate input costs and consider alternatives to the norm and (5) conduct research in close collaboration with industry.

- **Effect of supplementary feeding to ewes and suckling lambs on ewe and lamb live weights while grazing wheat stubble.** — Brand, T.S. & Brundyn, L. (2015)

2016

- **The Whole farm financial implications of different tillage systems on different crop rotations in the Swartland area of the Western Cape, South Africa.** Knott, S.C., Hoffmann, W.H. Labuschagne, J., Strauss, J. & Vink, N.
- **The financial evaluation of the various farming systems showed that conventional agricultural practices of monoculture and deep tillage are financially unsustainable.** The financial benefits of CA are directly related to improved soil health, lower weed and pest stress and improved yields. the CA farming systems were less susceptible to variations in external factors highlighting the resilience of the system that incorporates crop rotation and no-till
- **Evaluating the effect of crop rotations and tillage practices on soil water balances of selected soils and crop performances in the Western Cape.** The study showed that weather strongly influences outcomes, with no-till benefits mainly under dry conditions. Diverse rotations gave high yields, grazed forage phases reduced inputs, and integrating livestock improved sustainability, while grazing offered distinct weed management pressure. Swiegelaar.
- **Once-off tillage effects on no-till shale soil.** IR Leygonie (2016)

2018

- **Effect of once-off tillage on soil water, inorganic nitrogen and glomalin contents under Conservation Agriculture in the Swartland sub-region of the Western Cape.** Johan Labuschagne, Johan van Zylbc, Gert A Agenbag, Izane R Crousde & Josias E Hoffman. It is concluded that strategic tillage did not negatively influence SWC or mycorrhizal growth and did increase inorganic N content in WLWC and LWCW in year 2 after tillage.
- **Effects of long-term (42 years) tillage sequence on soil chemical characteristics in a dryland farming system.** Tshuma, Rayns, Swanepoel, Labuschagne & James Bennett. Overall, the infrequent tillage treatments were no better ($P > 0.05$) than the no-tillage treatment, as infrequent tillage could not effectively ameliorate the stratification of most soil chemical parameters and did not increase the stocks and stratification ratios of SOC and extractable P.
- **Disc vs. tine seed-drill openers & soil quality.** PA Swanepoel, GA Agenbag et al. (2018)

2019

- **Livestock in cropping systems for weed management.** C MacLaren, J Storkey, J Strauss et al. (2019)
- **Application of growth models to different sheep breed types in South Africa.** — Van der Merwe, D.A., Brand, T.S. & Hoffman, L.C. (2019)

2020

- **Premium lamb production of South African sheep breed types under feedlot conditions.** — Van der Merwe, D.A. et al. (2020)
- **Slaughter Characteristics of Feedlot-Finished Premium South African Lamb: Effects of Sex and Breed Type.** — Van der Merwe, D.A. et al. (2020)

RESEARCH OUTPUT

2021

- **Financials of cover crops in winter rotations.** TJ De Villiers (2021)
- **Heat & moisture stress on crop productivity.** B Conradie, J Piesse, J Strauss (2021)
- **42-year tillage sequence effects on soil chemistry.** F Tshuma, F Rayns et al. (2021)
- **Tillage effects on weeds in monoculture vs. rotation.** C MacLaren, J Labuschagne, PA Swanepoel (2021)
- **Development of a climate-smart Swartland grain system.** A Swanepoel, JA Strauss

2023

- **Conventional vs. Conservation Agriculture in wheat production.** W Mulimbi, LL Nalley et al. (2023)
- **Rotation & tillage effects on Fusarium crown rot.** JS Theron, GJ van Coller et al. (2023)
- **Rotation & tillage effects on residue decomposition.** JS Theron, GJ van Coller et al. (2023)
- **Modelling and predicting fat deposition rates in various South African sheep crosses using ultrasound technology.** — Theron, P.G., Brand, T.S., Cloete, S.W.P. & Van Zyl, J.H.C. (2023)
- **Study on modelling growth and production responses of pure- and crossbred sheep.** — Theron, P.G., Brand, T.S., Cloete, S.W.P. & Van Zyl, J.H.C. (2023)
- **Slaughter and carcass characteristics of cross- and purebred lambs finished in a pasture-based system.** — Theron, P.G. et al. (2023)

2024

- **Herbicide resistant ryegrass investigation.** L Bestbier (2024)
- **Wool production and quality traits of**

pure- and crossbred Merino-type sheep. — Theron, P.G., Brand, T.S., Cloete, S.W.P. & Van Zyl, J.H.C. (2024)

- **Including genomic information in the genetic evaluation of production and reproduction traits in South African Merino sheep.** — Nel et al. (2024)

2026

- **Wheat-canola rotation diversification & performance.** A Louw, PA Swanepoel et al. (2026)



Photo Credit: ARC

Farmers' Days at Langgewens during the past decades



SCIENCE FOR TOMORROW'S AGRICULTURE





Each era has brought new challenges and opportunities. The early decades focused on understanding soils and improving crop production.

The mid-twentieth century emphasised advanced fertiliser management, crop rotations and sheep production, while later decades embraced mechanisation and integrated livestock-cropping systems.

More recently, Langgewens Research Farm has become synonymous with Conservation Agriculture, demonstrating the value of minimum soil disturbance, crop diversity and long-term soil stewardship.

As the farm enters its second century, research is shifting from production alone to building resilient systems that can withstand climatic, environmental and economic uncertainty.

Soil is now studied as a living ecosystem whose biological, chemical and physical properties underpin sustainability.

Long-term experiments investigate crop rotations, tillage practices and biological management strategies to restore soil health, improve water infiltration and enhance productivity while reducing environmental impacts.

Climate change has become a defining challenge, and Langgewens Research Farm is at the forefront of adaptation strategies for the Western Cape's Mediterranean climate.

Research into carbon-smart agriculture, crop performance under variable rainfall and sustainable resource management is helping producers prepare for rising temperatures while maintaining profitability.

Crop diversification remains central to innovation. Wheat is still the backbone, but oilseed and protein crops such as canola and lupins broaden rotations, improve fertility, suppress weeds and reduce risk.

Long-term trials continue to generate insights into sustainability under dryland conditions. Herbicide-resistant ryegrass has emerged as a major challenge, and Langgewens Research Farm has responded with systems-based research combining chemical, cultural and mechanical control with innovations such as harvest weed-seed control.

Technology is also reshaping agriculture: precision tools, soil sensors and advanced data analysis enable more accurate input management, improving both efficiency and stewardship.

Livestock integration remains a defining feature. Sheep research now spans reproductive selection and genomics, nutrition during the dry summer feed gap, welfare and heat resilience, and integrated approaches to flystrike.

Crop residues and legume stubbles demonstrate the practical connection between plant and animal production, while breed comparisons and continuous temperature monitoring are helping scientists prepare future flocks for hotter conditions.

Economic sustainability is equally important, with studies evaluating the profitability of new technologies and management systems to ensure advances are practical for producers.

Perhaps the most remarkable feature today is the integration of disciplines once studied separately. Soil scientists, agronomists, animal scientists, economists and engineers

collaborate to understand complex interactions between crops, livestock, climate, technology and farm management.

As agriculture enters an era defined by climate change, resource scarcity and rapid technological progress, Langgewens Research Farm remains committed to practical science, innovation and service to agriculture. Its long-term trials continue to provide unique answers, while partnerships with producers ensure research stays grounded in commercial realities.

The challenges of the next century will differ from those of the last, but the purpose remains unchanged: to generate knowledge that enables farmers to produce more sustainably, profitably and resiliently.

From wheat trials nearly a century ago to today's investigations into carbon-smart agriculture and integrated systems, Langgewens Research Farm demonstrates that scientific innovation is the foundation of agricultural progress.

The first hundred years built the legacy; the next hundred will build the resilience to sustain it.

FARM MANAGERS THROUGH THE YEARS



WC Starke
1927 - 1929



Murray Landman
1964 -1979



Andries Durand
1980 -1983 & 1986 - 2006



Gerhard Buchholz
1984 - 1985



Leon Laing
1986 - 1995



Jackie Jordaan
2007 - 2012

RESEARCHERS AND TECHNICIANS THROUGH THE YEARS



Research Co-ordinator:
Samie Laubscher



Specialist Scientist:
Prof. Ters Brand



Specialist Scientist:
Prof. André Agenbag



Specialist Scientist:
Prof. Schalk Cloete



Specialist Scientist:
Prof. Mark B Hardy



Senior Scientist:
Prof. Nick Kotze



Senior Scientist:
Prof. Johann Strauss



Scientist:
Tielman de Villiers



Scientist:
Dr Johann van Heerden



Senior Researcher: Plant Pathology - Dr Johann Labuschagne



Scientific Researcher: Plant Pathology - Dr Gert van Coller



Scientist: Breeding/ Reproduction/Animal Housing & Welfare
Dr Ansie Scholtz



Scientist: Cropping Systems - Rens Smit



Scientist: Breeding/ Reproduction/Animal Housing and Welfare - Dr Pfunzo Muvhali



Scientist: Breeding/ Reproduction/Animal Housing and Welfare - Dr Cornelius Nel



Scientist: Weed Science
Gert Conradie



Scientific Technician: Agronomy - Piet Lombard



Scientific Technician: Agronomy - Herman Agenbag



Scientific Technician: Vegetables and alternative crops - Heinrich van Zyl



Scientific Technician: Nutrition and product quality - Resia Swart

IMAGES NOT PROVIDED

Klaas Dippenaar
Farm Manager
1980 - 1983

Staal Burger
Scientific Technician



The Langgewens turn-off from the N7 near Moorreesburg



Main entrance to Langgewens Research Farm



Ewes and lambs receiving supplementary feed in open-field lambing camps at Langgewens



Preparing small-plot cultivar trials at SKOG



The Langgewens team whose dedication keeps a century of research alive



Wheat cultivar trials evaluating performance under Swartland conditions

THE VISIONARIES BEHIND THE RESEARCH







Prof. Mark Hardy
Specialist Scientist

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“Together they ensured that every management decision reflected both scientific excellence and practical farming experience.”

Every institution has defining moments. For Langgewens Research Farm, one of those moments arrived in the mid-1990s with the establishment of the long-term crop rotation trials. At first glance, the concept appeared simple enough.

Different crop and crop/pasture rotation systems and applying minimum tillage practices would be compared under real farming conditions. But beneath that simplicity

lay a bold idea. Rather than searching for answers over three or four seasons, the researchers set out to understand how farming systems evolve over decades.

Today, those long-term trials are recognised as one of Langgewens' greatest scientific assets. They have been an important driver of Conservation Agriculture in the Western Cape, informed generations of researchers, supported postgraduate studies, influenced

farming practices and earned international recognition. Among those entrusted with guiding that remarkable journey was Prof. Mark Hardy. Ask Prof. Hardy about the origins of the trials, however, and he immediately shifts the spotlight away from himself.

“The trial was initiated and designed by Dr Johann van Heerden and colleagues,” he explains. Together with leading Swartland farmers, they recognised that rising production costs, declining profitability and changing economic conditions demanded a different approach to grain production. Their vision laid the foundation for an ambitious long-term experiment that would compare crop and crop/pasture rotation systems applying minimum and later no-till under practical farming conditions.

That response says much about the man. Even when reflecting on one of Langgewens’ defining achievements, Prof. Hardy is far more comfortable speaking about the contributions of others than his own.

Throughout his career he consistently built teams rather than personal profiles, believing that good science was never the work of one individual, but the result of collaboration, shared curiosity and mutual respect. When he assumed responsibility for the trials in 1997, Prof. Hardy inherited far more than fifty hectares of experimental plots. He inherited possibility.

His years of managing long-term grazing trials in KwaZulu-Natal had taught him an important lesson: agriculture seldom reveals its greatest truths in a single season. Real understanding comes from patience. From consistency. From protecting the integrity of research long enough for nature to tell its story.

Under his stewardship, the trials evolved into something much greater than originally imagined. What began as a comparison of farming systems became a living research platform where scientists could investigate soil health, weed dynamics, crop production, livestock integration, economics and the long-term sustainability of agricultural systems.

Each passing season added another layer of understanding, allowing researchers to ask questions that could never be answered through short-term experiments. Perhaps Prof. Hardy’s greatest contribution was recognising that the future of agricultural research could never rest with researchers alone.

“I had very little experience of Swartland cropping systems,” he admits candidly. Rather than pretending otherwise, he invited researchers from Elsenburg, extension officers, academics from Stellenbosch University, local farmers and representatives from the agricultural industry to become part of a technical advisory committee.

Together they ensured that every management decision reflected both scientific excellence and practical farming experience. It was an approach built on humility. No single person held all the answers. The best answers would emerge when different perspectives came together around the same table. That philosophy became part of the culture of Langgewens Research Farm itself.

The research farm was no longer simply a place where experiments were conducted. It became a place where researchers, extension officers, industry and farmers learned from one another. The relationship was never one-sided. Farmers challenged researchers.

Researchers listened. New ideas were tested, refined and improved together. As the first crop rotation cycles were completed, something remarkable began to happen. Farmers started coming. Information days attracted increasing numbers of producers eager to see the results for themselves.

Industry partners continued to invest in the work. Researchers from South Africa and abroad recognised the value of what was unfolding on the Swartland soils.

Data generated at Langgewens Research Farm found its way into respected international scientific publications, while postgraduate students increasingly chose the research platform as the foundation for their own studies. The influence of Langgewens Research Farm was no longer confined to its boundaries. Knowledge was travelling beyond the trial plots. It was crossing farm gates.

Prof. Hardy reflects with particular satisfaction on seeing other researchers use the platform to ask new questions and expand the science even further. He also speaks proudly of handing the long-term trials to Prof. Johann Strauss and his colleagues, who have continued building on those foundations through internationally recognised research into regenerative agriculture.

In many ways, that continuity is what defines Langgewens Research Farm. Researchers come and go. Technologies evolve. Agriculture continues to change. But the commitment to understanding farming systems over the long term—and ensuring that research remains relevant to farmers—has remained constant for a century. Looking ahead, Prof. Hardy believes the next generation of researchers faces a challenge every bit as significant as

those who came before them. Climate change. Changing markets. New production systems. His advice is simple. “Understand the past, but look to current and future challenges facing agricultural production systems.”

Today, one of Langgewens’ long-term trials bears Prof. Hardy’s name. Characteristically, he views the honour not as a personal accolade, but as recognition of the importance of research that remains relevant to farmers while helping agriculture adapt to changing climatic and economic realities. Perhaps that is why his contribution to Langgewens Research Farm extends well beyond the research itself.

He helped nurture a culture where curiosity mattered more than certainty. Where collaboration mattered more than recognition. Where the success of science was measured not only by publications, but by the confidence it gave farmers to embrace new ideas. That culture continues to define Langgewens Research Farm today. The long-term trials continue. New questions are being asked. New technologies are being explored.

A new generation of researchers now walks the same fields, building on foundations laid decades ago. Prof. Mark Hardy would probably be the first to remind us that no one person built that legacy.

Yet his fingerprints remain unmistakably woven through it. Because while the long-term trials transformed agriculture in the Swartland, they also transformed Langgewens Research Farm itself—from a place where experiments were conducted into one of South Africa’s most respected living laboratories, where knowledge continues to grow, season after season, for the benefit of agriculture.



Prof. Schalk Cloete
Specialist Scientist

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“The value of this work lies not only in individual findings, but in the continuity of a research platform that allowed scientists to refine recommendations as conditions changed.”

How Langgewens Helped Shape Sheep Research in South Africa

Although Langgewens Research Farm is widely recognised for its contribution to grain production and Conservation Agriculture, its sheep flocks have also supported an important body of animal-science research. Over several decades, researchers have investigated some of the most persistent challenges facing sheep producers- from reproductive performance and summer nutrition to heat stress, animal welfare and flystrike.

Together, these studies demonstrate how research conducted under local conditions can influence breeding, management and animal-health decisions.

Improving reproductive performance

Reproductive performance is one of the most important factors influencing the productivity and profitability of a sheep enterprise. Yet it is also difficult to improve through breeding. The number of lambs weaned per ewe mated is influenced by whether an ewe conceives, whether she gives birth to more than one

lamb and whether she successfully rears those lambs. Reproductive information also becomes available relatively late in an animal's life, while only ewes provide direct reproductive records. Against this background, researchers at Langgewens began asking an economically important question: could sheep be bred to give birth to and successfully rear more lambs?

In 1987, animals from the farm's Merino flock were selected according to the reproductive performance of their mothers. Replacements in the higher-performing line were descended from ewes that had successfully reared more lambs than their number of lambing opportunities. Those in the lower-performing line came from ewes that had either failed to conceive or had lost their lambs on at least one occasion.

By the 1992 lambing season, the two groups had begun to diverge. Continued research confirmed that selection for the number of lambs weaned could improve conception, multiple births and a ewe's ability to rear her lambs successfully. Together with supporting evidence, these findings contributed to the number of lambs weaned per ewe mated being formally included as a trait of economic importance in the National Small Stock Improvement Scheme during the 2000s.

Langgewens' contribution continued as sheep breeding entered the genomic era. Its Merino flock was one of five institutional research flocks included in a national study investigating whether genomic information could improve the prediction of breeding values. Using information from five institutional and five commercial flocks, researchers demonstrated that incorporating genomic data improved the accuracy of breeding values for reproductive performance by between 18% and 29%.

Bridging the summer feed gap

The dry summer and autumn months create a predictable nutritional challenge in the Swartland, particularly for pregnant and lactating ewes. Early research investigated whether treating wheat straw with urea and ammonia could improve its nutritional value. Although treated straw provided some benefits, including improved ewe liveweight and a tendency towards higher lamb birth weights, these gains were offset by higher feed costs.

Researchers also assessed wheat stubble, which is commonly grazed after harvesting. The studies showed that sheep could select material of better quality than samples collected by hand suggested. At higher stocking rates, however, the available feed could not meet the needs of reproducing ewes, confirming that supplementation would be required. Further trials evaluated different grain supplements. Supplementation generally reduced ewe liveweight loss, but its effect on lamb growth was inconsistent.

A later experiment showed that creep feeding lambs directly improved their growth more effectively than attempting to support them indirectly by supplementing their mothers. Research on lupin and faba-bean stubbles also found that both could support weather growth for at least six weeks before supplementation became necessary.

These studies provided practical guidance on the value and limitations of crop residues and demonstrated the close relationship between crop and livestock production at Langgewens.

Preparing sheep for a hotter climate

As temperatures rise, animal welfare and climate resilience are becoming increasingly important.

Between 1996 and 1998, simple shade structures were evaluated at Langgewens. Pregnant Merino ewes with access to shade consumed 26% less water than those in unshaded paddocks, while their lambs were approximately 4% heavier at weaning.

The sheep consistently used the structures during the hottest part of the day. The study demonstrated that a relatively uncomplicated intervention could reduce water use, support early lamb growth and improve welfare by allowing sheep to choose between shaded and unshaded areas. More recent research has examined whether certain breeds are better equipped to cope with heat. A multibreed flock has enabled scientists to compare wool, meat, composite and indigenous breeds under hot summer conditions.

Initial findings showed that wool breeds and some terminal-sire breeds generally relied on faster breathing rates to regulate body temperature, while breeds with indigenous genetic content appeared less dependent on this response.

Researchers have since introduced rumen boluses that continuously record internal temperature. This provides a less stressful alternative to repeatedly handling animals to measure rectal temperature and may help identify sheep that cope better with heat. The longer-term objective is to determine whether heat-tolerance characteristics are sufficiently heritable to allow producers to select more heat-resilient animals within their preferred breeds.

Learning from blowfly control

Flystrike caused by the Australian sheep blowfly, *Lucilia cuprina*, remains an important animal-health and welfare concern. During the

late 1990s, Langgewens formed part of research investigating whether large-scale trapping could suppress blowfly populations. The results showed that trapping was more effective where sufficiently large or isolated areas could be covered. At Langgewens, blowflies could continue entering from surrounding sheep farms, limiting the effect.

A later regional study recorded reductions in blowfly numbers in some suppression areas, although the effect on the actual incidence of flystrike remained inconclusive.

The findings demonstrated both the potential and limitations of trapping. Today, traps are used mainly to monitor blowfly populations, while producers rely on integrated management that includes timely shearing, crutching, strategic insecticide use and the selection of less susceptible animals.

The value of this work lies not only in findings, but in the continuity of the research platform. Langgewens enabled scientists to revisit questions, compare responses across seasons and refine recommendations as production conditions changed. It also provided opportunities for postgraduate students, technicians and researchers to build knowledge that could be shared with producers and industry.

From reproductive selection and genomics to nutrition, heat resilience and animal-health management, Langgewens has provided the continuity needed to investigate complex challenges over time. Its sheep research illustrates how work conducted on one research farm can strengthen scientific knowledge, inform producers and contribute to the resilience of an entire industry.

A landscape photograph showing a vast field. The foreground is filled with tall, green grasses or crops, possibly corn, with some small white flowers. The middle ground is a large, flat area covered in a bright yellow overlay, which serves as a background for the text. The background shows rolling green hills under a clear blue sky with a few wispy clouds. A small, dark structure is visible on the horizon to the right.

PARTNERS IN PROGRESS







Jannie Strydom
Chief Executive Officer
Agri Western Cape

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“What sets Langgewens apart is the way research and practice meet in the field.”



AGRI WESTERN CAPE AND A CENTURY OF COLLABORATION

For more than a century, Langgewens Research Farm has generated knowledge that has shaped grain production in the Western Cape.

Yet research only achieves its true value when it finds its way beyond the trial plots and into the hands of those who farm the land. That is where partnerships matter.

For decades, Agri Western Cape has proudly supported the work of Langgewens Research Farm in bridging the gap between research and practical farming.

Through this work, scientific discoveries have been translated into practical solutions that improve productivity, sustainability and resilience on farms across the Swartland and beyond.

According to Jannie Strydom, Agri Western Cape CEO, the enduring relationship between the organisation and Langgewens Research Farm spans generations of farmers, with the research farm serving as a trusted source of practical, field-based research for one of South Africa's most important grain-producing regions.

What distinguishes Langgewens Research Farm, he believes, is its ability to connect science with everyday farming.

“What sets Langgewens Research Farm apart is the way research and practice meet in the field,” says Strydom.

From Conservation Agriculture and crop rotation systems to cultivar evaluations and soil health research, the work undertaken at Langgewens Research Farm has helped some farmers adapt to an increasingly complex production environment.

As producers contend with recurring droughts, climate variability and rising input costs, the farm's long-term research has provided practical, locally relevant solutions that strengthen both resilience and profitability.

However, research alone is not enough.

One of Langgewens' greatest strengths has always been its commitment to sharing knowledge through Farmers' Days, field demonstrations and direct engagement between researchers and producers.

These opportunities have enabled farmers to see research in action, ask questions and confidently apply proven practices within their own farming systems.

For Agri Western Cape, this continuous exchange of knowledge represents one of the clearest examples of how public agricultural research creates lasting value for the private sector and, ultimately, for the sustainability of food production in the province.

As Langgewens Research Farm celebrates its centenary, Agri Western Cape recognises the important role this partnership has played over the years.

With climate adaptation, resource constraints and the need to produce more with less becoming defining challenges for agriculture, credible, locally relevant research will continue to play a critical role in supporting producers.

Agri Western Cape regards Langgewens Research Farm not merely as a research institution, but as a trusted partner that helped shape the sustainable future of organised agriculture in the Western Cape.

For an organisation that represents the interests of farmers across the province, the message is clear: the success of Langgewens Research Farm is measured not only in decades of research, but in the confidence it has given generations of producers to innovate, adapt and build resilient farming businesses.



Dr Litha Magingxa
President and Chief Executive Officer
Agricultural Research Council (ARC)

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“The establishment of the ARC’s Small Grains Centre in Bethlehem during the mid-1970s, and its later evolution into the Small Grain Institute, marked an important milestone in consolidating small-grain research nationally.”



A CENTURY OF COLLABORATION: THE ARC AND LANGGEWENS

The story of Langgewens Research Farm is one of partnerships—built over decades, strengthened through shared purpose, united by a commitment to advancing South African agriculture.

Few partnerships illustrate this better than the long-standing relationship between the Agricultural Research Council (ARC) and

Langgewens Research Farm. For almost half a century, the two institutions have worked side by side to improve grain production, strengthen Conservation Agriculture and ensure research addresses producers’ practical needs.

What began through South Africa’s evolving public wheat research system has become a partnership shaping farming across the Western Cape and beyond. The establishment of the ARC’s Small Grains Centre in Bethlehem in the mid-1970s, later the Small Grain Institute,

marked a milestone in consolidating small-grain research nationally. Within this network, Langgewens Research Farm became the Western Cape's living laboratory—where theories were tested under real Swartland conditions and transformed into solutions for producers.

Situated in the heart of South Africa's wheat region, Langgewens Research Farm has played an integral role in developing and evaluating cultivars familiar to producers nationwide. Palmiet, Kariega, Tankwa, Kwartel, Ratel, Steenbok and Tredou all formed part of this journey, with Langgewens Research Farm providing the ideal environment to test performance under dryland conditions.

The partnership also extends through the National Wheat Cultivar Evaluation Programme, where Langgewens Research Farm remains a key trial site. Data from these evaluations provides producers with independent recommendations that guide cultivar selection and contribute to resilient, profitable farming.

ARC's contribution goes far beyond cultivar development. As Conservation Agriculture gained momentum in the Western Cape, Langgewens Research Farm became the platform for exploring new systems. Research led by Dr John Tolmay investigated row spacing, seeding density and nitrogen placement, generating knowledge that helped producers transition confidently.

Equally important has been the work of Dr Sandra Lamprecht and colleagues, who used Langgewens Research Farm's long-term rotation trials to study soilborne diseases. Their research showed how rotation, tillage and cropping practices influence pathogens such as *Fusarium pseudograminearum* and *Rhizoctonia*, while

improving wheat performance. These findings strengthened farmers' understanding of the link between healthy soils, healthy crops and sustainable systems. Perhaps the partnership's greatest achievement lies beyond research itself.

Since the establishment of the Swartland Small Grain Development Group (SKOG) in 1991, Langgewens Research Farm has become more than a research facility. It is a meeting place where researchers, partners and producers exchange ideas, challenge assumptions and translate science into solutions. With dedicated plots supporting trials and technology transfer, the farm continues to show the value of collaboration in addressing modern agricultural challenges.

As Langgewens Research Farm celebrates its centenary, the ARC acknowledges generations of researchers, technicians, staff and producers whose shared commitment built one of South Africa's most respected research platforms. Agriculture's challenges continue to evolve.

Climate change, shifting systems, soil health and resource efficiency demand new questions and solutions. Through its enduring partnership with Langgewens Research Farm, the ARC remains committed to ensuring research serves producers—strengthening Conservation Agriculture, advancing climate-smart farming, protecting soil and plant health, and ensuring field knowledge benefits those who work it.

For both institutions, the past century has demonstrated the power of partnership. The century ahead promises even greater opportunity.



Gerhard Keun
Chief Executive Officer
Protein Research Foundation and the Oil and Protein
Seeds Development Trust

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“Over time, the partnership with the Western Cape Department of Agriculture continued to strengthen.”



OIL AND PROTEIN SEEDS DEVELOPMENT TRUST (OPDT) AND PROTEIN RESEARCH FOUNDATION (PRF), INVESTING IN CANOLA AND PROTEIN CROP RESEARCH AT LANGGEWENS

Agricultural innovation depends on partnerships willing to invest in research whose value is measured in stronger farming systems, better-informed producers and a more resilient agricultural sector. For decades, the Oil and Protein Seeds Development Trust (OPDT),

the Oilseeds Advisory Committee (OAC) and the Protein Research Foundation (PRF) have supported research and technology transfer relating to oilseed and protein crops. Although their mandates and histories are distinct, each has contributed to work undertaken through the Western Cape Department of Agriculture and Langgewens Research Farm.

PRF: Growing Knowledge Since 1994

The PRF's relationship with the Western Cape Department of Agriculture dates back to 1994.

Its central objective is to promote and fund research into protein sources for animal feed, with particular emphasis on oilcake.

At Langgewens, PRF support has contributed to research on canola and lupins, including cultivar evaluations, crop rotations, plant density, fertilisation, chemical options, and insects and pests affecting canola. The partnership has extended beyond trial plots. Through support for information days and participation in the Swartland Kleingraan Ontwikkelingsgroep (SKOG), the PRF has also contributed to technology transfer and engagement between researchers, industry and producers.

OPDT and OAC: Supporting Canola's Future

Established in 1997, the OPDT and OAC promote and support the development of South Africa's oilseeds industry. An important milestone was reached in 2012, when canola was included in the OPDT Trust Deed and added to the crops supported by these structures.

As collaboration with the Western Cape Department of Agriculture strengthened, direct funding was allocated to canola research. This supported work at Langgewens, particularly cultivar trials, while also enabling other organisations to undertake canola-related research on the farm's trial sites.

The role of the OPDT and OAC is to make research possible through funding and partnership. Scientific interpretation and the development of technical recommendations remain the responsibility of the researchers conducting the work.

A Shared Investment in Agriculture

South African commercial canola production grew from 400 tonnes on 400 hectares in

1992/93 to 306 000 tonnes on 174 515 hectares in 2025/26.

While this growth cannot be attributed to any single organisation or research programme, it demonstrates the importance of sustained investment in locally relevant research.

As Langgewens celebrates its centenary, these partnerships reflect a shared commitment to ensuring that research continues to address producers' needs, strengthen competitiveness and support sustainable agricultural growth.



Ms Suzanne Lureman
Agricultural Advisor - Overberg Agri
Current SKOG Chairperson



“What began as a relatively modest gathering has grown into one of the highlights of the Western Cape’s grain farming calendar.”



THE LANGGEWENS-SKOG PARTNERSHIP

Great agricultural research has little value unless it reaches the people who can apply it.

For nearly three decades, the partnership between Langgewens Research Farm and Swartland Small Grain Development Group (SKOG) has ensured that research does exactly that—moving beyond trial plots and into the fields of grain producers across the Swartland. Established through collaboration between

the Western Cape Department of Agriculture, local grain organisations and agricultural researchers, SKOG was created as a platform where producers could engage directly with leading researchers and industry experts while gaining access to practical, locally relevant information.

It quickly became a place where science and farming could learn from one another. Among the organisations that recognised the value of this vision from the outset was MKB

(Moorreesburg Koringboere Bpk), now known as Overberg Agri. In the early years, research trials were conducted at various locations, but it soon became clear that Langgewens Research Farm offered something unique. Situated between the grain-producing centres of Moorreesburg and Malmesbury, the research farm provided an ideal environment to conduct trials that reflected the realities of farming across the broader Swartland. Recognising this opportunity, MKB became a founding partner when the collaboration was formalised in 1997.

That decision laid the foundation for what has become one of the Western Cape's most respected platforms for agricultural research and producer engagement.

For many years, SKOG hosted two annual information events at Langgewens Research Farm: the SKOG Pre-Planting Information Day and the SKOG Farmers' Day.

While the Pre-Planting Information Day came to an end during the COVID-19 pandemic, it played an important role in preparing producers for each planting season by sharing cultivar evaluation results, research findings and production recommendations before the first seed entered the soil.

It also provided a platform for postgraduate students and researchers to present new research, while internationally recognised speakers shared insights that helped shape grain production across the region.

Today, the SKOG Farmers' Day continues that legacy. What began as a relatively modest gathering has grown into one of the highlights of the Western Cape's grain farming calendar. Attendance has increased from approximately 160 visitors in 2010 to 238 visitors in 2025,

reflecting the event's growing relevance and value to the agricultural sector. The day now brings together 14 independent agricultural organisations, each showcasing research trials, technologies and innovations that provide producers with practical solutions for modern farming. These demonstrations allow farmers to compare cultivars, evaluate new production practices and engage directly with the researchers responsible for the work.

Walking through the trial plots, producers experience something few research environments can offer—the opportunity to see innovation under local conditions while discussing challenges and opportunities directly with the scientists and technical specialists behind the research.

Today, Overberg Agri remains actively involved through its representation on the SKOG committee, with Agricultural Advisor Suzanne Lureman, who currently serves as Chairperson of SKOG, continuing the organisation's longstanding commitment to advancing agricultural research and supporting grain producers throughout the Swartland.

As Langgewens Research Farm celebrates a century of agricultural excellence, the enduring partnership between the research farm and SKOG stands as a powerful reminder that meaningful innovation is built through collaboration. For generations of grain producers, Langgewens Research Farm has been far more than a research farm. It has been a place where knowledge is shared, partnerships are forged and strengthened and practical research is transformed into better decisions on farms across the Swartland.



Photo Credit: SAWCIA

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“One of the partnership’s most significant achievements has been its support for the long-term Conservation Agriculture programme led by Prof. Johann Strauss.”



SAWCIA

SOUTH AFRICAN WINTER CEREAL INDUSTRY AGENCY (SAWCIA) - FORMERLY THE WINTER CEREAL TRUST

For a century, Langgewens Research Farm has stood at the forefront of dryland grain research, generating the knowledge that has helped shape farming practices across the Western Cape and strengthened the sustainability of South Africa’s winter cereal industry.

Behind every successful research programme, however, lies another story—one of enduring partnerships, shared investment and a collective commitment to supporting the farmers who feed the nation.

For the South African Winter Cereal Industry Agency (SAWCIA), that partnership has been built over generations.

Through its predecessor organisations—the Winter Cereal Trust and later the South African Winter Cereal Industry Trust (SAWCIT)—and now SAWCIA, the winter cereal industry has consistently invested in research that addresses the real-world challenges faced by grain producers.

United by a shared commitment to practical, farmer-focused innovation, SAWCIA and Langgewens have worked together to ensure that research delivers measurable value where it matters most: on the farm.

One of the partnership's most significant achievements has been its support for the long-term Conservation Agriculture programme led by Prof. Johann Strauss. The crop rotation and soil tillage trials at Langgewens, some of which have been running for several decades, are recognised as unique national research assets.

They continue to provide invaluable insights into soil health, Conservation Agriculture, crop rotation, climate resilience and sustainable grain production.

The value of these trials extends well beyond the research plots.

The knowledge generated at Langgewens has enabled producers to make informed management decisions, improve productivity and build more resilient farming systems capable of responding to changing climatic and production challenges.

At the same time, the research programme has played an important role in supporting postgraduate research and developing the next generation of agricultural scientists, ensuring that today's investment in research continues to benefit agriculture well into the future.

For SAWCIA, this is precisely why long-term research matters.

Meaningful agricultural innovation cannot be measured over a single season. It is built over years—often decades—through consistent investment, collaboration and the willingness to ask questions whose answers will benefit future generations of producers.

As Langgewens celebrates its centenary, SAWCIA celebrates a partnership founded on those very principles. The organisation remains committed to investing in research and innovation that strengthens South Africa's winter cereal industry while continuing its longstanding collaboration with the Western Cape Department of Agriculture and the dedicated researchers whose work at Langgewens continues to shape the future of grain farming.

After one hundred years, the partnership between Langgewens and SAWCIA stands as a reminder that agricultural progress is never achieved by one institution alone.

It is built through shared purpose, sustained investment and a collective belief that research has the power to transform not only farming practices, but the future of agriculture itself.



Photo Credit: Stellenbosch University

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“Langgewens has served as a hub for long-term research, teaching and capacity building. Students gain practical field exposure, while integrated trials advance both science and on-farm application.”



STELLENBOSCH UNIVERSITY AND LANGGEWENS: A CENTURY OF SHARED SCIENCE

For over a century, Stellenbosch University's (SU) Department of Agronomy has collaborated with the grain sector through its work at Langgewens Research Farm.

Established in 1917, the SU Department of Agronomy has focused on winter cereals

and dryland systems, combining academic expertise, government support and industry collaboration.

KEY PHASES OF RESEARCH:

1. Foundation Years (1926–1970): Early work on wheat systems, soil fertility, and cultivation practices, linking classroom theory with field application.
2. The Advent of Systems Research (1970–2000): Prof. André Agenbag's long-

term tillage and crop rotation trials shaped understanding of soil management and nutrient dynamics, while strengthening postgraduate training.

3. Conservation Agriculture (2000–2010s): Research on tillage, residue and rotation improved soil health, water-use efficiency and yield stability, with findings actively shared with farmers.
4. Sustainable Intensification and the Expansion of Conservation Agriculture and Regenerative Practices (2010s–present): Focus on nutrient flows, integrated weed management, soil health and climate resilience under Prof. Pieter Swanepoel's leadership, supported by strong collaboration with the Western Cape Department of Agriculture.

POSTGRADUATE RESEARCH AND GLOBAL IMPACT:

Langgewens Research Farm has produced generations of MSc and PhD studies on nutrient efficiency, weed dynamics, soil health and conservation practices.

Sustained through a long-standing partnership between Stellenbosch University, the Western Cape Department of Agriculture and the grain industry, the site remains a unique platform for innovation, training and the development of sustainable dryland farming systems.



**Dr Flackson Tshuma, post-doctorate:
Agronomy at Stellenbosch University**



Richard Krige
Chairperson
Grain SA - Western Cape

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“As Langgewens marks 100 years, Grain SA pays tribute to the researchers, technicians, managers, farmworkers and support staff whose dedication has built and sustained this remarkable agricultural asset.”



GRAIN SA: A CENTURY OF RESEARCH AND RESILIENCE

For generations, Langgewens Research Farm has been more than a place of scientific enquiry. It has been a living laboratory where research, innovation and producer experience come together to address the practical challenges facing grain farmers. As Grain SA joins the Western Cape Department of Agriculture in celebrating Langgewens' centenary, it

recognises an institution that has made an exceptional contribution to the sustainability, resilience and profitability of grain production in the Western Cape and across South Africa.

Through its long-term research programmes, Langgewens has generated practical, locally relevant knowledge that enables producers to make informed decisions and respond to changing climatic, economic and production conditions. Cultivar evaluations, nitrogen

studies and Conservation Agriculture trials have all contributed to a stronger understanding of what is required to sustain grain production in the region.

The farm's contribution to Conservation Agriculture has been especially significant. Research at Langgewens has demonstrated the value of diversified crop rotations, reduced soil disturbance, crop-residue retention and integrated crop-livestock systems. Together, these practices can improve soil health, water-use efficiency and the resilience of farming systems.

Langgewens' long-term crop-rotation and soil-tillage trials have consequently become important reference points for sustainable grain production. By maintaining these trials over several decades, researchers have been able to study changes that cannot be fully understood through short-term experiments. Their work has expanded knowledge of nutrient-use efficiency, soil biology, carbon sequestration and sustainable production under Conservation Agriculture systems.

A particularly important contribution has been the long-term rotation research initiated under the leadership of Dr Mark Hardy and subsequently advanced by Prof. Johann Strauss.

This work helped inform the development of crop-rotation systems in the Southern and Western Cape and demonstrated the benefits of diversified crop and crop-pasture systems compared with monoculture production.

The value of this research lies in its practical application. Findings generated in the trial plots are shared with producers and industry partners, helping to translate scientific

knowledge into management practices that can strengthen productivity, profitability and long-term sustainability on farms.

This impact has been made possible through enduring partnerships. Grain SA is proud of its longstanding collaboration with the Western Cape Department of Agriculture and of the support provided through industry structures such as SAWCIA and SAWCIT. These relationships have enabled sustained investment in research that responds directly to producers' needs and contributes to the advancement of South African agriculture.

Langgewens has also made an important contribution to technology transfer, producer development and scientific capacity building. It has provided a platform where farmers can engage with researchers, postgraduate students can develop their expertise and industry partners can help shape relevant research priorities. In this way, knowledge moves beyond the trial plots and into the fields, farming businesses and rural communities it is intended to serve.

As Langgewens marks 100 years, Grain SA pays tribute to the researchers, technicians, managers, farmworkers and support staff whose dedication has built and sustained this remarkable agricultural asset.

Grain SA looks forward to continuing this valued partnership and to advancing research, innovation and knowledge-sharing that will support resilient and sustainable grain production for generations to come.

Congratulations to Langgewens Research Farm on a century of agricultural excellence, scientific leadership and service to South African agriculture.

A portrait of Louis Wessels, a man with short brown hair, wearing a light-colored button-down shirt with his arms crossed. The background is a dark green gradient.

Louis Wessels
Secretariat
Red Meat Producers' Organisation - Western Cape

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“The Red Meat Producers’ Organisation, Western Cape (RPOWC), is honoured to join in celebrating 100 years of Langgewens Research Farm.”



RPO WESTERN CAPE: RESEARCH THAT REACHES THE FARMER

The Red Meat Producers’ Organisation, Western Cape (RPOWC), is honoured to join in celebrating 100 years of Langgewens Research Farm—an institution that has long stood at the heart of agricultural research and innovation in the province. Over the years, Langgewens has been a valuable partner to the agricultural sector. In particular, it has provided an

important research platform for master’s and doctoral students undertaking studies relevant to the livestock industry.

Conducted in collaboration with the farm’s staff and supported by its research facilities and livestock resources, this work has generated valuable findings relating to animal production, animal health and sustainable farming practices. These findings have, in turn, contributed to practical, science-based

information that livestock producers can use to improve productivity and strengthen resilience on their farms.

The value of this relationship extends beyond individual research projects. Langgewens Research Farm has served as a bridge between academic institutions, researchers and working farmers, helping to ensure that new knowledge and innovation do not remain confined to scientific journals, but reach the people who can apply them in practice.

For an industry facing mounting pressures—from predation and climate variability to animal health concerns and changing market and policy environments—credible, applied and farmer-focused research remains indispensable.

Looking ahead, RPO Western Cape looks forward to strengthening this valued relationship and to seeing Langgewens Research Farm continue to support the next generation of researchers whose work will help shape the future of livestock farming in the Western Cape.

RPO Western Cape congratulates the Western Cape Department of Agriculture and the researchers, students, technicians, farmworkers and staff of Langgewens Research Farm, past and present, on a century of scientific excellence and service to agriculture.

We look forward to the next hundred years of research, practical impact and collaboration.





Deon Saayman
Chief Executive Officer
Cape Wools SA

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“Cape Wools SA congratulates the Western Cape Department of Agriculture and everyone associated with Langgewens Research Farm on 100 years of service, scientific enquiry and practical contribution to South African agriculture.”



CAPE WOOLS SA - A CENTURY OF WOOL, SCIENCE AND RESILIENCE

For a century, Langgewens Research Farm has been a quiet yet enduring contributor to the resilience of Swartland agriculture and, in turn, to the wool producers who form an integral part of the region's mixed-farming landscape.

Cape Wools SA is honoured to celebrate this significant milestone and to recognise the

farm's contribution to the science that supports sustainable wool and sheep production.

Although Langgewens is widely recognised for its pioneering grain and conservation-agriculture research, its sheep flocks have also supported an important body of animal science.

Merino and Dohne Merino resource animals, among others, have enabled research into wool production, flock management, animal health,

genetics and the integration of livestock into crop-based farming systems.

This work has helped demonstrate that grain and livestock enterprises need not be viewed separately. When effectively integrated, they can complement and strengthen one another, contributing to healthier soils, better weed management, more efficient use of available resources and greater resilience in a variable and often challenging dryland environment.

For wool producers, the value of this research has been both practical and enduring. Evidence generated through Langgewens has contributed to a better understanding of how sheep can be responsibly incorporated into cropping systems while supporting farm productivity and the sustainability credentials increasingly valued by the modern wool market.

Over the years, Cape Wools SA has been involved in several research projects linked to Langgewens. These have included studies into the detection of ovine Johne's disease, its control through vaccination and the role of genetics in disease susceptibility. Research has also contributed to the development of a model for lamb production through comparisons of the growth performance of different sheep breeds.

Other projects have explored the genetic assessment of meat traits in South African sheep for possible inclusion in future breeding programmes. Australian ovine genetic resources have been used to support genomic prediction in South African sheep, while a reference population was established to enable the future implementation of genomic breeding values for the South African Merino breed. The practical effects of animal health challenges have also been investigated. This included research into

the impact of continuous infestation with the sheep body louse, *Bovicola ovis*, on the live weight and wool traits of Merino and South African Mutton Merino sheep.

Together, these projects illustrate the breadth of Langgewens' contribution—from the health and productivity of individual animals to the long-term genetic advancement and sustainability of the national flock.

They also demonstrate what becomes possible when research institutions and industry partners work together around challenges that matter to producers.

As the South African wool industry looks to the future, Cape Wools SA remains committed to partnerships that advance research, innovation and sustainable farming practices.

Continued collaboration in animal welfare, responsible natural-resource management, genetics and climate resilience will be essential to safeguarding the quality and sustainability of the South African wool clip.

Cape Wools SA congratulates the Western Cape Department of Agriculture and everyone associated with Langgewens Research Farm on 100 years of service, scientific enquiry and practical contribution to South African agriculture.



TOMORROW
STARTS AT
LANGGEWENS







The core purpose of a research farm is to provide an environment that enables high-quality, credible research. Equally vital is the responsibility to apply production practices that protect and enhance soil health, ensuring this resource is conserved for generations to come.

At Langgewens Research Farm, sound financial management underpins these objectives. To balance sustainability with research, the arable land (excluding dedicated research plots) is divided into three production blocks of approximately 80-100 hectares each, forming the foundation of a rotational production system.

- **Block 1:** Wheat is planted annually. Fertiliser and fungicides are applied here, with herbicides used only when necessary.
- **Block 2:** Annual medics pastures are established, under-sown with a cereal cover

crop mixture of oats, barley, black oats, and stooling rye. No herbicides are used. At the end of the grazing season, the block is terminated with a non-selective herbicide to reduce weed seed carry-over.

- **Block 3:** Re-established medics pastures prepare the soil for the following year's wheat crop.

This system provides high-quality forage for the sheep flock after the dry Swartland summer.

The diversity of plant species and root systems improves soil organic matter, stimulates biological activity, and strengthens microbial diversity — all of which support long-term soil health.

The Langgewens Research Farm Sheep Flock

The flock represents ten breeds, covering both wool and meat production systems.

European wool/meat breeds:

- Dohne Merino
- Merino
- South African Mutton Merino (SAMM)
- Ile de France
- Dormer

African hair sheep breeds:

- Dorper
- Meatmaster
- Namakwa Afrikaner
- Persian
- Damara

Each breed is maintained with approximately 40 breeding ewes, lambing annually from mid-March to the end of April.

Current Sheep Research

The flock provides a unique platform for research on animal nutrition, health, adaptation, and productivity under Western Cape environmental conditions.

It also offers a rare opportunity for breed comparison studies, as Langgewens is the only farm in South Africa where multiple sheep breeds are maintained and evaluated under the same production and environmental conditions.

Current projects investigate:

- Cryptosporidium infections in lambs
- Breed differences in susceptibility to natural tick infestations
- Variation in heat stress responses among sheep breeds.

A Living Laboratory

By integrating sustainable cropping systems with a diverse sheep enterprise, Langgewens Research Farm continues to build on more than a century of agricultural innovation. It remains a living laboratory where land stewardship and scientific excellence converge — generating knowledge that benefits producers, strengthens the agricultural sector, and safeguards resources for future generations.



Dry seeding wheat on the Hardy long-term trial 2016



Draining the bin of the “Mighty” Crop Tiger



Mixing cover crops for planting season



Taking soil samples takes a little bit more effort than in the rest of the country



Drone technology used at Langgewens Research Farm



The quiet before the storm - SKOG just before the attendees arrive



Dividing the crop/pasture treatment from the cash crop treatment

SUMMARY OF CURRENT RESEARCH PROJECTS

The project portfolio supports sustainable agriculture in the Western Cape through improvements in crops, soil, pastures, veld and farming systems.

Crop and Rotation Systems

- Crop rotation dynamics: Evaluating eight rotation systems in the Swartland and their impact on productivity and weed seedbanks.
- Cultivar evaluations: Assessing winter grains, lupins, canola and advanced oilseed/protein crops for adaptability and yield.
- Biological alternatives: Developing production systems that reduce reliance on synthetic inputs.
- The expected long term implications of policy options on profitability of a typical winter cereal farm in the Middle Swartland

Soil and Conservation Practices

- Soil health strategies: Long and short term management approaches to enhance soil quality.
- Tillage frequency: Studying its effect on soil quality and productivity.
- Soil regeneration: Linking soil recovery to crop and animal production.
- Strategic species: Identifying cultivars for improved production.

Crop Protection and Weed Management

- Disease monitoring: Tracking Sclerotinia stem rot and blackleg infections in canola.
- Wheat disease response: Testing cultivar reactions to foliar diseases under different spray programmes.
- The cost of herbicide resistance: A farm-level economics analysis in the Western Cape (Swartland) grain-producing regions

Farmer Engagement and Initiatives

- SKOG initiative: Facilitating the Swartland Kleingraan Ontwikkelings Groep to strengthen farmer researcher collaboration.
- Nitrogen management: Developing fertiliser strategies for wheat under Conservation Agriculture.

Climate resilience

- Variation in Heat Stress Response in South African Sheep Breeds under Temperate Climate
- Linear Analysis of Rumen Thermologger Data to Compare Tolerance to Heat Challenge in Eight Sheep Breeds
- Diurnal Variation of Rumen Temperature in South African Sheep Breeds under Mediterranean Summer Conditions
- Repeatability and between animal correlation between rumen and rectal temperature in South African sheep recorded during summer

Integrated Agricultural Impact

Collectively, these projects strengthen the sustainability, resilience, and profitability of Western Cape farming systems.

They support climate-smart agriculture through improved soil, crop, pasture, and livestock management, while enhancing resource-use efficiency and reducing production risks.

The research also promotes stronger farmer-researcher collaboration, ensuring practical solutions that can be adopted by industry to improve long-term agricultural productivity and environmental stewardship.

STUDENTS AND THE NEXT GENERATION OF SCIENTISTS

The following is a summary of postgraduate degrees that came from plant sciences.

The long-term trials, associated datasets, and research platforms at Langgewens Research Farm have provided the foundation for a substantial body of postgraduate research. To date, these resources have contributed to the successful completion of one BTech, one MTech, 20 MSc, and five PhD studies.

In addition, Langgewens Research Farm is currently supporting a further four MSc and six PhD students, highlighting its ongoing role as an important research and training hub in Conservation Agriculture and dryland production systems.

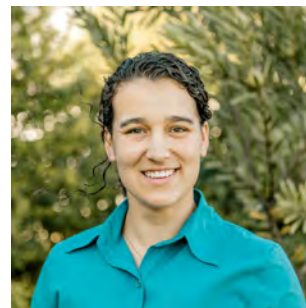
The following is a summary of postgraduate student degrees that came from animal sciences.

The climate resilience research programme has improved understanding of how South African sheep breeds respond and adapt to heat stress under Mediterranean and temperate conditions. Through the use of rectal temperature, respiration rate, and continuous rumen temperature measurements, the studies identified thermotolerant breeds and demonstrated the value of rumen temperature as a practical indicator of heat resilience.

These projects have also contributed to postgraduate training through the completion of four MSc studies, strengthening research capacity in animal science and climate adaptation. Collectively, this research provides a valuable foundation for breeding, selection, and management strategies aimed at improving the resilience and sustainability of future sheep production systems.



Velicia Mmakwena
Mabitsela -
PhD candidate:
Agronomy



Rebecca Ellerbeck -
PhD candidate:
Agronomy



Jade Hanse -
PhD candidate:
Agronomy



Kuda Mafunga -
PhD candidate:
Animal Sciences



Fadzai Zonke -
MSc candidate:
Animal Sciences

CLIMATE RESILIENCE IN CONSERVATION AGRICULTURE

Greater climate variability, more frequent droughts, and rising input costs are placing regional food security under growing strain.

Conservation Agriculture (CA) offers a practical pathway to improved climate resilience.

Although many South African farmers have adopted individual CA practices such as no-till, residue retention, or crop rotation, relatively few implement all three together, where the greatest benefits are achieved.

Long-term field experiments in the Western Cape show that diversified crop rotations can increase wheat productivity, improve gross margins, and enhance whole-farm profitability, especially when cropping is integrated with livestock.

The full CA system improves rainfall infiltration, reduces soil erosion, and increases the efficiency with which scarce water is used.

It also enhances nitrogen-use efficiency, lowers dependence on fertilisers and pesticides over time, and contributes to carbon sequestration.

Most importantly, these combined benefits strengthen the resilience of farming systems against drought, climate shocks, and economic uncertainty, making Conservation Agriculture a key strategy for sustaining wheat production and agricultural livelihoods in the Western Cape.



AI AND FUTURE RESEARCH POSSIBILITIES

WHAT WE HAVE DONE

Langgewens Research Farm is well placed for technology research, with a wide range of research trials and a long history of valuable data. Drone technology, including multispectral drones, is being used to regularly monitor crop health in CA trials.

These smaller plots use different crop rotation systems, making them ideal for comparing differences between the systems through multispectral analysis.

AI has also been used to develop a tool for evaluating the multispectral maps produced from these trials. This allows the data to be processed more efficiently and helps identify differences between trial systems. The tool was developed using AI and has the potential to be used across government research farms.

A spray drone is also being used at Langgewens Research Farm, allowing applications to be made only where and when they are required. A Wi-Fi station provides communication in the field and creates the opportunity to add more sensors and collect additional information from the farm.

POSSIBILITIES FOR THE FUTURE

The real opportunity is to connect all this technology with the large amount of information already available at Langgewens Research Farm.

The farm has a long history of research, good trials and valuable data. By adding more sensors and improving communication

between the field and Elsenburg, we can start building a much better picture of what is happening in the field over time. AI and machine learning can then be used to analyse this information, identify patterns and help researchers make better decisions for future farming and precision agriculture.

AI can also help us develop new systems, write the software that controls them and turn ideas into working agricultural technologies faster.

In the future, Langgewens Research Farm could become a real-world testing ground for smart agricultural machines, including autonomous rovers and other robotic systems.

These technologies can be tested under real farming conditions, not only to improve commercial agriculture, but also to develop practical solutions that can assist smallholder farmers.

The future is not about replacing the farmer with technology, but about giving the farmer better information, better tools and better ways of making decisions.

FROM TRIAL PLOTS TO FARM GATES









**Brothers Cobus and JP
Bester, Commercial Farmers**

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“Langgewens clearly demonstrated to us that crop rotation was the right way to farm.”

A LEGACY ROOTED IN TRUST

For Cobus Bester, Langgewens Research Farm has never been just another research station. It has been part of his family’s story for generations.

The Bester family has been farming in Moorreesburg since 1864, making Cobus and his brother, JP, the fifth generation to continue the family’s agricultural legacy.

While Cobus only became a direct neighbour of Langgewens Research Farm when he returned to the farm in 1993, the connection stretches back much further. His maternal grandfather farmed alongside Langgewens Research Farm

between 1958 and 1976 and often spoke about the close relationship he shared with the farm’s long-serving manager, Oom Murray Landman.

“My grandfather always enjoyed discussing and debating the latest developments and discoveries with Oom Murray,” Cobus recalls.

“There were always a mutual respect and a shared passion for finding better ways to farm.”

Like many grain producers in the Swartland, the Bester family once relied almost exclusively on monoculture wheat production. At the time, the Wheat Board provided a degree of certainty that made continuous wheat farming financially viable. Yet as agriculture evolved, so too did

the need for new approaches. For Cobus, Langgewens Research Farm played a pivotal role in that transition.

“Langgewens Research Farm clearly demonstrated to us that crop rotation was the right way to farm,” he says. “Through the long-term trials that started in 1996, they showed us which systems worked best and which managed risk most effectively.

We are grateful that today we farm according to those principles.”

Over the years, the research farm has become much more than a source of scientific information. It has become a trusted partner in decision-making.

Cobus speaks with admiration about the professionalism of the Langgewens Research Farm team—the dedication of its researchers, the precision with which trials are conducted and the pride taken in maintaining the farm.

“The people are knowledgeable and innovative. The farm is exceptionally neat and well managed, and the trials are always conducted on time. That gives us confidence that the results are reliable.” That confidence keeps him returning to the farm year after year.

Whether attending Farmers’ Days or engaging with researchers, Cobus regards every visit as an opportunity to learn.

“We always go home having learnt something worthwhile,” he says. “Even today, we continue to use Langgewens Research Farm as a sounding board. They already have the experience, the data and the statistics to guide us before we have to learn costly lessons ourselves.” His involvement with the annual

Farmers’ Days began through the former KKOv and later SKOG, organisations that helped strengthen the relationship between researchers and producers.

Today, he remains a regular attendee of Langgewens Research Farm’s own Farmer’s Days, which he believes continue to provide immense value to the farming community.

Looking ahead, Cobus believes Langgewens Research Farm’s greatest contribution may still lie in helping farmers prepare for an increasingly uncertain future. He hopes future research will focus on restoring soil health more rapidly, reducing dependence on chemical inputs and developing practical ways to improve soil moisture retention as climate change brings more erratic rainfall.

“Those two areas,” he says, “should form the cornerstone of Langgewens.”

As Langgewens Research Farm celebrates its centenary, Cobus believes its greatest strength lies not only in the science it produces, but in the trust it has built with generations of farmers. His advice to young producers entering agriculture is simple: “Visit Langgewens Research Farm.

Attend the Farmers’ Days. You can learn an incredible amount in a short time and save yourself years of expensive trial and error.”

For the Bester family, Langgewens Research Farm has never simply been a neighbouring farm. It has been a trusted source of knowledge, a partner in progress and, for more than a century, a place where research has helped shape the future of farming in the Swartland.



Andries Theron
Koringberg Farmer: Soutkloof
Farm and Chairman of PRF

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“In my opinion, minimum tillage had the biggest impact on what we have today.”

A PARTNERSHIP BUILT ON TRUST

Some farmers benefit from research. Others help shape its future.

For Andries Theron, the relationship with the Western Cape Department of Agriculture's Langgewens Research Farm has been both deeply personal and profoundly influential. A fifth-generation farmer on Soutkloof Farm near Moorreesburg, Andries has spent more than four decades farming in the Swartland. Although he handed the day-to-day management of the farm to his son at the end of 2024, his passion for agriculture and commitment to advancing the grain industry remain as strong as ever. Throughout his career,

Andries has believed that successful farming depends on more than what happens within the boundaries of a single farm.

It requires collaboration, shared knowledge and a willingness to invest in research that will benefit future generations. That belief led him to become actively involved in organised agriculture, serving through Agri Western Cape, Grain SA and the Winter Cereal Trust, where he chaired the Technical Committee responsible for supporting winter cereal research. Today, he continues to play a leading role in funding agricultural research as Chairperson of the Protein Research Foundation, while also contributing to technology transfer through SKOG. These roles have provided him with a

unique perspective on the vital partnership between researchers and producers. His own farming journey mirrors the evolution of grain production in the Swartland. When Andries started farming, conventional tillage was regarded as the norm and alternative systems were often viewed with scepticism. As production costs increased and farming margins tightened, however, change became inevitable.

“In my opinion, minimum tillage had the biggest impact on what we have today,” he reflects. “These practices were intensely researched and developed at Langgewens Research Farm over many years.” The journey did not stop there. As herbicide resistance became an increasing challenge, crop rotation once again proved its value, with canola becoming an important part of the cash crop cycle. Then came what Andries regards as one of the most significant breakthroughs for sustainable farming in the Swartland—the pioneering medics research led by Prof. Mark Hardy.

Later, the Conservation Agriculture work of Prof. Johann Strauss and his team reinforced the importance of no-till farming and maintaining permanent soil cover. “To be honest,” Andries admits, “in the beginning I was sceptical.” Experience soon replaced doubt with confidence. The practical demonstrations at Langgewens Research Farm, coupled with direct engagement with the researchers themselves, enabled him to adapt new ideas to suit the realities of his own farm. “The practices and ideas that I could see on the ground at Langgewens Research Farm, talk to the researchers about, and then adapt to my own farm, have had—and continue to have—a positive impact on my business.” From crop rotation and fertiliser management to lime application, livestock integration and seed

placement, Andries believes that the research conducted at Langgewens Research Farm has influenced his farming operation more than any other contribution from the grain value chain. For him, Conservation Agriculture is also one of agriculture’s greatest tools for responding to climate change.

“The biggest lesson we’ve learnt from Langgewens Research Farm is simple—keep your soil covered at all times.” As Langgewens Research Farm celebrates its centenary, Andries reflects with gratitude on the vision of those who established the research farm a hundred years ago.

“They created a true legacy,” he says. “The work being done at Langgewens Research Farm contributes to the sustainability of every farm in the Swartland.” Looking ahead, he believes the challenge for researchers will be to keep Western Cape grain producers competitive in an increasingly demanding global environment by responding to the challenges as they emerge.

When asked to reflect on the relationship between farmers and researchers, his answer captures the very essence of Langgewens Research Farm’s success. “Success is inevitable when great minds—researchers and farmers—listen to each other, learn from each other and execute the plan in a practical manner.” Perhaps there is no better way to describe the legacy of Langgewens Research Farm. For a century, its greatest achievement has not simply been the research it has produced, but the partnerships it has nurtured—partnerships built on trust, shared purpose and a commitment to ensuring that scientific discovery becomes practical progress for farmers across the Western Cape.

A portrait of Andries Isak van der Poll, a man with short dark hair and a mustache, wearing a black jacket over a red shirt. He is looking directly at the camera with a slight smile. The background is a blurred outdoor scene.

Andries Isak van der Poll
Farmer - Klipdrift Plaas

Photo Credit: Landbou.com

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“Before we came here, I did a great deal of research into which farming systems to use, and that’s how I came across the Langgewens system.”

TRUSTING THE RESEARCH

Some farming journeys are shaped by generations of inherited knowledge. Others are shaped by the courage to embrace new ideas. For Andries van der Poll, the latter became the foundation of his success.

Born in Vredendal, Andries grew up immersed in agriculture. His earliest memories are of working alongside his father and uncles, planting with donkeys, sowing wheat by hand and harvesting grain the way generations before them had always done. The family farmed Merino sheep, Boer goats and small grain crops, and it was here that his passion for agriculture first took root. “I experienced

farming with donkeys, hand sowing, sack harvesting and all the old methods,” he recalls. After studying at an agricultural college, Andries spent 19 years working on a citrus farm in Citrusdal. Yet his dream of farming remained alive. In 2013, that dream became a reality when he and his family moved onto their own farm.

Even before arriving, however, Andries had already made one of the most important decisions of his farming career. Determined to build a sustainable farming business, he immersed himself in research, searching for production systems that would allow a small farm to remain profitable in a challenging environment. That search led him to the Western Cape Department of Agriculture’s

Langgewens Research Farm. “Before we came here, I did a great deal of research into which farming systems to use, and that’s how I came across the Langgewens system,” he says. Initially, his plan was to focus on oats, forage crops and livestock. But once he began farming, he quickly realised that livestock alone would not generate sufficient income on a small property. The business needed to diversify.

In 2014, he invested in a disc planter and established his first medics pastures, committing himself to a no-till farming system before he had even visited Langgewens Research Farm. The following year, he planted his first wheat crop. Nature tested that decision immediately.

The 2015 season delivered a devastating drought, and his first wheat harvest yielded only 500 kilograms per hectare. For many producers, such a setback may have prompted a complete rethink. Instead, Andries remained committed to the system. “The farming system had already been decided,” he says. “I phoned Johann Strauss, even though I had never visited Langgewens Research Farm. We discussed the different systems, and that’s where we settled on no-till and the medics-based system.”

That decision proved to be life-changing. Although the years that followed were also dry, the benefits of Conservation Agriculture steadily became evident. Wheat planted after medics pastures began to perform better, with yields increasing per hectare, despite the challenging climatic conditions. Recognition soon followed. In 2018, Andries received second prize in the Conservation Agriculture Competition for the farming system he had implemented — a system built directly on research conducted at Langgewens Research Farm. A year later, he was named Grain SA’s

New Era Commercial Farmer of the Year, an achievement he attributes to the Conservation Agriculture principles he adopted through Langgewens’ research. Today, approximately 90% of his farm has been established with medics pastures, forming the cornerstone of an integrated medics-wheat and livestock production system.

For Andries, the value of Langgewens Research Farm extends far beyond improved yields. The research has enabled him to build healthier soils, increase organic matter and develop a farming system that is better equipped to withstand the realities of climate change.

“If Langgewens hadn’t existed, it would have been much more difficult for us to adapt to climate change,” he says. “You can see the difference that years of Conservation Agriculture research have made, and I believe we will continue to see those same improvements in our own soils.”

Looking back, Andries believes Langgewens Research Farm has become far more than a research farm. It is a trusted source of knowledge that gives farmers the confidence to make decisions whose benefits may only become visible years later. His own journey is testament to that. By placing his trust in research before he saw the results, he built a farming business that is more resilient, more productive and better prepared for the future.

As Langgewens Research Farm celebrates its centenary, Andries hopes the farm continues receiving the support it deserves. “I’m extremely grateful for the work the Western Cape Department of Agriculture does through Langgewens,” he says. “I believe they need every bit of support they can get so they can continue with this important research.”



Whernit Dirks
Farmer - Genadeshoop Boerdery

Photo Credit: Food for Mzanzi

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“The first time I came to Langgewens and saw all the trial plots, I thought, ‘Wow! This is the place to be.’”

CHANGING MINDS, TRANSFORMING FARMS

Some farmers inherit a way of farming. Others discover a new way of thinking. For Whernit Dirks, Langgewens Research Farm became the place where that transformation began.

A first-generation farmer, Whernit started farming on a small scale shortly after leaving school. After spending a year or two working for a commercial farmer, he began renting land of his own before steadily expanding the business. Today, he farms more than 950 hectares, producing livestock, grains and rooibos tea at Genadeshoop Boerdery in the Sandveld. His journey with Langgewens began in 2012, when he and his family purchased

a farm on the edge of the Swartland, where the Sandveld begins. Farming in sandy soils presented an entirely different set of challenges, prompting him to search for more sustainable production systems. It was during this time that he was introduced to the cover crop research being conducted at Langgewens Research Farm. His first visit remains etched in his memory.

“The first time I came to Langgewens and saw all the trial plots, I thought, ‘Wow! This is the place to be.’ That’s where you can really see development—soil development—and how life returns to the soil through these practices.” For Whernit, the cover crop systems demonstrated at Langgewens Research Farm stood out

immediately. Working with sandy soils meant constantly battling to build nitrogen and improve soil structure. The diversity of cover crops, however, introduced something entirely different—a system that restored life to the soil while improving the performance of the crops that followed.

The benefits extended well beyond grain production. “It has also been life-changing from a livestock perspective,” he explains. “You can now carry more livestock on fewer hectares. With the diversity of plants in a cover crop system, it has really made a tremendous difference for me.” Those lessons have become even more valuable as weather patterns continue to change. Despite receiving only 80 to 85 millimetres of rain during the current season, Whernit has seen first-hand how crop rotation and Conservation Agriculture strengthen resilience.

“The wheat, oats and lupins are holding on because you’re farming with a completely different system,” he says. “As far as climate change and the sustainability of a farming operation are concerned, crop rotation is by far the most important practice.” The impact of Langgewens Research Farm, however, reaches beyond farming techniques. It fundamentally changed the way he approaches agriculture. “Langgewens has completely changed my way of thinking, my management style and my approach to farming.” Today, Whernit believes that attending research days at Langgewens Research Farm is essential for every grain producer.

“You simply can’t farm today without this research farm. The research days expose you to new developments and practical farming systems that are not only effective, but often more affordable than people realise.” Looking

to the future, he hopes Langgewens Research Farm will continue expanding its work on cover crop systems and soil biology, particularly for producers farming in regions such as the Sandveld and Rooikaroo, where resilient farming systems are becoming increasingly important. His advice to young farmers is equally heartfelt. “Don’t miss the opportunity to attend a research day at Langgewens,” he says. “Your whole way of thinking will change when you see the restoration of plant growth, the grazing management practices you can apply and how every hectare can become more productive. Every piece of land is valuable—provided we farm it the right way.”

Among his many memories of Langgewens Research Farm, one stands above the rest. In 2016, he had the opportunity to share a platform with Dr Johann Strauss during the Western Cape Department of Agriculture’s annual Extension and Advisory Services Symposium, speaking about soil development and cover crop systems. More than the occasion itself, he remembers the mentorship that followed.

“Dr Johann Strauss took me under his wing. Even today, if I phone him, he is always willing to talk. I have tremendous gratitude for that.” When asked to describe Langgewens Research Farm in just a few words, Whernit’s answer captures the essence of its century-long legacy.

“Sustainable development of the mind.” Perhaps there is no greater tribute. For while Langgewens Research Farm has transformed soils, improved farming systems and strengthened agricultural resilience over the past hundred years, its greatest achievement may well be the generations of farmers whose thinking it has changed—and whose farms continue to flourish because of it.



Alfreda Mars
Commercial Farmer

Photo Credit: Food for Mzanzi

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“I wasn’t farming with cattle then, so I struggled to see the benefit.”

GROWING THROUGH KNOWLEDGE

Some journeys into agriculture begin with inheritance. Others begin with opportunity.

For Alfreda Mars, it has been both.

Raised in the small community of Saron, she grew up watching her father farm vegetables and livestock on communal land. It was there that her own love for agriculture took root.

When she eventually took over the farming operation in 1996, she continued building on the values she had learnt growing up—hard work, perseverance and respect for the land. Everything changed in 2015 when

Alfreda was awarded a 266-hectare Proactive Land Acquisition Strategy (PLAS) farm near Moorreesburg. While the opportunity fulfilled a lifelong dream, it also presented an entirely new challenge: becoming a grain farmer in one of South Africa’s most demanding dryland production regions.

Like many emerging producers, Alfreda quickly realised that success depended on more than determination alone. It required knowledge.

Through Grain SA’s grain production courses, she was introduced to Langgewens Research Farm, where theory was transformed into practical learning. Her first visit to a Farmers’ Day in 2016 remains vivid.

“I had never seen so many different grain cultivars in one place,” she recalls. “There were wheat, lupins, canola, oats and different pasture systems. It opened my eyes to what was possible.”

The lessons she learnt at Langgewens Research Farm soon found their way onto her own farm. A carefully planned crop rotation system incorporating wheat, legumes, canola and cover crops became the foundation of her production system.

Not every recommendation made immediate sense. “At first I couldn’t understand the value of cover crops,” she admits. “I wasn’t farming with cattle then, so I struggled to see the benefit.”

Experience, however, proved the research right.

Today, crop rotation, minimum tillage and cover crops have become essential components of her farming operation, improving soil health, restoring nitrogen naturally and strengthening the long-term sustainability of her land.

The journey was not without obstacles.

When Alfreda took ownership of her farm, the fields had stood unplanted for three years and were heavily infested with weeds. Rehabilitating the land became a marathon rather than a sprint. “It took five years to win the battle against the weeds,” she says. “At the same time, we had to deal with the drought.”

It was during those years that Langgewens Research Farm became more than a place to visit—it became a trusted source of practical solutions. Research on short-season wheat cultivars proved particularly valuable under challenging climatic conditions, helping Alfreda

make informed decisions while improving both productivity and resilience. Looking back, she believes Langgewens Research Farm has played an invaluable role in equipping Swartland farmers with practical knowledge that can be applied where it matters most—in the field.

“The research and Farmers’ Days have helped farmers improve both their yields and their profitability,” she says.

As agriculture continues to evolve, Alfreda hopes Langgewens Research Farm will keep its focus on developing drought-tolerant cultivars and practical solutions that enable producers to farm more sustainably in an increasingly unpredictable climate.

Her advice to young people considering agriculture reflects the journey she has travelled herself. “Farming is a business. It is no longer done the way our forefathers farmed. Technology and innovation have opened up so many opportunities and young people should see agriculture as an exciting career with endless possibilities.”

For Alfreda, Langgewens Research Farm is far more than a research farm. It is a place where science meets practical farming, where knowledge becomes confidence and where producers—whether established or emerging—are empowered to build resilient farming businesses.

As Langgewens Research Farm celebrates a century of agricultural excellence, Alfreda’s story is a reminder that its greatest harvest is not measured only in research results, but in the farmers whose lives and livelihoods have been transformed through the knowledge it has shared.



Tshepo Marawu
Emerging Farmer

Photo Credit: Tshepo Marawu

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“We did not know what to expect,” Tshepo recalls. “However, when we arrived at Langgewens, we had a wonderful experience and learnt a great deal about farming.”

GROWING THROUGH KNOWLEDGE: TSHEPO MARAWU’S LANGGEWENS JOURNEY

For Tshepo Marawu, Farm Manager at Ganzekraal Farming Trust near Hopefield, the value of agricultural research is measured by the positive difference it makes on the farm.

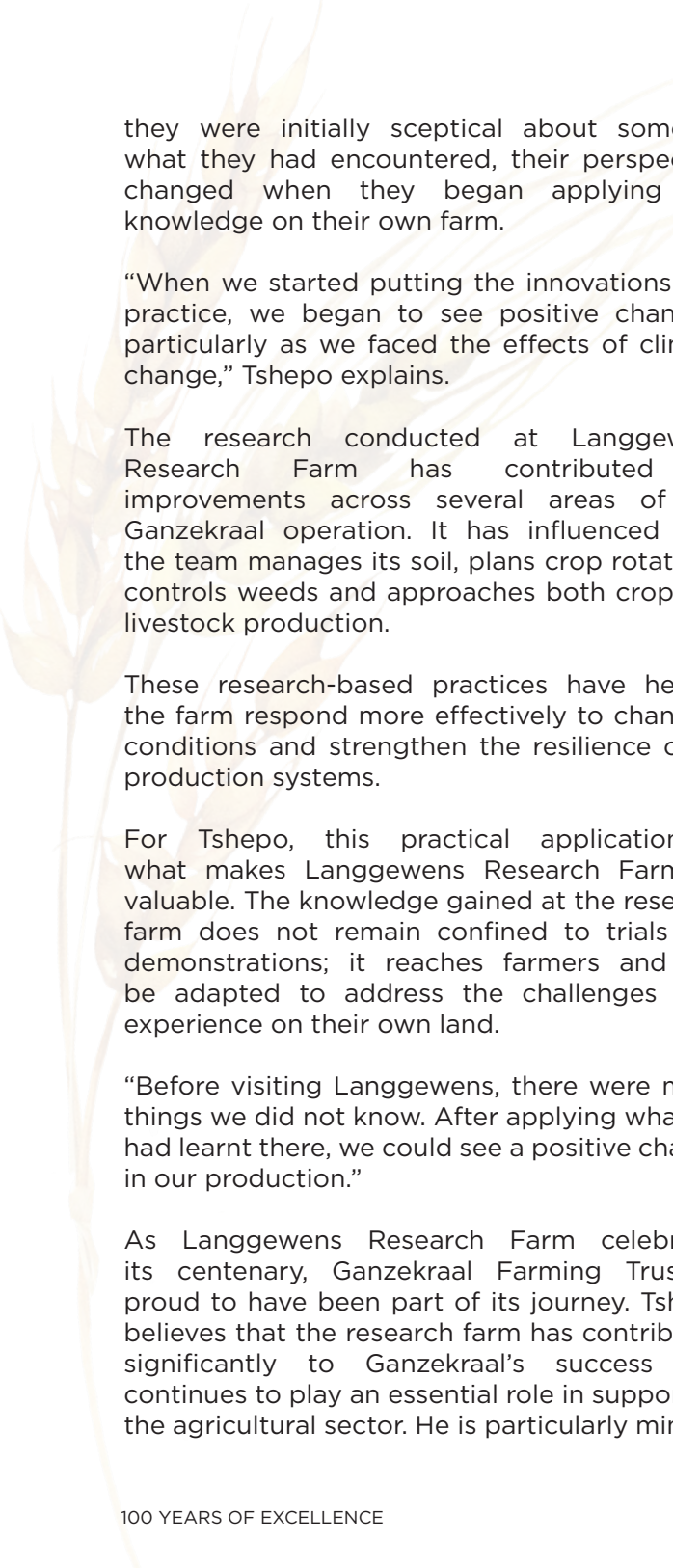
Ganzekraal Farming Trust operates a 1 500-hectare mixed-farming enterprise in the Swartland. The farm produces wheat, oats, canola and other grain crops, while its livestock component includes cattle, sheep and goats. Having farmed in the region for 16 years, Tshepo has witnessed how changing climatic conditions and the increasing

demands placed on farmers have made access to sound research and practical knowledge more important than ever.

His relationship with Langgewens Research Farm began in 2012, when the Western Cape Department of Agriculture introduced the Ganzekraal team to the research facility.

“We did not know what to expect,” Tshepo recalls. “However, when we arrived at Langgewens, we had a wonderful experience and learnt a great deal about farming.”

The visit exposed the team to new ideas, innovations and farming practices. Although



they were initially sceptical about some of what they had encountered, their perspective changed when they began applying the knowledge on their own farm.

“When we started putting the innovations into practice, we began to see positive changes—particularly as we faced the effects of climate change,” Tshepo explains.

The research conducted at Langgewens Research Farm has contributed to improvements across several areas of the Ganzekraal operation. It has influenced how the team manages its soil, plans crop rotations, controls weeds and approaches both crop and livestock production.

These research-based practices have helped the farm respond more effectively to changing conditions and strengthen the resilience of its production systems.

For Tshepo, this practical application is what makes Langgewens Research Farm so valuable. The knowledge gained at the research farm does not remain confined to trials and demonstrations; it reaches farmers and can be adapted to address the challenges they experience on their own land.

“Before visiting Langgewens, there were many things we did not know. After applying what we had learnt there, we could see a positive change in our production.”

As Langgewens Research Farm celebrates its centenary, Ganzekraal Farming Trust is proud to have been part of its journey. Tshepo believes that the research farm has contributed significantly to Ganzekraal’s success and continues to play an essential role in supporting the agricultural sector. He is particularly mindful

of the value that research institutions hold for the next generation. Young farmers entering an increasingly complex and unpredictable sector need access to practical knowledge, proven methods and opportunities to learn from agricultural research.

“Research farms such as Langgewens provide invaluable support, especially to young farmers,” he says.

If Tshepo had to describe Langgewens Research Farm in one word, it would be simple but meaningful:

Helpful.

For Ganzekraal Farming Trust, Langgewens Research Farm has been more than a place of research. It has been a trusted source of knowledge that has helped the farm improve its practices, increase its resilience and continue growing through change.



A close-up photograph of several wheat stalks. The stalks are green at the base and transition to a golden-yellow color towards the tips of the grain heads. The background is a soft, out-of-focus orange. A semi-transparent yellow rectangular box is positioned in the upper-left quadrant, containing the title text in white.

THROUGH THE EYES OF AGRICULTURAL MEDIA





Dr Amelia Genis, agricultural journalist and chronicler of the Langgewens story

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“Congratulations on 100 years of research at Langgewens.”

A CENTURY OBSERVED: JOURNALIST DR AMELIA GENIS

Few people have had the opportunity to witness the evolution of Western Cape agriculture from as many perspectives as agricultural journalist Dr Amelia Genis.

For years, she has reported on the challenges, innovations and breakthroughs that have shaped the province’s agricultural sector, making Langgewens Research Farm a familiar feature in the story of dryland agriculture. As Langgewens Research Farm celebrates

its centenary, Dr Genis believes its enduring relevance can be attributed to one defining characteristic: a commitment to long-term, practical research that has consistently addressed the real needs of farmers. “Congratulations on 100 years of research at Langgewens,” she says. “Its contribution to agriculture has been remarkable.” She credits much of the farm’s success to the vision of Prof. Mark Hardy, whose decision to establish the long-term crop rotation trials laid the foundation for what has become one of the most influential Conservation Agriculture research programmes in South Africa. Over

the years, that vision was carried forward by a dedicated team of researchers, including Ms Annelene Swanepoel, Prof. Johann Strauss, the late Prof. Johan Labuschagne, Mr Piet Lombard, Mr Rens Smit, Mr Samie Laubscher and Ms Lisa Smorenburg, supported by successive farm managers who ensured that scientific excellence translated into practical application.

For Dr Genis, however, research alone does not explain Langgewens Research Farm's success. Equally important has been its willingness to share knowledge and engage directly with the farming community. While communication with producers has always formed part of the farm's work, she believes this relationship was strengthened significantly through the establishment of Conservation Agriculture Western Cape (CAWC) in 2011, with the support of *Landbouweekblad*.

The annual conferences and practical field days created a platform where researchers, local producers and international experts could exchange ideas, challenge one another and refine farming practices through collaboration. She also points to the Western Cape Department of Agriculture's ability to build meaningful partnerships with institutions such as Stellenbosch University, the Protein Research Foundation and agricultural businesses as a key factor in ensuring that Langgewens Research Farm remained both scientifically rigorous and practically relevant. According to Dr Genis, the impact of the research has extended far beyond the boundaries of the research farm itself. The work undertaken by the Western Cape Department of Agriculture and Stellenbosch University has deepened producers' understanding of Conservation Agriculture and, perhaps more importantly, given them the confidence to implement its principles under commercial farming conditions. "The fact that the whole

farm practises what it preaches through zero tillage, disc planters and low-input production systems give the research tremendous credibility," she explains. That credibility has become one of Langgewens' defining strengths. Rather than relying solely on theory, the farm demonstrates research under real-world conditions, allowing producers to observe results over many seasons before applying the lessons to their own operations.

Looking to the future, Dr Genis believes Langgewens Research Farm is uniquely positioned to continue addressing the complex challenges facing agriculture. She sees enormous value in expanding research into indigenous grazing species and pollinator strips, investigating indigenous nitrogen-fixing legumes, further integrating sheep into conservation cropping systems and exploring climate-resilient farm infrastructure that protects both people and livestock. She also encourages researchers to draw inspiration from international initiatives such as Western Australia's Future Farm Project, while continuing to build on the long-term rotation trials that have become synonymous with Langgewens Research Farm.

For Dr Genis, the farm's greatest legacy lies not only in the knowledge it has generated over the past century, but in the confidence it has given generations of farmers to embrace innovation. Its long-term trials have created an invaluable body of scientific evidence, strengthened understanding of Mediterranean Farming Systems, and provided generations of students with practical data that continues to shape agricultural research. As Langgewens Research Farm enters its second century, Dr Genis believes its purpose remains as relevant as ever: to generate practical, credible research that helps farmers adapt, innovate and build resilience in an increasingly uncertain world.

A photograph of a field of yellow wildflowers and green grass. The top portion of the image is covered by a semi-transparent olive-green banner. The text "LOOKING INTO THE NEXT CENTURY" is written in white, bold, sans-serif capital letters across the banner. The background shows a dense field of yellow flowers and green foliage, with a grey, overcast sky in the distance.

LOOKING INTO THE NEXT CENTURY





Annelene Swanepoel (left), Plant Scientific Manager, and Mmboniseni Mulaudzi, Animal Scientific Manager, advancing integrated research at Langgewens

For a hundred years, Langgewens Research Farm has answered the questions facing agriculture. Today, a new generation of scientists is asking the questions that will shape the next century.

There is something remarkable about standing in a field where research has been taking place for a century. The wheat may be different. The technology certainly is. The questions researchers ask today would have been unimaginable to the scientists who first walked these soils in 1926.

Yet one thing has never changed. Every generation has accepted the responsibility of leaving agriculture better than they found it.

That responsibility now rests with a new generation of scientists. As Langgewens Research Farm enters its second century, the focus is no longer simply on increasing production. The challenges facing agriculture have become more complex.

Climate change, resource scarcity, soil degradation, biodiversity loss and rapidly advancing technology are reshaping the way food is produced. The future demands more than individual breakthroughs. It calls for farming systems that are resilient, profitable and sustainable, supported by science that remains firmly rooted in the realities of the farm.

For Dr Filicity Vries, Chief Director of Research and Technology Development Services, the enduring strength of Langgewens Research Farm lies in its ability to evolve without losing sight of its purpose.

“The greatest contribution Langgewens Research Farm has made over the past hundred years has been its ability to generate

independent, long-term scientific research that helps farmers make informed decisions,” she reflects.

“What has kept the farm relevant is its commitment to addressing the changing challenges facing producers through practical, collaborative research.”

That philosophy continues to shape every research programme undertaken at Langgewens Research Farm today.

While previous generations focused on improving crop production and livestock performance, today’s researchers are increasingly asking broader questions.

How do we restore soil health? How do we farm successfully with less water? How do we reduce agriculture’s environmental footprint while maintaining profitability? And perhaps most importantly, how do we ensure that farming remains viable for future generations?

For Annelene Swanepoel, whose career has been deeply rooted in plant science at Langgewens Research Farm, the answers no longer lie within individual disciplines.

Plant science, she explains, has evolved from solving isolated production challenges to understanding the entire sciences farming systems.

Soil biology, crop rotations, biodiversity, technology and environmental sustainability are now viewed as interconnected parts of a much larger picture.

Long-term trials, some of which have been running for decades, remain the foundation of that understanding.

They provide insights that simply cannot be gained from short-term studies and continue to guide producers through increasingly unpredictable climatic conditions.

That same systems approach is evident in the work of Mmboniseni Mulaudzi, whose focus is helping livestock farmers prepare for a future shaped by climate change.

Animal sciences, she believes, is no longer only about improving production. It is about understanding how animals cope with environmental stress, how indigenous genetics can contribute to climate resilience and how precision technologies can improve animal welfare while making better use of limited natural resources.

Research into heat tolerance, genomics and integrated livestock systems is already helping producers prepare for conditions that will become increasingly common in the decades ahead.

Although their disciplines differ, all three share a common belief: the future of agricultural research will depend less on individual discoveries and more on collaboration.

Tomorrow's solutions will be developed by teams that bring together agronomists, animal scientists, engineers, economists, soil biologists, data specialists and producers themselves.

Scientific excellence will remain essential, but equally important will be the ability to connect knowledge across disciplines and ensure that research continues to solve real problems for real farmers. Perhaps that has always been Langgewens Research Farm's greatest strength.

For a hundred years, the farm has never pursued research for its own sake. Every trial, every season and every experiment has ultimately been measured against one question: Will this help farmers?

That question continues to guide the work taking place on these fields today.

As the conversation turns to the future, each of the scientists pauses for a moment before answering one final question.

When people read this book a hundred years from now, what do you hope they will understand about the work your generation was doing today? Their answers are remarkably similar.

They hope future generations will see that this was a generation that recognised the challenges ahead and chose to respond through science, collaboration and innovation.

A generation that understood the importance of investing in long-term research, even when the benefits would only be realised decades later.

A generation that remained committed to building farming systems capable of producing food while caring for the land on which future generations will depend.

The questions facing agriculture will undoubtedly continue to change.

The answers will too.

But if the first hundred years of Langgewens Research Farm have taught us anything, it is that progress has never been about predicting the future.

It has been about having the curiosity to ask better questions, the discipline to seek the answers and the courage to place that knowledge in the hands of those who feed a nation.

For a hundred years, Langgewens Research Farm has answered the questions facing agriculture.

Today, a new generation of scientists is asking the questions that will shape the next century.

The story isn't over.

In many ways, it is only just beginning.



ACKNOWLEDGEMENTS







Dr Filicity Vries
Chief Director:
Research and Technology Development Services

A centenary is never the achievement of a single individual.

It is the collective work of countless people whose dedication, expertise and commitment span generations.

As the Western Cape Department of Agriculture celebrates one hundred years of Langgewens Research Farm, we acknowledge with sincere gratitude the researchers, farm managers, technicians, administrative and support staff who have devoted their careers to advancing agricultural science.

Their work has laid the foundation for one of South Africa's most respected centres of dryland agricultural research.

We extend our appreciation to the many farmers who generously shared their experiences and opened their hearts to tell the stories captured in these pages. Their willingness to embrace innovation and translate research into practical farming has given lasting meaning to the work undertaken at Langgewens Research Farm.

Our sincere thanks also go to our valued partners, producer organisations, research institutions, universities and industry bodies whose continued collaboration and investment have strengthened the relevance and impact of research over many decades.

Together, these partnerships have ensured that scientific knowledge continues to reach those who need it most.

This publication would not have been possible without the contributions of former and current colleagues who shared historical records, photographs, memories and technical expertise.

We also acknowledge the editorial, design and production team whose creativity and professionalism transformed a century of history into the publication you now hold.

Finally, we recognise that the true legacy of Langgewens Research Farm extends beyond the research itself. It lives in healthier soils, more resilient farming systems, stronger partnerships and the confidence with which producers continue to face the future.

While every effort has been made to acknowledge all those who have contributed to the remarkable journey of Langgewens Research Farm, we recognise that, over the course of a century, some names may inadvertently have been omitted.

To those individuals, we extend our sincere appreciation and gratitude. Your contribution forms an enduring part of this legacy.

May this book stand as a tribute to the past, a celebration of the present and an inspiration for the generations of researchers, farmers and innovators who will write the next chapter in the Langgewens Research Farm story.

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#ForTheLoveOfAgriculture

100 YEARS OF PURPOSE. GROWING A BETTER FUTURE

Spanning the years 1926 to 2026, this commemorative publication celebrates Langgewens Research Farm's century-long legacy of agricultural discovery, practical innovation and farmer-focused partnerships in the Swartland.

It traces the farm's evolution from its early winter-cereal and crop-rotation trials to its pioneering, internationally recognised work in conservation agriculture, climate-smart farming and integrated crop-livestock systems.

Looking towards its next century, the book highlights Langgewens' continuing multidisciplinary research, long-term stewardship of soil health and collaborative science - all directed towards building a more productive, sustainable and resilient agricultural future for Western Cape producers.



ADVANCING
AGRICULTURAL
RESEARCH



EMPOWERING
PEOPLE AND
COMMUNITIES



SUSTAINING
OUR NATURAL
RESOURCES



INNOVATING
FOR A RESILIENT
FUTURE