

NEWSLETTER

**Happy 10th
Anniversary
SmartAgri!**

This month it is exactly 10 years since the SmartAgri Plan was completed!

**10. TAKEAWAYS FROM
COP30**

**13. MANAGING
CLIMATE RISK
IN SWARTLAND
CANOLA**

**16. CHANGING
BEHAVIOUR TO
ADAPT TO CLIMATE
CHANGE**

**20. THE PARIS
AGREEMENT IS
WORKING - 10
YEARS LATER**

**5. CONSERVATION
AGRICULTURE RESEARCH
EXCELS**



TABLE OF CONTENTS



EDITORS NOTES	3
NEWS SNIPPETS AND MEDIA LINKS	4
SMARTAGRI IMPLEMENTATION	9
NEWS FROM OUR PROVINCE	15
NATIONAL AND INTERNATIONAL NEWS	19
NEWS FROM OUR PARTNERS	22
SHOWCASING RESEARCH & YOUNG SCIENTISTS	24
UPCOMING CONFERENCES	26

Editor's Note

Welcome to the fourth edition of the SmartAgri Barometer of 2025/2026

This month it is exactly 10 years since the SmartAgri Plan was completed – March 2016. The plan has been implemented ever since. Happy 10th Anniversary SmartAgri (and Paris Agreement)! The world has changed dramatically in 10 years.

The climate crisis is losing the attention of governments, business and citizens across the world, being pushed aside as a priority risk (at least in the short term) by the geopolitical, trade and social upheavals. We must continue to strengthen climate resilience in the food system because climate change is not waiting for the world to sort out these crises.

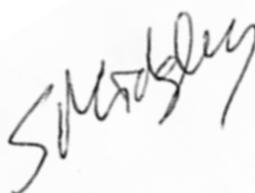
This edition of the Barometer puts into focus the progress that has been made in making climate change a key theme not only in diverse aspects of core agriculture (e.g. world-leading local research on apple and canola production in variable climates, the carbon footprint of veld-based wool production, climate-smart solutions for small-scale vegetable farmers, and private sector-led weather reports for on-farm decision-making), but also extending into other sectors, with cross-benefits to farming communities.

In the last few months, the Western Cape's Directorate Museum Services, in collaboration with the Stellenbosch Academy of Design and Photography, Stellenbosch Museum and the Department of Environmental Affairs and Development Planning, conducted a climate change campaign. Students developed impactful communications materials to raise awareness on climate change and behaviour change.

The campaign will be rolled out to the province's museum network, reaching thousands of citizens, especially the youth. The province's Department of Health and Wellness has become the second department (after Agriculture) to develop a climate change strategy, envisioning "a healthy, low carbon healthcare system that supports a safe environment and equitable patient care".

Enjoy the read, and please feel free to send your feedback and ideas, and to disseminate to other interested parties.

To access previous editions of the SmartAgri Barometer, please visit www.greenagri.org.za and click on SmartAgri.



Dr Stephanie Midgley



**NEWS SNIPPETS &
MEDIA LINKS**

WESTERN CAPE RESEARCH EXCELS AT THE 2026 COMBINED CONGRESS



Some of the award winners at the 2026 Combined Congress. From left to right: Kelly Cogillis, Inathi Mpetshwa, Louise Bestbier, Karen Truter and Rebecca Ellerbeck.



For more information, please contact Prof Johann Strauss, Sustainable Cropping Systems Research, Directorate Plant Sciences, Western Cape Department of Agriculture. Email: Johann.Strauss@westerncape.gov.za

The 2026 Combined Congress was held at North-West University in January. Delegates from three scientific societies, including crop production, soil science, and horticulture, attended the three-day congress.

The Western Cape Department of Agriculture and Stellenbosch University were well represented, with 18 oral and poster presentations. The department's research and associated students from the Stellenbosch Department of Agronomy walked away with several awards at the Combined Congress. Dr Jacques van Zyl won the award for the best crop production poster with the title "Conservation Tillage Practices for Potato Production and the Associated Bacterial and Fungal Community Analysis Spanning Three Production Cycles".

Louise Bestbier, a PhD student, received two prizes for her talk titled "Herbicide Decision-making in Conservation Agricultural Systems". She received the prize for the best paper in crop protection, as well as the best presentation by a member under 40. Rebecca Ellerbeck was honoured with the best student presentation and the best paper on Conservation Agriculture. Her talk was entitled: "Effects of Utilising a Cover Crop Under Different Grazing Pressures within a Conservation Agriculture Setting".

Inathi Mpetshwa received the prize for the best poster in Conservation Agriculture, with her poster focusing on: "Integrating Biological Strategies into Conservation Agriculture for Sustainable Canola and Wheat Production in the Western Cape".

The Combined Congress was a huge success and well organised by the North West University. The 2027 congress will be hosted at Stellenbosch University.

THE CARBON INTENSITY OF WOOL PRODUCTION



A new study by South African and Australian researchers has found that the inclusion of the biogenic carbon of wool production in the Life Cycle Assessment (LCA) methodology leads to a reduction in the estimated carbon footprint (carbon emissions intensity) of wool.

This is indeed very welcome news for the wool industry, since it was previously believed that wool production is associated with high greenhouse gas (GHG) emissions. Sheep, like cattle, use enteric fermentation to digest their food, and this emits methane, a strong GHG.

However, wool production takes place in a biogenic system which includes photosynthesis and biomass production of grazed plants and thus carbon removals from the environment. This fundamentally alters the carbon footprint of bio-fibres compared to fossil fuel-based synthetic fibres.

The calculations are sensitive to how much manure is retained in the grazing system, since manure contains 54.1% of the carbon flows after digestion. With a retention of 66.7% of manure in the system, the carbon intensity of wool production was reduced by 102% compared to previous LCA methodologies that do not account for biogenic carbon flows.

Consumers of wool products can now make more informed decisions on the climatic impacts of wool production.

Reference: James Blignaut, Paul Swan, Lemuel Blignaut (2026). A biogenic life cycle approach towards estimating the carbon intensity of wool production: Evidence from six Australian case studies. Agricultural Systems 233 (2026) 104631. <https://doi.org/10.1016/j.agsy.2025.104631>

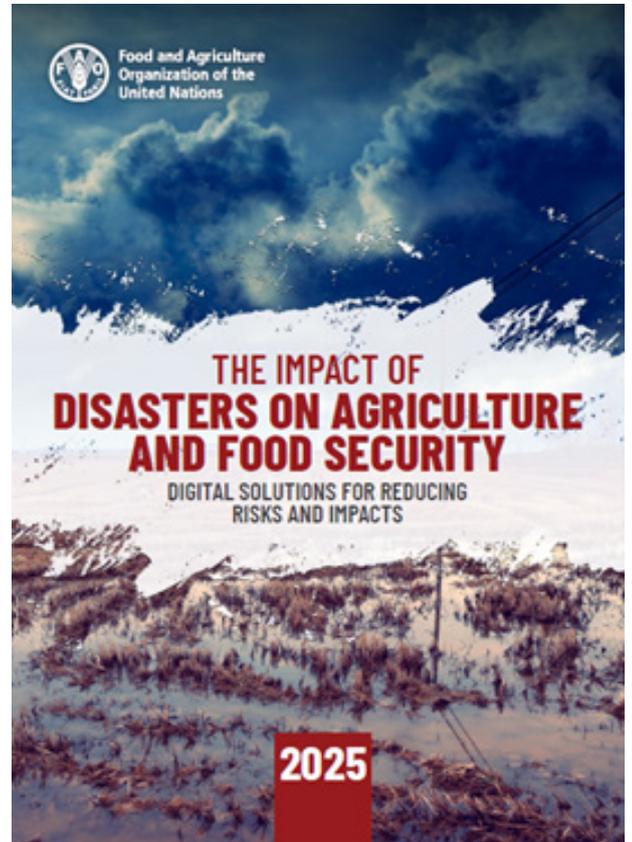
DISASTERS COST GLOBAL AGRICULTURE \$3.26 TRILLION OVER THREE DECADES

In late 2025, the United Nations Food and Agriculture Organization (UN-FAO) published an important report entitled "The Impacts of Disasters on Agriculture and Food Security – Digital Solutions for Reducing Risks and Impacts". This is the second edition of this report, presenting evidence of economic losses in the agricultural sector over the last three decades.

Worldwide, extreme and unprecedented weather events are threatening food production and security, and the achievement of the Sustainable Development Goals. They are often exacerbated by simultaneous conflicts and economic shocks. The impacts ripple through infrastructure damage, market disruptions, financial system failures and ecosystem service degradation that can last for many years.

"Disasters have inflicted an estimated USD 3.26 trillion in agricultural losses over 33 years (1991–2023), averaging USD 99 billion per year, with cereal crops bearing the heaviest burden at 4.6 billion tonnes of losses, followed by fruits and vegetables (2.8 billion tonnes), and with meat and dairy losing 900 million tonnes." These losses lead to severe impacts on agricultural livelihoods. Africa is bearing the brunt of these impacts, equating to around 7.4% of agricultural gross domestic product.

The report highlights the advances in digital technologies and tools in monitoring climate risk in agriculture. Digital platforms are harnessing complex data sets and employing advanced analytics powered by artificial intelligence (AI) and machine learning (ML) to provide integrated information suitable for risk reduction decision making. For example, early warning systems driven by these technologies have revolutionised proactive quick responses and damage aversion.



To access and read the report, please click on the link below. FAO. 2025. The Impact of Disasters on Agriculture and Food Security 2025 – Digital solutions for reducing risks and impacts. Rome. <https://doi.org/10.4060/cd7185en>

SMARTAGRI ON RADIO SONDER GRENSE

RSG Landbou, 27 January 2026 – Interview with Prof Stephanie Midgley, Specialist Scientist: Climate Change, Western Cape Department of Agriculture. She updates us on COP30 (Conference of the Parties of the United Nations Framework Convention on Climate Change), as well as recent actions that form part of the implementation of the Western Cape's climate change response.

Click [here](#) to listen the to the broadcast

A production manual for climate-smart practices to strengthen small-scale vegetable farming in Southern Africa was recently published by Solidaridad (Southern Africa).

To read and download the report, click on this link: [Climate-Smart Horticulture Production Manual for Small-Scale Farmers](#)

CLIMATE-SMART HORTICULTURE PRODUCTION MANUAL



FOR SMALL- SCALE FARMERS

Solidaridad manages programmes in Malawi, Mozambique, South Africa, Zambia and Zimbabwe: <https://www.solidaridadnetwork.org/region/southern-africa/>

The manual presents field-tested, practical strategies that help small-scale vegetable farmers to enhance sustainability, adapt to climate change and build resilience to climate shocks, while producing nutritious and marketable produce. Topics covered include:

- The Climate-Smart vegetable garden
- The vegetable nursery
- Soil health management for vegetable production
- Pest and disease management in organic vegetables

Climate-smart horticulture works with rather than against nature, using local resources. Practices such as crop diversification, intercropping, companion planting, nutrient recycling and natural methods to reduce pest and disease pressure are covered in the manual.

Practical water-saving techniques can include mulching, sunken and raised beds, and affordable drip systems, amongst others.

The manual can become a useful resource for small-scale farmers and their advisors across the region, with adaptation of the techniques to local conditions.





SMARTAGRI IMPLEMENTATION

Learnings and opportunities – takeaways from COP30

By Dr Stephanie Midgley and Ms Ashia Petersen



Photo 1. View of Belém, Brazil.

In November 2025, Ms Ashia Petersen (Director: Sustainable Resource Use and Management, Western Cape Department of Agriculture) and Dr Stephanie Midgley (Specialist Scientist: Climate Change, Western Cape Department of Agriculture) participated in the 30th Conference of the Parties (COP30) of the United Nations Framework Convention on Climate Change, Belém, Brazil (Photo 1).

In the December 2025 edition of the SmartAgri Barometer we summarized the key outcomes of COP30 in the context of South African and Western Cape climate response priorities, especially regarding agriculture and food systems. In this follow-up article, we include more details on our participation in conference events, key learnings, and opportunities that stood out. Although we were able to observe some negotiation sessions, we do not report on these here.

MCAP AND SUBNATIONAL COLLABORATION

Ms Petersen and Dr Midgley actively participated in events co-organised and -hosted by the Mediterranean Climate Action Partnership (MCAP) of which the Western Cape Government is a member.

COP30 provided an opportunity to increase the global visibility and awareness of MCAP and deliver a unified MCAP voice on subnational contributions across Mediterranean bioregions. It also strengthened the network through in-person engagements and knowledge sharing with other partner regions attending the event.

Ms Petersen was a panel member at a side event entitled “From Droughts to Heatwaves to Wildfires: Mediterranean Regions Teaming up for Climate Resilience” hosted by MCAP, Regions4 and the Government of Catalonia, Spain. The other speakers were: Ms Sonsoles Letang (Director General for Climate Change and Environmental Quality, Government of Catalonia) and Ms Kim Curtain (Deputy Secretary, Energy, Climate Change and Sustainability, New South Wales Department of Climate Change, Energy, the Environment and Water) (Photo 2). The lively discussion

highlighted the shared climate-related hazards, the adaptation needs of Mediterranean climate regions, local innovations and solutions in adaptation and resilience building, and how inter-regional collaboration can drive more impactful action at scale.



Photo 2. Mr Sam Carter (MCAP Secretariat Lead & Founding Principal, Resilient Cities Catalyst) moderating the panel discussion, with (from left to right) Ms Sonsoles Letang (Catalonia), Ms Kim Curtain (New South Wales) and Ms Ashia Petersen (Western Cape).

Later in the conference, MCAP (and Resilient Cities Catalyst, acting as MCAP Secretariat), Regions4 and the Government of Catalonia co-hosted a side event on “Innovative Approaches to Driving Climate Action: Subnational Leadership & Bioregional Collaboration in Climate Adaptation and Resilience”. This time, Dr Stephanie Midgley was on the panel, with Ms Karen Ross (Secretary of the California Department of Food and Agriculture, Government of California) and Ms Karlene Maywald (Water Commissioner, Government of South Australia) (Photo 3). The discussion explored how cooperation among bioregions fosters innovation, strengthens implementation, and accelerates resilience.

The MCAP collaborative framework between subnational governments can inspire broader bioregional alliances and connect diverse territories while maintaining a unified voice for Mediterranean priorities within the global climate agenda.

The event also included a second panel that discussed “Innovative Financing for Accelerated Collaboration and Implementation”. Successful local or regional initiatives can be scaled up or replicated through joint action and unique funding approaches and mechanisms to effectively channel funding into successful implementation.



Photo 3. Mr Sam Carter (MCAP Secretariat Lead & Founding Principal, Resilient Cities Catalyst) moderated the panel discussion, with (from left to right) Dr Stephanie Midgley (Western Cape), Ms Karlene Maywald (South Australia) and Secretary Karen Ross (California).

CLIMATE FINANCE AND THE JUST TRANSITION

Many of the COP30 side and pavilion events were strongly focused on accelerating climate finance availability and ensuring that finance flows to where it is most needed – at grassroots actionable level. We learned what makes proposed adaptation projects investible from large financiers such as the Gates Foundation, BMW Foundation, Nordic Development Fund and Open Society Foundation.

They (and others) are looking for high-impact solutions in real partnership with the beneficiaries, scaling of proven pilots, tangible local benefits (financial, livelihoods, resilience) and a feasible and self-sustaining post-project business plan.

The “Just Transition” and finance that drives transformation and systemic change was a common thread – this was the central message of two events led by the South African Presidential Climate Commission (PCC) and the Development Bank of Southern Africa (DBSA). The PCC launched the ‘Just Transition Finance Mechanism for South Africa’ at one event – an important

step to strengthening climate finance in our country. Finance must also be well aligned with countries’ Nationally Determined Contribution documents, and locally tailored climate change strategies.

A cross-cutting theme at COP30 and brought up frequently in relation to climate finance and capacity building was the needs and roles of the youth in responding to climate change. Young people bring a special understanding, skills and energy to the table, and are proving themselves in research, innovation and policy discussions at the highest levels.

TECHNOLOGIES FOR AGRICULTURE AND DISASTER RISK REDUCTION

Technologies and innovation for climate change adaptation and mitigation come in all shapes and sizes: from very practical, low cost and easy to use, to next-generation solutions powered by Artificial Intelligence, IoT and geospatial analytics. We learned that, in fact, these are coming together to provide AI-powered solutions and support to farmers and disaster practitioners in developing country settings. We

were surprised at how many applications are already being rolled out across Africa. The tools and learnings are often readily available and can be adjusted to local contexts. Examples include low cost and widely disseminated extreme weather early warnings (using simple WhatsApp messaging), integrated monitoring systems, and 'digital agronomy' that is changing the lives of African farmers. Innovation is also apparent in the field of wildfire planning, monitoring, risk reduction and disaster response logistics.

Technologies are enabling a paradigm shift from reactive to proactive. AI-driven predictive power and scenario-based tools (including digital twins) are getting much smarter, with benefits for real-time preparation and allocation of resources, and fast responses that save lives and reduce costs.

In combination with local communities and their indigenous and local knowledge, decision-making is improved and can better mitigate severe impacts on ecosystems and livelihoods (as implemented in Australia and the Amazon region, amongst others). Solutions can be very practical and surprisingly simple!

We heard about 'on the ground resilient infrastructure' including self-healing concrete, anti-flood airbricks, and sandbags filled with superabsorbent polymers that are lightweight and faster to deploy than traditional ones.

NEXUS OF WATER, ENERGY, FOOD AND BIODIVERSITY

The world is embracing climate-responsive approaches that acknowledge, measure and integrate the connected spheres of water, energy, biodiversity and food systems. '

Nature-based Solutions' are cost-effective and sustainable approaches for protecting and stopping further losses of ecological infrastructure and ecosystem services that underpin societies and economies.

Examples include the sustainable production of nutritious food through judicious soil and water management, catchment and wetland management that boosts water provision and water quality, and the use of trees in urban and rural settings to provide spaces for cooling for people and animals.

CONCLUSION

Was attending COP30 worth the cost, time and discomfort (the venue experienced extreme heat, flooding and a fire, bringing climate change right into the negotiating rooms)? Our objectives were met, namely: to participate in and help drive the objectives of MCAP, including building relationships with other partners, and to learn as much as possible and distill this into implementable recommendations for the Western Cape.

We will take forward opportunities arising from the further implementation of MCAP, and continue the discussions with our partners in the Western Cape Government on how to strategically access climate finance in a way that supports our provincial climate change response and needs of the citizens.

For further information please contact Dr Stephanie Midgley at stephanie.midgley@westerncape.gov.za.



MANAGING CLIMATE RISK IN SWARTLAND CANOLA: PRACTICAL INSIGHTS FROM 12 YEARS OF FIELD RESEARCH

By Andries Le Roux, Stephanie Midgley, Johann Strauss, Piet Lombard and Pieter Swanepoel



Canola has become an important component of dryland cropping systems in the Western Cape, offering both rotational benefits and a valuable cash crop option. In these systems, production potential is primarily determined by rainfall and temperature, which influence soil moisture availability, crop growth, and the risk of stress during key development stages.

However, both rainfall and temperature are highly variable from season to season. For producers, one of the biggest challenges is not knowing how a particular season will unfold — when the rains will arrive, how much will fall, and how temperatures will develop throughout the growing season.

In the Swartland, where rainfall is limited and concentrated in winter, even small shifts in these climatic factors can have large impacts on yield. Understanding how rainfall, temperature, and crop development interact is therefore critical for managing production risk. Drawing on 12 years of field trial data (2011–2023) from Langgewens Research Farm (Figure 1), several clear patterns emerge that can help guide more informed decision-making in canola production.

CLIMATE DRIVERS OF YIELD

- Three climate-related factors consistently shape canola yield in the Swartland: rainfall distribution; temperature; and the timing of flowering.

RAINFALL DOMINATES

- Rainfall (Figure 2) was the dominant climatic driver of canola yield in the Swartland.

Over the 12-year period, more seasonal rainfall generally led to higher yields, showing that inadequate rainfall during the growing season was the main limitation to production. Importantly, the highest yield response to rainfall was still not reached within the seasons studied, which means that canola remained largely water-limited across the trial period. However, it was not only the total amount of rain that mattered, but also when it fell.

Evenly distributed rainfall during the vegetative stage had the greatest positive effect on yield, followed by rainfall during flowering. During flowering, the crop became more sensitive: dry spells, waterlogged conditions, and a higher number of rain days were all linked to yield losses.

TEMPERATURE – TIMING IS CRITICAL

Temperature (Figure 3) plays a similarly complex role. Warmer conditions early in the season can support faster establishment and improved early growth, particularly when planting is done early. However, as temperatures increase towards spring, the likelihood of heat stress rises sharply. The most critical period is flowering. Even a single day of temperatures above approximately 28°C during flowering can significantly reduce yield through poor pollen viability, flower abortion, and reduced pod set. This makes the timing of flowering one of the most important determinants of yield potential.

WHY FLOWERING TIMING MATTERS

Across all seasons, the most consistent driver of yield was whether flowering occurred within a favourable climatic window. In the Swartland, this window is typically:

- Cool enough to avoid heat stress
- Moist enough to support reproductive growth
- Not excessively wet to limit poor pollination or disease risk

Crops that flower too early in the season may experience wetter conditions, including a higher number of rain days and an increased likelihood of temporary waterlogging, which can reduce yield potential.

However, these early-season risks were generally less limiting than those observed later in the season. As flowering shifts towards late August and especially into September, the likelihood of both heat stress and moisture stress increases sharply, resulting in significantly greater yield losses.

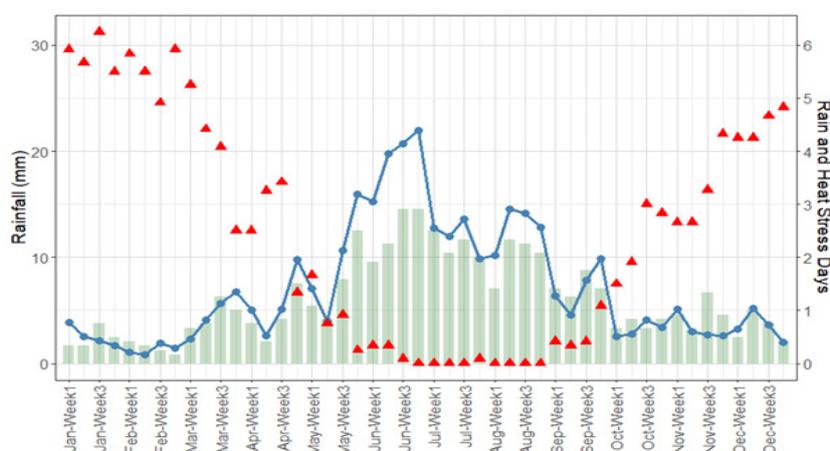


Figure 2: Weekly average rainfall (blue line), rain days (green bars), and heat-stress days (red triangles) across the trial illustrate the timing and intensity of key climatic factors affecting canola production in the Swartland.

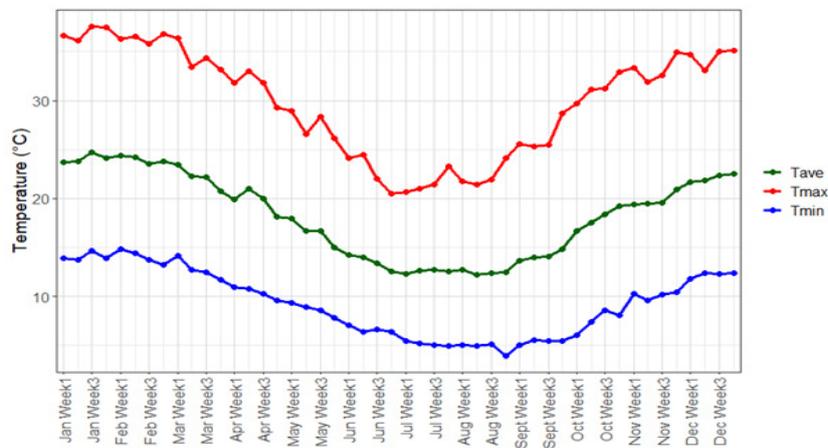


Figure 3: Weekly average maximum (Tmax: red), minimum (Tmin: blue), and mean temperatures (Tave: green) illustrate the seasonal temperature cycle in the Swartland and highlight periods when heat or cold conditions are most likely to influence canola growth and development.

This highlights that late lowering carries the greatest production risk in the Swartland. Management decisions that influence flowering timing, particularly planting date and cultivar choice, are therefore central to reducing climate risk.

WHAT THIS MEANS IN PRACTICE FOR PRODUCERS

The findings translate into several practical guidelines for Swartland producers:

- Prioritise timely establishment
- Early planting, when soil moisture allows, increases the likelihood that flowering will occur within a favourable climatic window.
- Match cultivar to planting date
- Medium-short cultivars were the most stable across seasons, particularly under typical planting conditions. Longer growing cultivars can perform well when planted early but become increasingly risky with delayed planting.
- Avoid late-season flowering
- Crops that flower into late September face a much higher probability of heat and moisture stress, resulting in yield loss.
- Spread risk across cultivars
- Using a combination of cultivar types can help ensure that at least part of the crop flowers under favourable conditions.
- Focus on flowering, not just planting date
- The goal is not simply early planting but aligning flowering with the optimal climatic window, which is mid-August to early-September.

MOISTURE CONSERVATION AS A BUFFER

One of the most important and controllable management tools is soil moisture conservation. In a Mediterranean-type climate, where rainfall is both limited and variable, practices that retain soil moisture can significantly improve yield stability. These include:

- Stubble retention
- Reduced tillage
- Effective weed control

Maintaining soil moisture not only supports early crop development but also helps buffer the crop against short dry spells and reduces the impact of early heat events.

LOOKING AHEAD: ADAPTING TO A CHANGING CLIMATE

Climate projections for the Swartland region of the Western Cape suggest a 2050 future with:

- Higher temperatures, rising by approximately 1–2 °C compared to the recent past (1981-2010)
- Potential reduction of 20 % in annual rainfall, although this will vary spatially and is more uncertain than warming
- More frequent heat events in the growing season, especially autumn and spring

These changes are likely to accelerate crop development and increase the risk of heat stress during flowering. As a result, the timing of flowering will become even more critical in the future.

While elevated atmospheric carbon dioxide (CO₂) may slightly improve water-use efficiency in canola, this benefit is unlikely to offset the risks associated with warming and reduced rainfall. Adaptation will therefore depend largely on management decisions.

KEY MESSAGES

Twelve years of field research highlight a clear message for Swartland canola production:

- **Yield is primarily limited by insufficient rainfall, but how that rainfall is distributed, and when the crop flowers, determines how effectively that water is converted into yield.**
- Across seasons, higher rainfall generally resulted in higher yields, confirming that canola production in the Swartland remains strongly water-limited. However, crops that flower too late are exposed to increasing heat and moisture stress, which can rapidly reduce yield potential.
- Producers who can align flowering within a favourable climatic window, through appropriate planting dates, cultivar selection, and effective soil moisture conservation, are best positioned to manage this risk.
- Despite increasing climate variability and the likelihood of more frequent heat events, canola remains a viable and valuable crop in the Western Cape. With informed decision-making and proactive management, it can continue to play an important role in resilient and profitable cropping systems.

An aerial photograph of a coastal city, likely Cape Town, South Africa. The foreground shows a densely packed residential area with many white buildings. In the middle ground, there are several prominent mountains with flat tops, including Table Mountain and Lion's Head. The ocean is visible in the lower right, with waves breaking on a sandy beach. The sky is blue with some light clouds. A large, semi-transparent white circle is overlaid on the upper half of the image, containing the text.

**NEWS FROM OUR
PROVINCE**

TAKING ON THE CHALLENGE TO CHANGE INDIVIDUAL BEHAVIOUR TO ADAPT TO CLIMATE CHANGE



By Dr Helene Vollgraaff, Museum Services, Western Cape
Department of Cultural Affairs and Sport

On Wednesday, 11 February 2026, Museum Services, in collaboration with the Stellenbosch Academy of Design and Photography, Stellenbosch Museum and the Department of Environmental Affairs and Development Planning (DEA&DP) showcased the work of second year discourse and marketing students at the Academy at the Stellenbosch Museum.

The students were given the challenge to develop a video and design a marketing strategy to raise awareness of climate change and to obtain buy-in from the public, especially the youth, to adapt individual lifestyles to mitigate climate change. This project forms part of an agreement between the Stellenbosch Museum and the Stellenbosch Academy to provide real life experience to students. Museum Services and the Climate Change Directorate in DEA&DP provided guidance and support.

Also on display was children's art that was produced as part of trauma counselling by the Department of Social Development following the August 2024 Riverlands floods.

The student group involved consisted of the second year Discourse and Marketing students at the Academy. They were asked to develop a campaign aimed specifically at youth who do not have a background in environmental activism. The Discourse students conducted interviews and submitted short social media clips and infographics while the same student cohort, this time as part of the Marketing course, developed a media campaign and media posters.

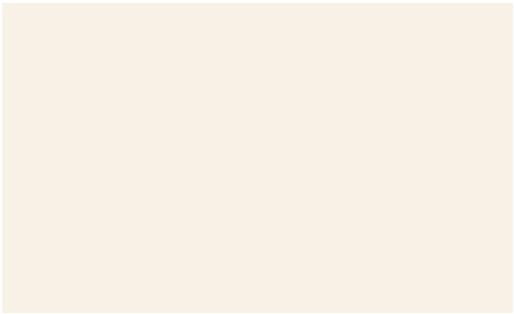
The video clips were further edited into two short narratives by the Western Cape Museum Services and Academy staff and can be viewed on <https://museumstories.co.za/climate-change/>.

The takeaways from the Academy project are that facts do not lead to behavioural change – speaking

to people's needs and feelings do. The students therefore recommended a campaign that focuses on climate action as an opportunity to address broader societal issues and create a sense of community via social media through storytelling and sharing experiences.

The Department of Cultural Affairs and Sport and the Department of Environmental Affairs and Development Planning, CapeNature and the Stellenbosch Museum will take this project forward by leveraging our networks of libraries, museums, and youth networks to manage and implement a campaign build on the ideas of the students.

For further information, contact Dr Helene Vollgraaff at: helene.vollgraaff@westerncape.gov.za



Small actions. Big ripples.

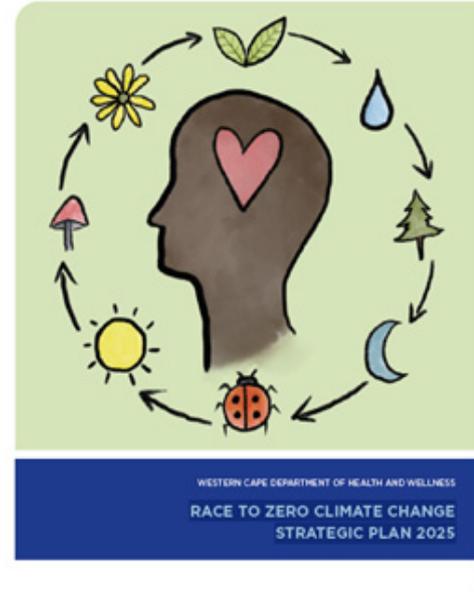
Join the movement that's flooding the Cape with good energy

Take the pledge. Post your act.
#MakelRain

Western Cape Government FOR YOU

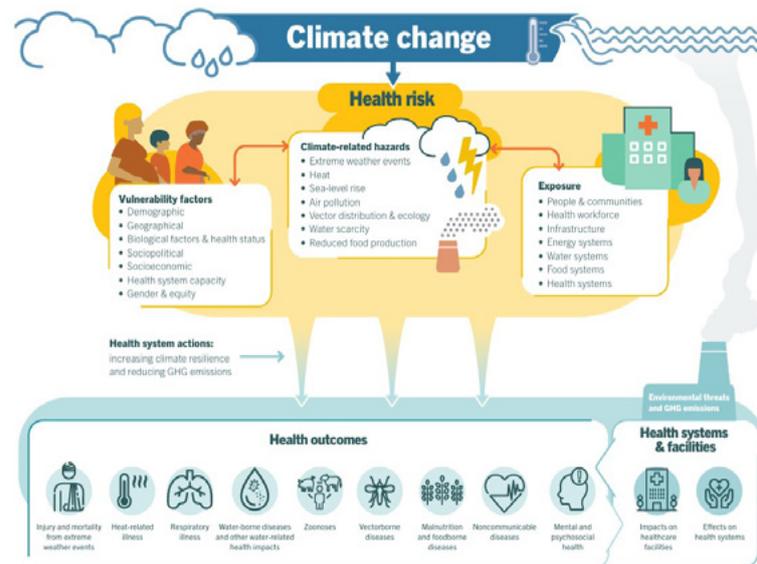
STELLENBOSCH ACADEMY OF DESIGN & PHOTOGRAPHY

WC DEPARTMENT OF HEALTH AND WELLNESS LAUNCHES “RACE TO ZERO”



The Western Cape Department of Health and Wellness (DHW) has developed its Race to Zero Climate Change Strategic Plan. The Plan is currently being formally adopted and will become available to the public thereafter.

The plan's vision is “a healthy, low carbon healthcare system that supports a safe environment and equitable patient care”. “Its objectives span both mitigation and adaptation: systematically cutting energy and transport emissions, greening building, procurement and waste streams; and strengthening public health services against climate risks.”



The Western Cape Department of Agriculture's own Climate Change Response Framework and Implementation Plan (the “SmartAgri Plan”) highlights several intersections between agriculture and health in view of the expected climate impacts across the province, and the need to cooperatively drive the province towards its “Net Zero” target for greenhouse gas emissions by 2050.

Our farming communities are strongly impacted by climate change, because many people work outdoors and are exposed to increasing physical risks of heat stress, wildfires, storms and floods.

Other threats include reduced access to safe water in times of severe drought, increased incidence of climate sensitive diseases, and deteriorating food and nutritional security when food is scarce. Moreover, health care service delivery can be impeded when communities are cut off by floods and fires.

“Now is the time to rethink how we design, power and operate our health system to safeguard both people and the environment”.

Through the Western Cape One Health Steering Committee, the Western Cape Climate Change Working Group, and the provincial Growth for Jobs Energy Team, the health and agriculture sectors are already part of the transversal structures that are collaboratively responding to climate change.

For further information please contact Ms Levani Naidoo, Deputy Director: Climate Change and Utilities Management, Department of Health and Wellness - levani.naidoo@westerncape.gov.za



**NATIONAL &
INTERNATIONAL
NEWS**

THE PARIS AGREEMENT IS WORKING

- 10 years later

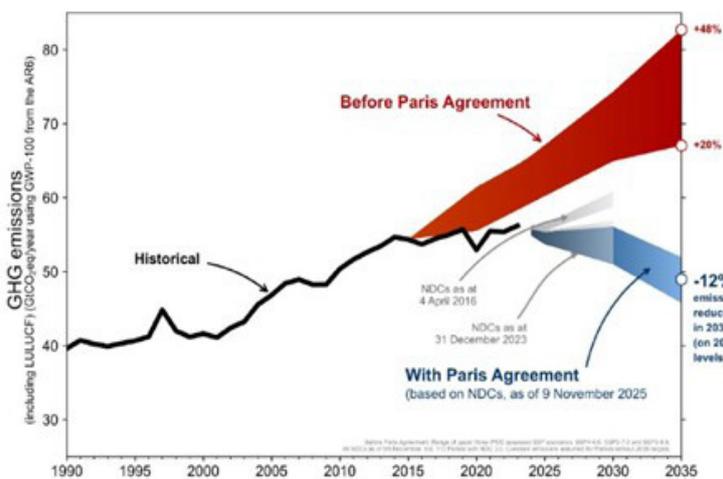


Figure 1. The historical and projected future trajectory of greenhouse gas emissions before and with the Paris Agreement adopted in 2015, as of early November 2025. Source: UNFCCC Secretariat.

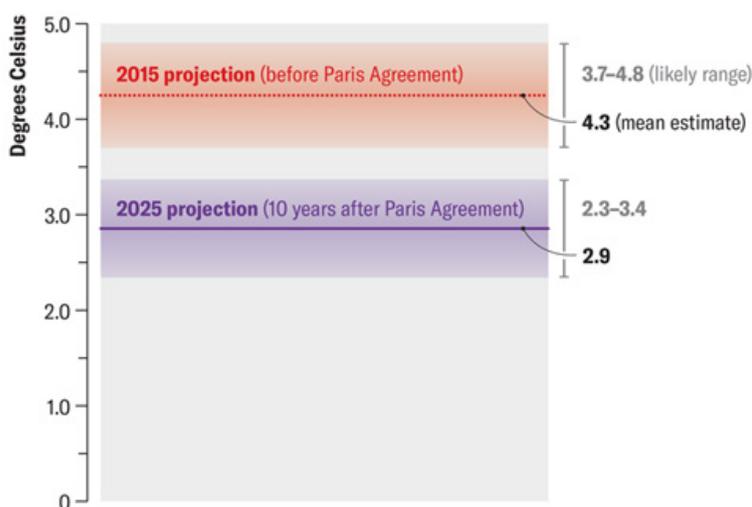


Figure 2. Estimates of future temperature increases projected in 2015 (IPCC 2014: [Summary for Policymakers, in Climate Change 2014: Mitigation of Climate Change. Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, February 2015](#)) and projected in 2025 (Rhodium Group). Source: Amanda Montañez (<https://www.scientificamerican.com/article/the-paris-climate-agreement-is-turning-10-these-5-charts-show-what-progress/>).

The Paris Agreement is a legally binding international treaty adopted under the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 at the 21st Conference of the Parties in Paris, France.

The Agreement “aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: (a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change”. Currently, as of 27 January 2026, there are 194 Parties to the Paris Agreement.

Ten years after the adoption of the Paris Agreement, at the start of the 30th Conference of the Parties (COP30 held in Brazil in November 2025), the UNFCCC released a chart showing what has been achieved (Figure 1).

Without the Paris Agreement, the world was tracking an increase of greenhouse gas emissions of 20 – 48% by 2035 (compared to 2019). With the Paris Agreement being implemented, and considering the new climate plans that were submitted by Parties prior to COP30, we expect to see a 12% reduction of emissions in the next 10 years (Figure 1).

That is very heartening. It shows that complex multilateral agreements and often painful annual climate change conferences are not useless and can make a big difference to averting much worse futures.

Nevertheless, no-one would argue that that we are sufficiently on track to “achieve Paris”. We need to up the pace significantly to see the emissions and temperature increases not only peaking but declining as soon as possible to limit warming to 1.5°C above pre-industrial levels (Figure 2).

WORLD ECONOMIC FORUM GLOBAL RISKS REPORT 2026

FIGURE 3 | Global risks ranked by severity, short term (2 years) and long term (10 years)
 Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period.



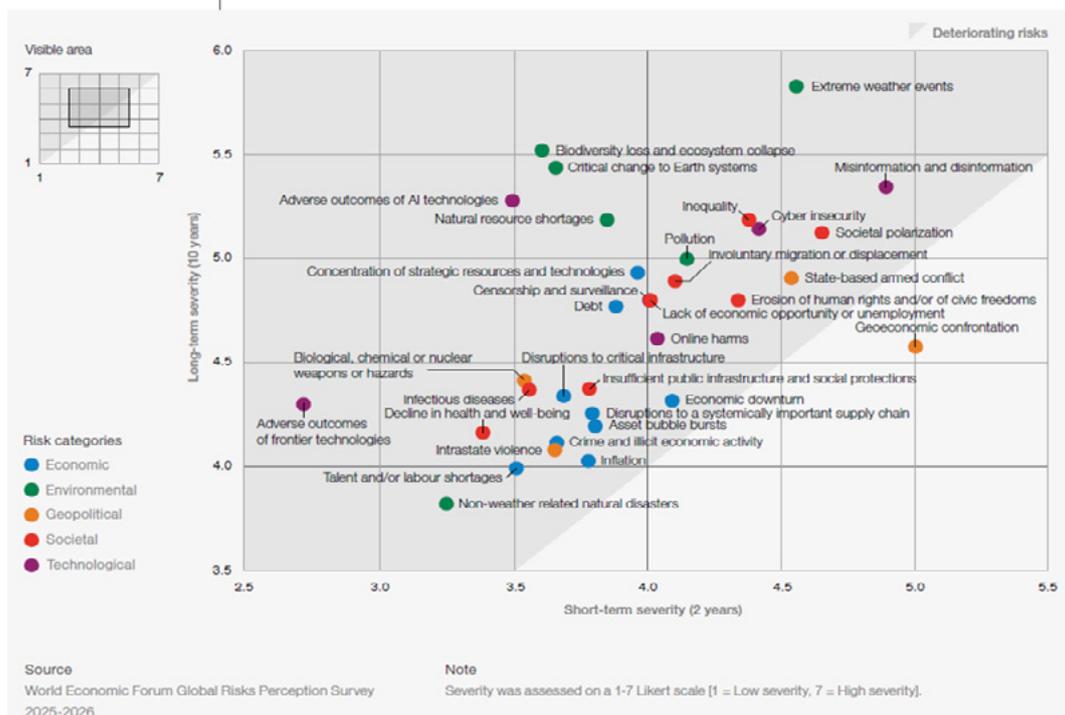
The 21st edition of the annual Global Risks Report (2026) was recently published by the World Economic Forum. The report is widely used by planners and decision makers to assess current global crises and longer-term priorities, and how these challenges are interconnected.

The report states that “Uncertainty is the defining theme of the global risks outlook in 2026.” Furthermore, “As global risks continue to spiral in scale, interconnectivity and velocity, 2026 marks an age of competition. As cooperative mechanisms crumble, with governments retreating from multilateral frameworks, stability is under siege.” Owing to the prioritisation of short-term geopolitical, technological and societal risks, environmental risks are being deprioritised over the

2-year timeframe. Extreme weather events have moved from #2 to #4, and Pollution from #6 to #9. Critical change to earth systems and Biodiversity loss and ecosystem collapse also moved down in the list. The severity score for all environmental risks has also declined compared to 2025.

However, in the 10-year timeframe, environmental risks maintain their urgency compared to 2025. They make up five of the top ten risks and take up the first three positions (Extreme weather events, Biodiversity loss and ecosystem change, Critical change to Earth systems). Natural resource shortages and Pollution come in at #6 and #10, respectively, in the long term. To download the report, click [here](#).

FIGURE 7 | Relative severity of global risks, short term (2 years) and long term (10 years)



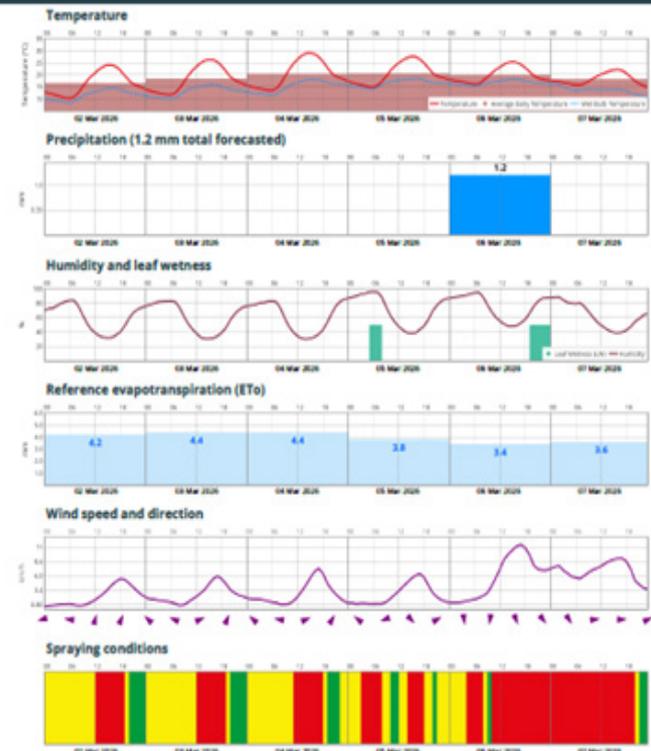


**NEWS FROM OUR
PARTNERS**

All values used to produce this forecast were averaged over the entire region using data from select weather stations

Map of the Drakenstein region and the METOS SA weather stations.

Weather Forecast



All values used to produce this report were averaged over the entire region. For hyper-localised weather data consider subscribing to an existing METOS weather station in the region, or to establish your own METOS station contact admin@metos.co.za. To visit the METOS website visit www.metos.co.za.



Hindsight Analysis

Index	RAIN (JAN+)	RAIN (SEP+)	GDD (JAN+)	GDD (SEP+)	HOURS>30° (SEP+)	HOURS>35° (SEP+)	HOURS>40° (SEP+)
1 week ago	33	98	727	1971	481	74	1
2 weeks ago	32	98	622	1867	444	61	0
3 weeks ago	11	76	530	1775	428	60	0
4 weeks ago	7	72	429	1673	405	60	0
1 year ago	10	154	787	1888	315	46	2
2 years ago	20	212	872	1983	444	120	8
3 years ago	40	193	840	1950	347	52	0
4 years ago	20	233	854	1871	361	91	5
5 years ago	18	211	824	1799	304	47	0
3-year average	23	186	833	1940	369	73	4
5-year average	22	201	835	1898	354	71	3

RAIN: Cumulative rainfall measured
 HOURS: Cumulative number of hours, where <0° is below zero C° and >35C° is above 35 C°
 GDD: Growing degree days
 (MONTH): The month from which the index is calculated, e.g. (JAN+) is from 1 January.

- More than 20% higher than last week's value
- Within 20% of last week's value
- More than 20% lower than last week's value

All values used to produce this report were averaged over the entire region. For hyper-localised weather data consider subscribing to an existing METOS weather station in the region, or to establish your own METOS station contact admin@metos.co.za. To visit the METOS website visit www.metos.co.za. While Villa makes every effort to provide accurate and up-to-date weather data, this report is intended for informational purposes only and should not be construed as specific advice. Villa's expertise supports informed decision-making, but users are encouraged to consult their crop advisor or agronomist for advice tailored to their unique circumstances. Villa, METOS and TerraClim are not liable for any actions taken based solely on the information provided in this report.



VILLA REGIONAL WEATHER REPORTS

Villa Crop Protection (Pty) Ltd, in partnership with METOS SA (www.metos.co.za) weather station network and TerraClim (www.terraclim.com) have launched Villa Regional Weather Reports.

Subscribers receive free, region-specific weekly insights via WhatsApp or email, with a choice of 46 regions across South Africa.

The reports include a 5 year hindsight and a weekly forecast. To subscribe, click here: <https://weather.villacrop.co.za>

In addition, farmers can access hyper-localised weather data by subscribing to an existing METOS weather station in their region, or by establishing their

own METOS station contract. Contact: admin@metos.co.za.

Sustained high temperatures place added pressure on crops by driving higher water demand and increasing heat stress during key growth stages.

Staying informed at a regional level helps to plan irrigation, timing and interventions more effectively.

Above are two pages from a recent weekly report for Drakenstein.

A close-up photograph of two female scientists in white lab coats. They are looking down at a device or piece of equipment. The scientist in the foreground has dark hair and is looking intently. The scientist in the background is partially visible, also looking down. The background is slightly blurred, showing a laboratory setting with teal-colored equipment.

**SHOWCASING
RESEARCH & YOUNG
SCIENTISTS**

INTERNAL BROWNING OF 'CRIPPS PINK' APPLES – THE EFFECT OF GROWING REGION TEMPERATURE, CANOPY POSITION AND DYNAMIC CONTROLLED ATMOSPHERE - CHLOROPHYLL FLUORESCENCE ON FRUIT QUALITY AFTER LONG-TERM STORAGE

DANIELA RAMOS

Master of Agricultural Science in the Department of Horticultural Science, Faculty of Agrisciences at Stellenbosch University, March 2026

¹ Supervisor: Dr. E.M. Crouch

² Co-supervisors: Dr. M.M. Jooste, Dr. I.J. Crouch



Daniela Ramos

THESIS SUMMARY

Internal browning (IB) is a major post-harvest physiological disorder of 'Cripps Pink' apples that threatens the reputation of the Pink Lady® brand in export markets. IB reduces fruit quality and typically develops after long-term storage. The disorder is multifactorial, influenced by pre-harvest temperatures, orchard factors and canopy position, as well as post-harvest storage technologies. Accordingly, this study had three objectives: (i) to assess the effects of pre-harvest temperature and orchard factors on IB, (ii) to investigate the influence of canopy position on IB incidence and associated fruit quality attributes, and (iii) to evaluate the efficacy of dynamic controlled atmosphere-chlorophyll fluorescence (DCA-CF) storage compared with controlled atmosphere (CA) storage in reducing IB after long-term storage.

The study showed that orchard factors and temperatures during fruit development and ripening influenced IB incidence. Radial browning (RB) was higher in high-yielding orchards and under warmer fruit development followed by cooler ripening conditions. Diffuse browning (DB) occurred mainly in cool seasons with low growing degree days (GDD), confirming its chilling-related nature. Combination browning (CB) was associated with rootstock, vigour and fruit size, but no clear climatic threshold was identified. Superficial and peduncular scald were most severe in vigorous canopies and in seasons with cooler early-season temperatures. CO₂-related flesh and cavity disorders were most prevalent in orchards with vigorous or seedling rootstocks. Warmer conditions during fruit enlargement generally reduced CO₂ disorder susceptibility, whereas cooler temperatures during early development or ripening increased risk. Overall, temperature-maturity interactions drove defect patterns, highlighting the need for refined climate-based models using more homogenous climate zones.

DB and CB were not associated with specific canopy positions in free-standing trees; however inside canopy fruit were more prone to RB and both forms of scald after long-term storage. This higher susceptibility likely reflects reduced light exposure and lower antioxidant capacity, limiting the fruit's tolerance to storage stress. Inside fruit also had poorer blush development, firmness, TSS and TA than outside fruit. The results demonstrate that more open, modern canopy structures promote a more uniform fruit developmental environment and reduce within

canopy variability. Post-harvest fruit from different canopy positions should be harvested and stored separately, as they differ physiologically and vary in their susceptibility to post-harvest disorders.

The comparison of DCA-CF and CA storage showed that IB susceptibility was driven primarily by fruit physiological maturity at harvest rather than the storage technique employed. Extensive starch breakdown between harvest and pre-storage highlighted the need for accurate maturity assessment before low-oxygen storage. Fruit harvested post-optimum showed higher total IB under both CA and DCA-CF, whereas optimally mature fruit benefitted from DCA-CF through reduced superficial and peduncular scald, but this result was not consistent for IB types.

Overall, effective IB management requires an integrated orchard-to-storage approach, including monitoring pre-harvest temperatures, accounting for orchard factors, separating fruit by canopy position, and applying strict maturity indexing before low-oxygen storage to maintain Pink Lady® quality.

Daniela has distinguished herself with the following research outputs based on her Masters study:

Presentations:

- Hortgro Science Research Showcase, Stellenbosch, June 2023, June 2025.
- XIV International Controlled and Modified Atmosphere Research Conference, Wenatchee, USA, May 2025.

Conference proceedings: Accepted for publication

Ramos, D., De Jong, I., Jooste, M., Crouch, I.J., Crouch, E.M., 2025. Dynamic controlled atmosphere – chlorophyll fluorescence (DCA-CF) and controlled atmosphere (CA) for long-term storage of 'Cripps Pink' apples with special reference to internal browning. *Acta Horticulturae*.

Award:

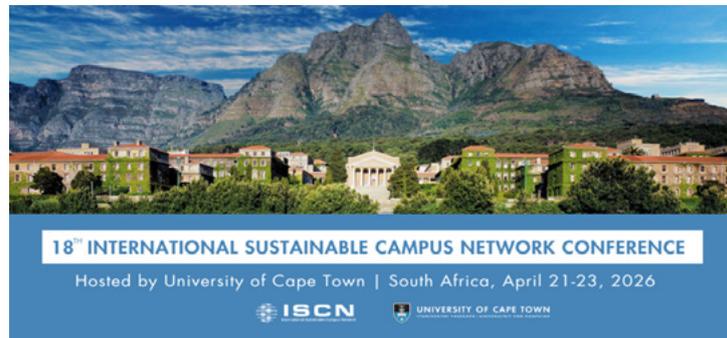
International Society for Horticultural Science (ISHS) Young Minds Award for best oral presentation (competing with international PhD students), XIV International Controlled and Modified Atmosphere Research Conference, Wenatchee, USA, May 2025.



**UPCOMING
CONFERENCES**

1. International Sustainable Campus Network Conference (18th ISCN) - Global higher-education sustainability conference (campus sustainability, climate action in universities)

21-23 April 2026 - University of Cape Town, Cape Town, South Africa: <https://international-sustainable-campus-network.org/conferences/cape-town-2026/>



2. 61st Annual Congress of the Grassland Society of Southern Africa (GSSA)

20-24 July 2026: Hybrid event, Houw Hoek Hotel, Grabouw, Western Cape

<https://grassland.glueup.com/event/61st-annual-congress-of-the-grassland-society-of-southern-africa-151840/>

Abstract submissions are open and the submission deadline is 04 May 2026. Congress 61 Abstract Topics:

- Rangeland Ecology & Management
- Livestock & Game management & Ecology
- Climate change & carbon
- Planted pastures
- Fire Ecology
- Bush encroachment & Alien Invasives
- Biodiversity & Conservation
- Communal Rangelands
- Restoration & Rehabilitation Ecology

Overview of the programme:

1. 20 July: Research Skills Workshop SCIENCE COMMUNICATION: Advancing the publishing and peer-review skills of ecology researchers and practitioners.
2. 21 - 23 July: CONGRESS 61
3. 24 July: Policy and Practice Workshop HERDING FOR HEALTH IN ACTION: Bridging Science, Policy and Practice for Climate-Resilient Rangelands



3. 5th Fire in the Earth System Conference



FES 2026

SAVE THE DATE 5th Fire in the Earth System conference

Dates: 4-6th November 2026
Kruger Park, South-Africa

Pre-and Post conference excursions
(2-3/7-10th November 2026)

FIRE DYNAMICS & FIRE RISK
MANAGEMENT

FIRE EFFECTS ON ATMOSPHERE,
BIOTA, SOIL & WATER

FIRE IN SOCIETY (SOCIO-ECONOMIC,
HISTORICAL, GEOGRAPHICAL &
POLITICAL PERCEPTION)

POST-FIRE LAND MANAGEMENT
APPROACHES

NELSON MANDELA
UNIVERSITY



Website: www.firecongress.eu
Any questions please email to:
organizing_committee@terraenvision.eu



BECOME PART OF THE SMARTAGRI DRIVE

SMART agri

Interested persons who would like to get more information on SmartAgri and its related actions, are invited to contact Prof Stephanie Midgley: stephanie.midgley@westerncape.gov.za. Please subscribe to the SmartAgri Barometer if you would like to be updated on a regular basis.



Newsletter compiled by:

Prof Stephanie Midgley
Specialist Scientist: Climate Change
stephanie.midgley@westerncape.gov.za



Lee-Ann Bell
Information Developer
lee-ann.bell@westerncape.gov.za

