

Bugged by Passion:

SA Agricultural Scientist Champions Insect Research for Food Security

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While most people might flinch at the sight of a bug, Dr Astrid Jankielsohn sees a world of possibility. For this 57-year-old agricultural entomologist at ARC–Small Grain, insects aren't just tiny creatures, they are the key to understanding, preserving, and protecting South Africa's food supply. The seasoned researcher completed her undergraduate studies with a Bachelor of Science degree, followed by a BSc Honours in Entomology, a Master of Science (MSc) in Entomology, and a PhD in Entomology.

"There aren't many entomologists left, especially in agriculture," she says, her voice a blend of concern and passion. As one of South Africa's few experts in this fading field, Dr Astrid has dedicated her life to studying aphids and other pests that threaten crops especially wheat.

Her journey began in the early 2000s at the Agricultural Research Council (ARC), where she quickly became a cornerstone of the organisation's pest research initiatives. But her love for insects? That dates all the way back to age six, when family trips to the mountains sparked an early fascination with the wonders of nature.

Born and bred in Bloemfontein, she knew from a young age where her fate lay. "I am still not sure where my fascination comes from, but my family always supported me in what I was interested in. I come from a very



academic family. My dad was a professor in history, and my mom was a librarian who studied philosophy and artistry. My brother is a business psychologist, and I'm the only one who went into natural sciences. But for holidays, our parents took us to the mountains, we went camping, and I think that exposed me to nature," she said.

Dr Astrid said this early exposure sparked her interest in insects. "As a child, I used to be absolutely fascinated by insects. I was about six years old when I decided this is what I wanted to do. Not everyone is that lucky, some people finish school and still don't know what they want. I was interested in entomology. I found it fascinating because it's more complex. It's easy to see a bird and learn about it, but with insects, I realised it was more difficult," she said.

She was drawn to the tiny details most people missed, the flutter of wings, the way insects move. It was like discovering a secret world. Now, decades later, Dr Astrid is using that childhood wonder to make a real-world impact. Her research helps farmers across the country monitor and manage pest populations more effectively, ensuring healthier crops and more secure food systems. "Monitoring is the most important thing when dealing with pests in your crops," she explained.

"You need to know the insect, where it comes from, and how it spreads. Only then can you act effectively. We found that with resistance in wheat cultivars, insects are very good at surviving. The moment you put pressure on them, they start adapting, eventually they evolve and overcome the resistance," she said. Dr Astrid, who monitors aphids in production areas across South Africa, says her job is fascinating. "I go to wheat fields and collect samples, then come back and analyse them. Most of the aphids are females, that's why they're so successful. You only need one aphid, and it can produce clones and start its own population. It spreads very quickly. From the samples I collect, I take one aphid and create a plant population. I then screen those populations to determine their resistance genes," she said.

She's also passionate about educating farmers and agricultural chemical agents.

"The first step is identification. If you don't know the enemy, you can't fight it properly," she emphasised. According to Dr Astrid, understanding the life cycle of an insect is just as critical as applying any chemical treatment. "If farmers know when and how an insect develops, they can intervene at the right time

and with the right methods. The reason I'm still here is because I'm passionate about insects and research. I enjoy doing the work, and I feel it's important. What I've realised, working in agriculture and in the field, is that I love it. I enjoy being out there. I've seen that we need those insects to produce food. We can, up to a point, replace insects with artificial fertilisers and chemicals, but only up to a point. I think in the last decade, we've lost 50% of our insect biodiversity, and agriculture is the cause. We plant monocultures, which isn't natural. We plant one genetic crop, with the same gene, across the same area. This excludes many insects. Agriculture ends up favouring certain species, and because the others are excluded, there's no competition, no predation, no parasitism, so the pests just multiply," she said.

With her boots firmly planted in the soil and her eyes always scanning for signs of life, Dr Astrid continues to be a quiet but powerful force in South African agriculture. She has over the past two decades proven that sometimes, the smallest creatures can make the biggest difference.

