

Spiders, Spiders everywhere!

BY ANSIE DIPPENAAR-SCHOEMAN,
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What has eight legs, is rather scary and is not an octopus? It must be an arachnid. Spiders are superb spinners and fearsome predators, and are the most familiar members of the class Arachnida that also include scorpions, sun spiders, etc.

Spiders can be found almost everywhere on Earth. You will find them on cold, Arctic islands and in hot deserts, such as the Namib Desert in Namibia. Spiders live in extreme habitats such as high up on mountains, on dunes, in caves, along the beach between the high and low water marks, and even under-water.

You will, however, find more spiders in temperate regions (where it is not too hot or cold) because of the rich plant life in these regions.

Most spiders spend their entire life in one particular habitat, which is influenced by several abiotic (not biological) factors such as temperature, humidity, wind and light intensity. Biotic factors that have an influence on them are vegetation, availability of food and whether or not there are many natural enemies.



Baboon spider (Family Theraphosidae)



Flower crab spider feeding on locust (Family Thomisidae)



Dr Ansie Dippenaar-Schoeman studying a spider



Lace-web spider feeding on an insect

Why would spiders be able to adapt so well to all these different habitats and what makes them so unique? Here are some reasons. They can:

- Produce silk
- Produce venom
- Prey on a wide variety of insects and other invertebrates, therefore there is always plenty of food for them around
- Be carried to faraway places on air currents
- Lower their metabolism to survive long periods without food or water
- Adapt to different climates and habitats, even ones which one would never think they could survive in
- Use defence mechanisms such as camouflage and mimicry to blend in with their environment.

We will tell you more on how spiders catch their prey and spin their webs in a future issue of EasyScience in MiniMag.

THE SPOTLIGHT IS ON:

ANSIE DIPPENAAR-SCHOEMAN – OUR OWN “SPIDER WOMAN”

TALKING OF SPIDERS...

JOB DESCRIPTION

I am an arachnologist (spider expert) at the Plant Protection Research Institute, part of the Agricultural Research Council (ARC). I work mainly with spiders and I am the curator of the National Collection of Arachnida and do research on spiders. One of our projects is to look at their role in agriculture. We also coordinate the South African National Survey of Arachnida. Anybody interested in helping us to collect and document our spider fauna is welcome to contact us.

EDUCATIONAL BACKGROUND

I started off by becoming a biology teacher and obtained a BSc degree with subjects like zoology, botany and geography from the University of South Africa. A degree with entomology/zoology as main subject would be very valuable in this line of work.

WHY DID YOU CHOOSE SCIENCE?

I have always been fascinated with science, especially biology. It was my favourite subject at school. While I was still completing my studies to become a biology teacher, I heard a discussion over the radio on the interesting work done at the Plant Protection Research Institute and decided that this was what I wanted to do. I applied, was successful, and have been in the job ever since! I was very lucky to be appointed to do research on spiders.

INSPIRATIONS

I am fascinated with the workings of nature. Spiders are such interesting animals and yet so little is known about them. I am inspired by my fellow arachnologists and the work they do globally. I hope in my own way to make a small contribution towards documenting the spider fauna of South Africa.

BEST THING ABOUT MY JOB?

Part of my work as a taxonomist is to collect, discover and describe new organisms – spiders in my case. It is never boring – you discover new things every day. And I am not office bound.

I love the outdoors, so going out into the veld for days, or even weeks at a time to collect spiders is a real treat. I am always amazed at the rich diversity of living things you can find in the smallest area of veld.

I love studying the interesting behaviour of these animals. Spiders make the most wonderful webs and are masters at adapting to their environment. They make the most of every opportunity and will occupy any available open space. For instance, spiders think that plastic garden chairs with their hollow legs were made especially for them. They love to make their webs in the dark, hollow legs.

I also quite often get the opportunity to travel and interact with colleagues from countries all over the world. You should hear us talk non-stop about spiders when we get together at our regular conferences!

WORST THING ABOUT JOB?

Spider bites! No, I'm only joking. I have been bitten three times in over 37 years of working with these creatures, but I have not suffered any bad effects. I really cannot think of anything bad about my job.

HIGHLIGHT?

I was able to complete three books on African spiders and it gives me great pleasure if people find this of value in their work. It is also very rewarding when other arachnologists name new species after you in recognition of your work. These names will still be used long after my retirement.

IMPORTANCE OF YOUR FIELD OF SCIENCE?

The more we learn about spiders, the more we realise what important role they play in nature. South Africa has a very rich fauna of spiders and more than 9% of the world's fauna occurs in South Africa. The number and variety of spiders in an area is a good indicator of the biodiversity of that area.

We are trying to market spiders and encourage their sustainable use as "the farmer's and gardener's greatest friend", since they help control pests such as termites, aphids, mosquitoes and ants.

We are also extending our indigenous knowledge of spiders and the traditional uses of spider venom. Researchers are using components of spider venom to develop new environmentally friendly insecticides, or using them in medicine to help people suffering from certain heart conditions and strokes. Spider silk is regarded as one of the wonders of nature. It is one of the strongest natural fibres known and researchers are trying to produce it commercially for use in e.g. bullet proof vests.

ADVICE FOR CAREER IN SCIENCE

A career in natural science can be very rewarding. Anybody who loves nature and the outdoors will enjoy this kind of work. Make sure that you have the correct subjects such as biology and maths to be able to do a BSc degree or technikon diploma.

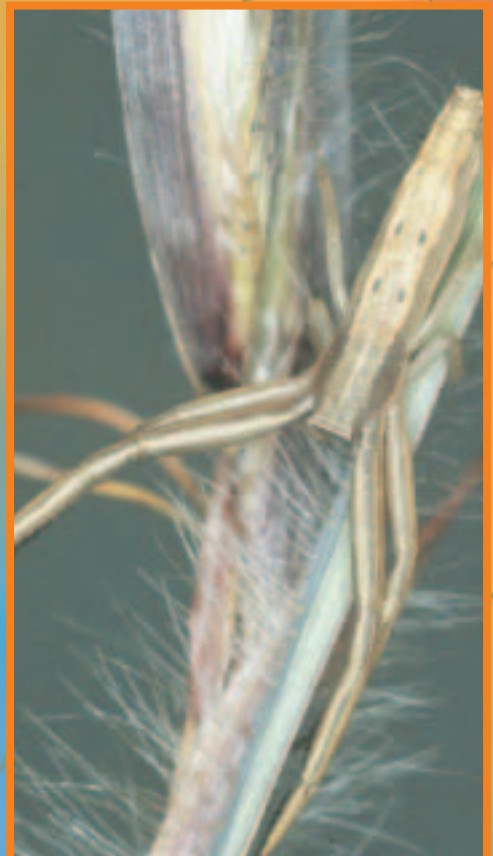
GOALS

My main goal is to make people more aware of the important and positive role spiders play in our world. The more people who know about these creatures, the less they will fear them, and work towards their protection and sustainable use. That's why I love being involved in our Spider Educare Programme that has taught over 22 000 children more about spiders in the last six years.

The ARC has produced three colourful wall posters on "common spiders", "venomous spiders" and "venomous scorpions" that are invaluable for identifying the ones which one should be careful of (available at a special price: R30). Ansie and her team have also produced a wonderful CD-Rom on the spiders of southern Africa (Price: R100) with more than 800 colour images. These items are available from the ARC website (www.arc.agric.za – see shopping). Or for more information, contact Ansie Dippenaar-Schoeman at tel: (012) 356-9824; email: DippenaarA@arc.agric.za or Private Bag X134, Queenswood 0121. The price includes VAT, but excludes postage and packaging.

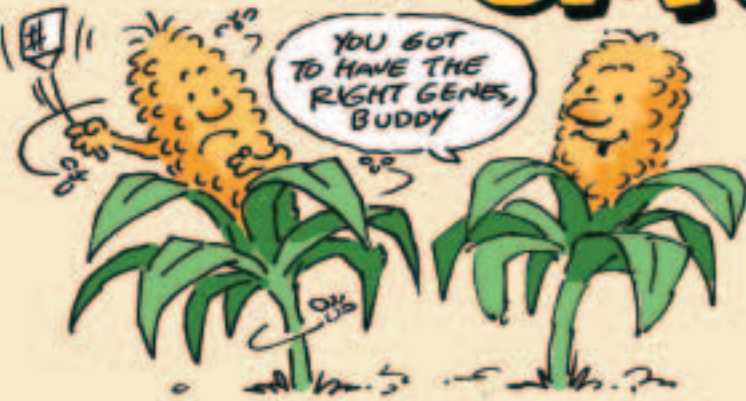


A garden spider in its orb-web



Grass crab spider (Family Thomisidae)

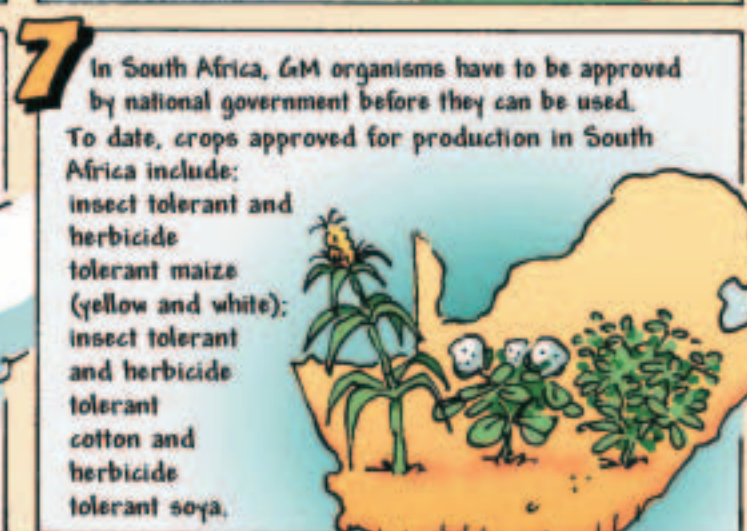
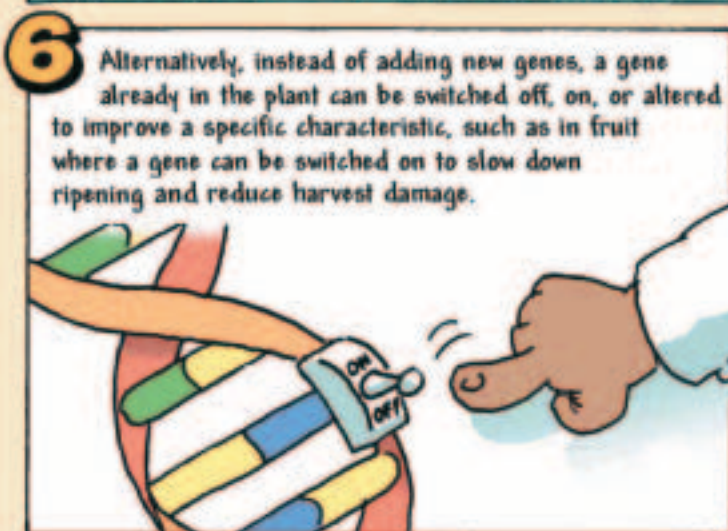
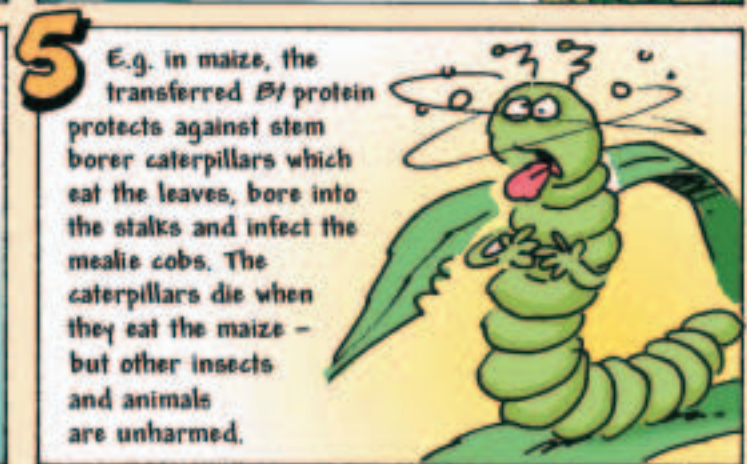
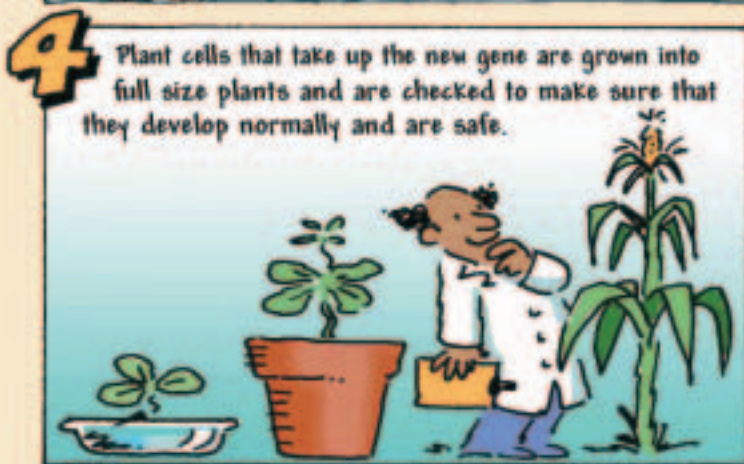
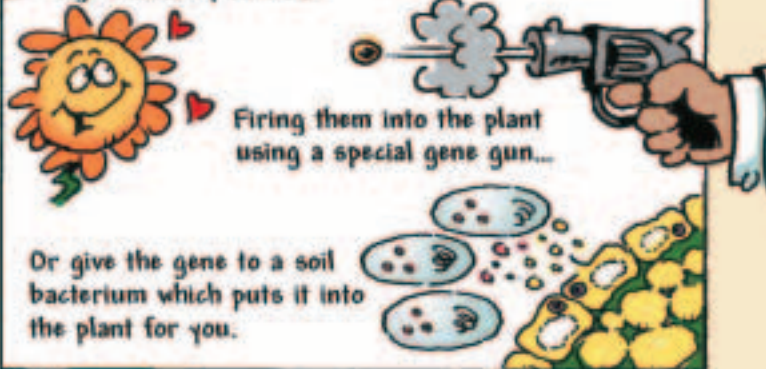
HOW ARE GM CROPS MADE?



1 Identify an organism with the desired characteristics e.g. *Bacillus thuringiensis* (Bt) - a bacterium which produces a protein that kills specific insects.



3 Transfer this gene into the plant you want to protect, e.g. maize, by either...



PUBLIC UNDERSTANDING OF BIOTECHNOLOGY

The Department of Science and Technology has launched a Public Understanding of Biotechnology programme to make sure South Africans understand the scientific principles, related issues and potential of biotechnology. Biotechnology is the part of science that uses the DNA building blocks of life to make useful products from living things. If you have opinions, questions or concerns about any area of biotechnology, let's hear from you at speakup@pub.ac.za or fax 012 320 7803 or visit www.pub.ac.za for more information.



PUBLIC UNDERSTANDING OF BIOTECHNOLOGY