

Answers lie in the cabbage patch

GREG DARDAGAN

KEEPING pace with the fertile mind of a seasoned professor whose life's research work has involved a hunt for answers to improve agricultural yields is a struggle.

No need to plant any seeds in his cranial field – it's already full of bristling energy emitting a healthy surplus of positive ideas and possibilities.

From plant breeding to developing biological agents that control pests and promoting the use of silicon in agriculture, Professor Mark Laing has made an indelible mark in a variety of spheres, where the emphasis is on food security and improving yields in fields throughout the world, but especially in Africa.

And it all started with cabbages – Laing's favourite vegetable.

As director of the African Centre for Crop Improvement (ACCI) at the University of KwaZulu-Natal (UKZN) and chair of plant pathology in the School of Agricultural Sciences and Agribusiness at UKZN he has his work – and much of his leisure time – cut out for him.

He describes himself as being part of a family of workaholics. One of the few diversions he allows himself is to follow the fortunes of the Sharks rugby team. "When I watch a game on TV, I have two bowls of lettuce pieces in front of me and snack from them throughout the match."

Born in Zimbabwe, the son of a bank manager, his early life was disrupted by regular household relocations as his father was transferred from one town to another. "In Bulawayo and Mutare our homes were close to the bushveld and I was able to amble freely there looking at the birds, the buck and the plants. This gave me an engagement with African plants and the environment which stuck with me and ultimately influenced the direction my career took."

He completed a BSc degree at the then University of Natal with plant pathology as his final major. "It was fun – all about mushrooms, fungi attacking plants, viruses... far more interesting than the physical chemistry which I didn't grasp easily."

Laing started his master's degree on a cabbage disease called blackleg. That later became the subject of his PhD.

"I didn't have any finance for my research, but I wrote to 1 400 farmers asking them for funds... there were 1 400 cabbage farmers in South Africa at the time. Three farmers financed my first year of research." After that, the Department of Agriculture provided the funds.

Laing's early research concentrated on cabbage diseases. (Cabbages are the most grown vegetable in South Africa.) He also did research work with the Seedling Growers Association of South Africa and was able to show how disease could be left behind by planting seedlings in polystyrene trays instead of beds in the soil. "Over the years I did the work which led to the registration of several fungicides to control serious diseases... many of these are still being used today."

This led to his next big research area. "I got dissatisfied with the efficacy of many of the fungicides and moved into biological control of pests and diseases, and that's what I still do as part of



The director of the African Centre for Crop Improvement at the University of KwaZulu-Natal, Mark Laing, with examples of his portrait photography. PICTURE: COLLEEN DARDAGAN

my work at UKZN, in collaboration with Plant Health Products (Pty) Ltd, who fund much of my biocontrol research.

"There is a growing realisation that the biocontrol agents can complement conventional agrochemicals, especially where there are resistance problems, or for organic production."

Laing started the lecturing leg of his career in 1984, rising to the position of professor of plant pathology.

Ten years ago he received funding from the Rockefeller Foundation to train African plant breeders on food security crops. Thus the ACCI was established and set out to train five groups of eight plant breeders at the PhD level, with the vision of African scientists solving Africa's food security problems.

Additional funding was provided in 2007 by the Bill and Melinda Gates Foundation through a consortium, the Alliance for a Green Revolution in Africa (AGRA), which is funding a second round of five groups of 10 students. Twenty-nine have already graduated and received their doctorates in Plant Breeding.

The ACCI students study at

UKZN for two years before returning home to do three years of field research, breeding African food security crops.

The focus of their PhD research is on the applied breeding of key food crops such as maize, sorghum, cassava, and sweet potato for increased disease and drought tolerance and improved yields.

The aim is to increase food security in countries such as Ethiopia, Kenya, Mozambique, Zambia and Malawi.

While not opposed to GMO breeding, Laing believes that conventional breeding is quicker and cheaper to deliver significant gains in crop yields in most situations, and especially for most African crops. On the issue of the use of silicon in agriculture, Laing says that silicon fertilisation seems strange because the soil is already full of silicon.

However, most of it is insoluble and unavailable to plants.

"When we fertilise plants with soluble silicon, it can make a profound difference – their stress tolerance and resistance to pests and diseases increase dramatically."

The dissolved silicon appears to "prime" plants to be

more resistant.

"I believe my most important achievement in Africa has been the training of plant breeders, who no doubt will have a lasting impact on agriculture in Africa... several (graduates) have been promoted to senior positions in their home countries. All the students are breeding food security crops for conditions in their own countries, and the graduates are starting to release new varieties and cultivars... this is making a difference to food production."

Laing said the five-year cycle of funding for the ACCI was ending. One of his goals in 2011 was to find finance to ensure the long-term sustainability of training.

Making sure that African farmers had access to good seed when they needed it and improving sustainable soil health were vital for food security in Africa, Laing said. "Also necessary is a livestock management process similar to what we are doing with crops. Large areas of the continent do not get enough rain to grow crops, so the concentration there must be on animals such as camels and goats that can live in dry areas and provide food for people."

THE MERCURY HIGHROAD



SHAPING KZN'S ECONOMY

HighRoad Board Members

David Wightman (Chairman)	Protas Mdlala .. (Thekwini Business Development Centre)
Angela Quintal (Mercury Editor)	Crcela Allers (Ithala)
David Canning (Mercury)	Lindiwe Khuzwayo (Sapref)
Russell Curtis (Durban Investment Promotion Agency)	Shobna Persadh (South African Breweries Limited)
Mthengi Gumede (Ethekwini Municipality)	Michael Delighton (Tongaat Hulett)
Moses Tembhele (Durban Chamber of Commerce & Industry)	Soo Meyer (Tongaat Hulett)
Bonke Dumisa (Dumisa Invest)	Wendie Gumede (KZN Trade and Investment)
Vuyo Mkhize (Native Saints Holdings)	Catherine Uys (Leap Projects)
John Barton (Growth Coalition)	Wayne Barr (Stedone Hazycrest Projects)
Mark Taylor (eLan Developments)	Bruce Winship (Grid Group)

