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Project partner presents public lecture

On 23 March 2016, Prof Idah Sithole-Niang, GMASSURE's project partner at the University of Zimbabwe, presented a public lecture entitled "Are genetically modified (GM) crops an option for Zimbabwe?". The lecture was hosted by the University's Biochemistry Undergraduate Students' Association (BUSA).



Members of the audience addressed by Prof Sithole-Niang at the University of Zimbabwe.

Letter from the Editor

This year, GMASSURE hopes to cement the networks that have formed between its stakeholders at the various interactions that are held on a regular basis. Improved communication and collaboration among SADC countries will go a long way towards facilitating greater cooperation with regard to GM crops. GMASSURE strives to promote sustainable agricultural practices and enhance food security across the region.

Ella Nyakunu
Editor

This association, which was established in 2012, aims to motivate and encourage students pursuing a career in this scientific field. It offers seminars and public lectures to the students, as well as field trips.

Prof Sithole-Niang enlightened the public about the pros and cons of considering GM crops as a food security measure in Zimbabwe.

Currently, the distribution and importing of GM crops are banned in Zimbabwe.

Zimbabwe is facing a crippling maize shortage. The country's Vice President, Emmerson Mnangagwa, has revealed that the cash-strapped government needs at least US\$300 million to import 700 000 tons of maize to meet the national consumption.

Scientists believe that varieties of drought-tolerance maize could go a long way towards addressing the desperate situation.

It is unfortunate that, despite the maize shortage, GMOs remain banned in this country.

The lecture was attended by several distinguished guests, many of whom are research scientists. Members of the media and students were also present.

GMASSURE's Project Manager, Ella Nyakunu, also attended the lecture as part of a three-day visit to Zimbabwe.



Dates to diarise

In 2016, GMASSURE is planning a number of exciting events that will aim to meet the action's objective of empowering stakeholders. These events include a workshop on navigating cultural and religious issues in relation to genetically modified organisms (GMOs), and a workshop on the impact of new biotechnologies. A number of interactive workshops are also planned for Namibia, South Africa and Zimbabwe.

- **18 July 2016:**
Cultural and Religious Issues Workshop (South Africa)
- **25 July 2016:**
Cultural and Religious Issues Workshop (Zimbabwe)
- **15 August 2016:**
Cultural and Religious Issues Workshop (Namibia)
- **5 August 2016:**
Interactive Workshop (South Africa)
- **26 September 2016:**
Interactive Workshop (Namibia)
- **11 October 2016:**
Interactive Workshop (Zimbabwe)

Did you know?

France's top administrative court overturned a 2014 ban on a type of GM maize in a symbolic victory for GM supporters that will not allow such crops to be grown in France because of subsequent legislation reinforcing the ban.

GM crops are widely grown in the world, but remain controversial in Europe and have been strongly opposed by France, which has pointed to potential environmental risks. On 15 April, the court ruled that the decree from March 2014, which outlawed Monsanto's MON 810 maize (corn), did not demonstrate serious health or environmental risks, as was required by the rules of the European Union (EU) in order to withdraw a GM crop already approved at EU level.

However, France has since passed legislation banning the growing of any GM maize. It then requested to opt out of EU-wide GM approvals under rules adopted in 2015. The agriculture ministry said in a statement that the court's ruling "would not allow the cultivation of GM maize to resume in France".

Information about forthcoming events will be posted on the website as it becomes available.

Meet GMASSURE supporter, Dr Jane Morris

Dr Jane Morris is the former Director of the African Centre for Gene Technologies (ACGT), co-hosted by the University of Pretoria and the Council for Scientific and Industrial Research (CSIR) in South Africa. She has played an active role in biotechnology and biosafety issues for many years.

Dr Morris obtained a BSc (Hons) in Biochemistry from the University of St Andrews and a PhD from the University of Aberdeen. When she retired in 2011, she continued to act in a mentorship role to support the ACGT.

She is currently the co-editor – with Ademola Adenle and Denis Murphy – of a forthcoming book to be published by Cambridge University Press. This book is entitled *Risk analysis and governance of genetically modified organisms*

in developing countries – addressing the impediments to innovation. She is also co-editor of a book to be published by Routledge, with sponsorship from the Stockholm Environment Institute, on the contribution of bioscience to the development of bioeconomies in Africa and Europe.

She spent more than 10 years managing biotechnology research in an industrial environment, after which she became involved in

technology management. She chaired the South Africa Committee for Genetic Experimentation (SAGENE), which advised on GMOs before the South African GMO Act came into force. In addition to this, she was involved in the drafting of the GMO Act, and served on the advisory subcommittee under the Act for many years.

Dr Morris is becoming increasingly involved in national and international consortium-based research programmes.





Pioneering scientist evaluates the progress made with GMASSURE

The establishment of the GMASSURE project in 2014 was, to a great extent, due to the relationships established with project partners in the Southern African Development Community (SADC) region by Dr Jane Morris, former Director of the ACGT, even after her retirement in 2011. This was the outcome of her many years' experience working in a networked environment.



Dr Morris has been involved with biosafety aspects related to GMOs in South Africa and in other countries over many years, and saw that many countries in the region did not have sufficient knowledge when it came to the regulation of GMOs.

Despite capacity-building programmes, GM crops are over-regulated or banned completely in many countries. Opportunities to contribute to food security are often missed, and agricultural productivity in the region has stagnated.

Meanwhile, South Africa – as the only producer of GM crops in SADC – has difficulty selling its produce in the region, resulting in diversion of sales to countries outside SADC.

The idea behind the launch of the GMASSURE action was to include a limited number of institutions as project partners, but to involve a much wider

range of participants in project activities. Beyond the South African partners (the University of Pretoria, the University of Johannesburg and the Agricultural Research Council), the University of Namibia and the University of Zimbabwe stood out as obvious project partners. The Technical University of Denmark was included as a European partner to bring in some expertise on food safety from outside the region.

The project aimed to achieve greater networking among countries and institutions in SADC to encourage the harmonisation of approaches to biosafety, based on the stakeholders' enhanced knowledge of the issues.

The project could play a major role in countering the misinformation that had resulted in negativity towards GMOs in many countries in SADC.

According to Dr Morris, since the science is moving rapidly worldwide, the concept of what constitutes a GMO is now a matter for debate internationally. SADC countries need to be aware of new developments and respond appropriately in terms of governance.

After two years of implementation, the GMASSURE project is now in its final year. Asked how far she thinks the project has succeeded in meeting its initial goals, Dr Morris states that the participants in the activities presented to date have all given positive feedback, which is encouraging. Dialogue and interaction between participants from different countries in the region has also improved. However, she thinks that we should not have unrealistic expectations of what can be achieved in such a short space of time.

Many hurdles need to be overcome, as exemplified by the fact that, although all the SADC countries are parties to the Cartagena Protocol on Biosafety that came into force in 2003, the majority of these countries have not yet put the legal, administrative and other measures that are required in place to implement their obligations under the Protocol.

Contemplating the road ahead, Dr Morris thinks the key challenge will be for the workshop participants to take home what they have learned, disseminate the learning further and lead some important initiatives towards the development of biotechnology and biosafety in their countries. "It is easy to attend a workshop, but then to forget what you have learned once you get back to the everyday pressures of work in your home environment," she says.



Acreage for GM crops declined in 2015

Although the world's farmers steadily and sharply increased their use of GM crops since the technology became broadly commercialised in 1996, this is no longer the case.

According to the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), which tracks the planting of biotech seeds, the acreage used for GM crops declined for the first time in 2015.

The main cause for the decline seems to be low commodity prices, which has led farmers to plant less corn, soybeans and canola, both GM and non-GM. However, the figures for the last few years show that the existing market for the crops is nearly saturated.

Only three countries – the USA, Brazil and Argentina – account for more than three-quarters of the total global acreage. Furthermore, only four crops – corn, soybeans, cotton and canola – account for the majority of biotechnology use in agriculture. In many cases, more than 90% of these four crops grown in these three countries, and in other large growers like Canada, India and China, is already genetically modified, leaving little room for expansion.

Efforts to expand the use of biotechnology to other crops and countries have been hindered by opposition from consumer and environmental groups, regulatory hurdles and, in some cases, scientific obstacles.

The annual acreage statistics of the ISAAA, which are kept in attempt to help small farmers in developing countries take advantage of biotechnology, are widely cited.

It found that, overall, the acreage planted with biotech seeds in 2015 fell by 1% globally to 444.0 million acres (from 448.5 million acres in 2014). These crops were grown in 28 countries and used by up to 18 million farmers, most of

them smallholders in developing countries. Critics say that despite the expansion over the last two decades, biotech crops still account for a small fraction of global farmland and are grown by a small percentage of the world's farmers.

According to ISAAA, the value of the seeds was \$15.3 billion in 2015 (down from \$15.7 billion in 2014). That represents 34% of the global commercial seed market.

Most of the GM crops contain genes from bacteria that make the crops resistant to certain insects or tolerant to Roundup or other herbicides. This tolerance of herbicides can allow farmers to spray those chemicals without harming their crops.

The crops were eagerly adopted from the moment they first became widely commercialised in 1996, particularly in the USA. Global acreage grew year over year, in many years by double digits, until a slowdown in the last two or three years.

The USA remained the largest grower of such crops in 2015, with 175.2 million acres planted (down 5.4 million acres from 2014).

This decline was largely offset by an increase of nearly five million acres in Brazil, bringing its total to 109.2 million acres.

Acreage in Argentina, the third-largest grower, increased by 1%, to about 60.5 million acres.

Plantings in India, where the only GM crop planted is cotton, were flat at about 28.7 million acres, while cultivation in Canada fell by about 5% (to 27.2 million acres) because of lower overall cultivation of canola, according to ISAAA.

According to L. Val Giddings, senior fellow at the Information

The development of these markets will be gradual, with only about 400 acres of the potatoes and 15 acres of the apples planted in 2015, according to ISAAA.

With Vermont now set to require the labelling of foods containing GM crops, some big food companies like Campbell, General Mills and Mars have said they will start labeling all their foods nationwide. Del Monte Foods went even further, saying it would eliminate ingredients from GM crops in many of its products.

In China and India, growers have widely adopted cotton engineered to be resistant to insects. However, efforts to expand the use of biotechnology to food crops have faltered. China has devoted a lot of research to developing its own versions of GM corn and rice, but has not yet approved them for commercial use. In India, the government imposed a moratorium on the commercial cultivation of insect-resistant brinjal in 2010.

Europe remains the centre of opposition to GM crops. Cultivation in the EU fell by 18% to only about 300 000 acres, which includes almost all the insect-resistant corn grown in Spain.

According to ISAAA, the global acreage could expand if GM corn were to be adopted in China and other parts of Asia and Africa. Vietnam began growing GM corn commercially in 2015.

ISAAA found that about 85 potential new products are being field tested, including drought-resistant corn and pest-resistant cowpeas for Africa.

Efforts to introduce different traits and different GM crops have been slow to take hold.

Technology and Innovation Foundation in Washington and a proponent of biotech crops, the small yearly decline was a sign of a maturing market. "I'm completely unsurprised to see this slight evidence of cycles, which are normal in agriculture," he said.

Efforts to introduce different traits and different crops have been slow to take hold. In the USA, two notable new genetically engineered crops have been approved since late 2014: apples that do not turn brown when sliced and potatoes that produce less of a potential cancer-causing chemical when fried.

In response to activists, food companies like McDonald's, Wendy's and Gerber have said that they have no intention to use any of those products at present.