



Zimbabwe Plant Breeders Association

Innovative. Creative. Exceptional

NEWSLETTER

ZPBA Newsletter Issue 2 of 2019

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- Launching ceremony of the African Plant Breeders Association in Ghana, October, 2019
- ZPBA Annual Congress January 2020

1. WHO IS ZPBA- Zimbabwe Plant Breeders Association

ZPBA is a **membership-based, not-for-profit, non-political, professional association** of Zimbabweans based locally or abroad active or interested in plant breeding and/or plant breeding-related fields (e.g. seed agronomist, seed inspectors, seed technologists, geneticists, germplasm conservation specialists, biotechnologists, molecular biologists, etc.) launched on the **26th of January, 2016** at Holiday Inn, Harare.

ZPBA hopes to contribute towards agricultural and industrial development in Zimbabwe through creating a platform for information exchange and sharing amongst plant breeders and related professionals, contributing towards policy dialogue, building capacity in both the public and private sector through relevant training.

ZPBA is governed by an **elected Executive Committee**, which **derives its powers** from the **membership** and functions through an **appointed Secretariat**.

ZPBA is legally registered as a **Trust** in Zimbabwe: registration number 1791/2018. The **ZPBA Board of Trustees** consists of the elected **Executive committee of the ZPBA** who are bound by the Trust Deed and the ZPBA Constitution.

2. IN THE NEWS

2.1 Midlands State University (MSU) Contributing towards utilisation of neglected and future crops in the face of climate change

Dr. Veronica MAKUVARO - Chairperson Dept. of Agronomy,
Faculty of Natural Resource Management and Agriculture, MSU

Contact: + 263 77 347 5823; makuvarov@staff.msu.ac.zw

Climate change is causing extreme events like frequent droughts and flooding thereby increasing the frequency of crop loss. The recent drought followed by heavy rains in certain parts of the country due to Cyclone Idai in just a single season is just an example. Elevated CO₂, higher temperatures, altered precipitation and transpiration regimes, and increased frequency of extreme events, as well as modified weed, pest, and pathogen pressure are expected to affect low altitude areas more than medium to high altitude areas.

With this in mind, researchers at the Midlands State University's Department of Agronomy and Horticulture have ramped up their efforts in helping improving crop diversity through sensitising communities of neglected crops such as the horned melon (*nganganga*), muskmelon (*bondas*), sesame (*runinga*), utilisation of Amaranth (*mowa*) both as vegetables and for grain as well as introducing new crops such as Quinoa (which is still under quarantine). Working with partners such as the DanChurch Aid in the Zimbabwe Resilience Building Fund (*Sizimele Action for Resilience Building*) Programme, the Department has managed to train smallholder farmers in production and utilisation of Quinoa and grain Amaranth. Quinoa a C3 crop is growing in popularity around the world as it flourishes in salty and arid environments where staple crops like maize, wheat or rice would wither. On the other hand Amaranth is a multipurpose C4 crop which thrives in hot climates can produce both grain and the leafy vegetables ranging from arid to wet conditions (higher yield obtained under wetter conditions).

The Department is also involved in the registration and development of a soil ameliorant called Safe Rock Minerals (SRM) which has potential to contribute towards agronomic biofortification of high hectareage crops such as maize, wheat, soyabean and beans.

A number of BSc students enrolled in Agronomy and Crop Production and Horticulture honours degrees and a number of post-graduate students undertaking the MSc in Crop Science (with Crop Production or Crop Improvement options) have participated in research around the abovementioned crops and projects. By so doing, MSU is contributing to the capacity building/ development of professionals who can address current and future challenges with confidence.

For more details contact: Dr V Makuvaro on 0773475823 email: makuvarov@staff.msu.ac.zw



Left: Dr Tavagwisa Muziri inspecting a crop of Quinoa at the Midlands State University.

Right: Mr Sherald Manhokwe Department of Food Science and Nutrition assisting farmers at Filabusi in Matebeleland South on processing of Quinoa and grain Amaranth

2.2 Tobacco Breeding at Kutsaga - Current breeding thrust and highlights from the 2019 season

Dr Frank MAGAMA- Head Plant Breeding Division, TOBACCO RESEARCH BOARD

Contact details: fmagama@kutsaga.co.zw ; +263 71 680 1771

1. BREEDING RESEARCH THRUST AND CAPACITY DEVELOPMENT

- The Plant Breeding research focus is on drought mitigation through production of drought-tolerant and fast-growing varieties that can escape low rainfall conditions.
- The search for resistance to the debilitating Potato Virus Y (PVY) disease is also top priority and involves collaborative research with many international partners.
- In response to the proposed ban on tobacco smoking by the World Health Organization Framework Convention on Tobacco Control (WHO FCTC), modern tools are being utilised to breed for ultralow nicotine content varieties that may be considered as a healthier option.
- Furthermore, TRB plays a role in capacity building and has in place ongoing programs for undergraduate and post graduate students.

1.1 Drought Mitigation Research

Following a serendipitous discovery of drought tolerance in a unique parental through plasticity of root architecture, the Division has incorporated full genetic studies of root architectural traits as a strategy for improving elite parentals to drought tolerance. One new hybrid, K RK75 (drought tolerant variety) is a product of this work. Additionally, for the first time in the history of tobacco development in Zimbabwe, the Division is pursuing a new class of hybrids with a quick maturing character capable of drought escape.

1.2 Potato Virus Y Research

Potato Virus Y is a seemingly intractable cosmopolitan disease of high economic and academic importance. Currently, there is no known durable genetic resistance and in Zimbabwe the disease is managed through legislation. Devastating outbreaks have been witnessed recently in tobacco production districts due to non-adherence to the legislation on timely planting and stalk destruction. Figure 1 presents results of a PVY screening trial in which fourteen entries remained asymptomatic of any PVY symptoms throughout the testing period. This exciting result promises many breakthrough scientific discoveries and will have significant impact on taming the scourge of PVY.

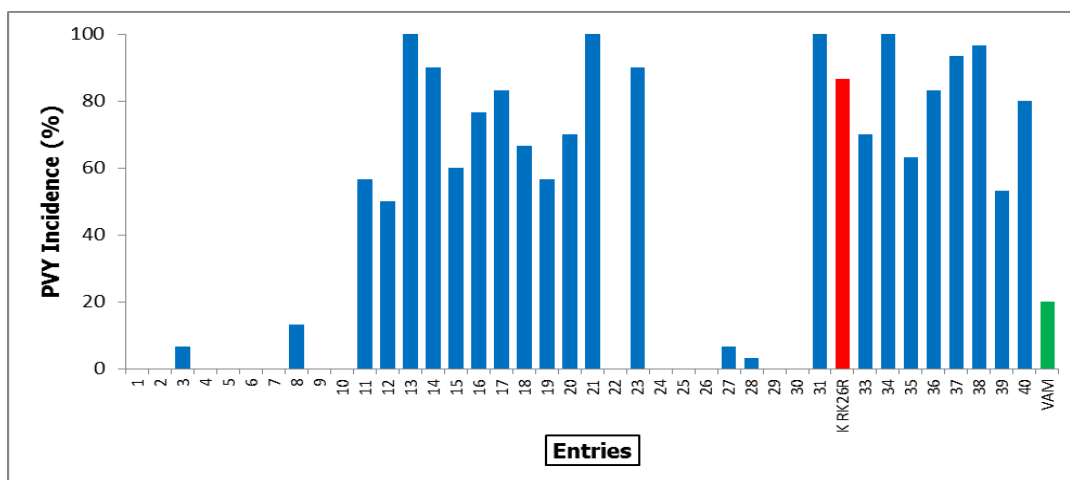


Figure 1.3: Final incidence of Potato Virus Y (PVY) in entries tested in a Greenhouse. Red bar indicates the popular variety K RK26R used as a susceptible control, Green bar indicates Virgin *A Mutante* (VAM) used as a resistant control and Blue bars are entries of the local landrace collection. For statistics, N=32 plants, LSD = 32.16 and significant differences were valid at F Prob = < 0.001.

1.3 Reducing Nicotine in Tobacco

Concerted efforts by the WHO FCTC to ban smoking will have huge negative impacts on the economy of Zimbabwe. Considered viable and healthier strategies by some stakeholders are low nicotine content cigarettes or high nicotine content tobacco that can be processed for vaping with electronic nicotine delivery systems (ENDS). However, nicotine content is intricately linked with tobacco growth and development. The Division is using molecular biology tools to allow unhindered nicotine biosynthesis, hence normal growth and development but a redirection of synthesised nicotine from wholesale accumulation in the leaves. This will be achieved through mutation of nicotine transport genes, resulting in ultralow levels of nicotine in the harvested and cured leaves. Ultralow nicotine accumulating Kutsaga-bred varieties are expected in the next five years.

1.4 Capacity Development

In the face of extensive brain drain and skills flight from the country, the Tobacco Research Board proactively invests heavily in capacity development to enable continuity. Annually, the Plant Breeding Division recruits two to three BSc students on 12 months attachment and these are then rigorously trained. Additionally, a 1-2 year internship programme is available for new graduates who are further trained in the Division and given various portfolios to run. The Head of Plant Breeding also occasionally lectures and co-supervises MSc and PhD programs from local universities.

2. HIGHLIGHT FROM THE 2019 SEASON

Release of Five New Varieties

The 10th of May 2019 proved to be a momentous date for the Plant Breeding team (Fig.2). Five new elite flue-cured tobacco varieties (K RK70, K RK73, K RK74, K RK75 and K RK76) were deemed novel and able to address current pressing challenges in tobacco production by the Tobacco Variety Release Committee and were placed on open release. The addition of these varieties to the currently registered collections means the Zimbabwean tobacco farmer is spoilt for choice. The new varieties can be grown with minimal amounts of crop protection agents without compromising yield or quality and thereby reduce costs of production. These new varieties were also bred to give significant protection from inclement weather factors such as sun scorch and extended dry periods.



Figure 2: Kutsaga Plant Breeding team. From Left to right M. Shamudzarira, F. Mukoyi, R. Ruzane and F. Magama



2.3 ZPBA ORGANISED EVENTS

JUNE 11, 2019 PRESENTATION BY VISITING SCIENTISTS FROM UK



Presentations topics

1. Rhizodeposition: the root to mitigation of nitrous oxide?
By Prof. Liz Baggs, Deputy Director of the Global Academy of Agriculture and Food Security, University of Edinburgh

2. Plant and microbial controls of nutrient cycling at the root-soil; interface
By Eric Paterson, The James Hutton Institute

3. Impacts of maize cultivars on soil organic matter mineralization and nitrification rates in soils of Zimbabwe
By Lumbani Mwafurirwa, University of Edinburgh

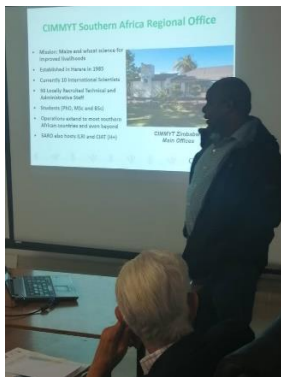
Brought by



A big THANK YOU to the presenters

ZPBA Annual Event held on 5 July, 2019 at CIMMYT- SARO
'UNPACKING BETTER SEEDS FOR SUSTAINABLE DEVELOPMENT'

In pictures





THE ZPBA ANNUAL EVENT
Unpacking Better Seeds for Sustainable Development

PROGRAM

TIME		SPEAKER
08:30-08:45	Registration	ZPBA Secretariat
08:45-09:00	Welcome & Introductions	ZPBA
09:00 - 09:30	Development of Resilient Food Systems under Climate Change	Dr. Cosmas MAGOROKOSHO - CIMMYT
09:30 - 09:45	Participatory crop improvement	Ms. Nomusa MUGUTI - CTDI
09:45 - 10:30	Off the treadmill with private sector-led dry bean seed systems in Zimbabwe	Mr. Denford CHIMBOZA - CIAT
10:30-11:00	TEA BREAK	
11:00 - 11:30	Innovations vital to sustainably develop local horticulture seeds	Mr. Daniel MADUNGWE - Zimbabwe Horticulture Association
11:30-12:00	Unpacking the value of African traditional vegetables	Dr. Leawmore MWADZINGENI - Seed Co.
12:00-12:30	Five (5) Decades Later: TRB still shinning our elite tobacco varieties for Zimbabwe and beyond	Dr. Frank MAGAMA - TRB
12:30 - 01:45	Vegetable breeding for the Zimbabwean market - success stories from the field	M. Van der WEEF - AVANOS SLEUS
01:45-03:00	Closing Remarks	Dr. Joe MUSHONGA - CTDI, ZPBA
03:00	LUNCH & NETWORKING	

A BIG THANK YOU TO:

- CIMMYT** CIMMYT Zimbabwe for hosting the event
- Klein Karoo** for kindly providing beans and vegetables
- The paid up ZPBA members & the ZPBA organising team
- and YOU** for coming out today, as all would have counted to nothing without your presence.

ON THE MENU, ENJOY THE TASTES OF:
 • Cardinal beans • Capricorn onion • Nantes carrots • Green Sunrise cabbage from Klein Karoo
 • Z5242 Orange maize samp from Sky Brands

ZPBA Contact details
 +263 784 618 719 zimplantbreedersassociation@gmail.com

An opportunity for purposeful discussions, learning and networking

A very big THANK YOU to the presenters & to CIMMYT-SARO for kindly providing the venue

3. UPCOMING EVENTS

3.1 REMINDER: African Plant Breeders Association Launch

LAUNCHING CONFERENCE

HARNESSING GENOMICS AND MODERN BREEDING TOOLS FOR FOOD AND NUTRITION IN AFRICA

OCTOBER
23 - 25
 2019

ACCRA (GHANA)

- **The Inaugural meeting will be held in Accra Ghana, 23-25 October, 2019.** Diarize these dates and make an effort to attend this meeting- a very important milestone for the continent.
- Institutions PLEASE support and sponsor professionals and/or students who wish to attend. Contact ZPBA if you can help.
- For more details visit <https://africaplantbreeders.com/home-1>
- Link to the Master Consolidated Breeders List being compiled by the African Plant Breeders Association- add your name and share link with relevant colleagues

https://docs.google.com/spreadsheets/d/16sG-W-VrgnVL4bO_zPi6-RuKQFuep6nzcDR3whRuwBo/edit?ts=5c9073d8#gid=484946574

3.2 ZPBA congress scheduled for January, 2020. It is also a time when new office bearers are elected into office to champion the association going forward. Contact if you wish to sponsor or help organise this event.



4. OPPORTUNITIES

- 4.1 **Shine the Light on the outstanding record breaking achievements**, i.e. those firsts for Zimbabwe and its professionals in the sector. Would like to compile these, therefore kindly asking you to share those stories be it of a discovery, an invention, an innovation etc. Email a brief to zimplantbreedersassociation@gmail.com
- 4.2 **University of Edinburgh's Global Academy of Agriculture and Food Security** which is interdisciplinary offers Agriculture degree programs- undergraduate, Masters and PhD and some online courses. For more details on studies and collaborations contact globalagriculture@ed.ac.uk or Liz.baggs@ed.ac.uk

5. ZPBA MEMBERSHIP

5.1 Membership benefits include

Professional and personal development; **Shared costs on human resource development**; Networking; **Timely Communication (especially for events, internships, job vacancies, scholarships)**; Voting rights; **Discounted rates for events**; Sense of pride in the profession and industry

5.2 Membership Fees

Thank you to members who have already paid their 2019 subscriptions.

If you have not yet paid, the 2019 subscriptions are now overdue and **NOTE** these have been maintained at the previous levels. \$250.00 for **Corporate** member; \$100.00 for **Ordinary** members; \$50.00 for **Retired** members; \$10.00 for **Student** member.

5.3 Come work with us

- ZPBA has a **platform for information exchange** amongst professionals & business, for enriching and respectful discussions, and for contributing towards policy dialogue. Plans are to host at least four meetings annually. Contact if you wish to give a presentation, share a newsletter article
- **Sponsor an event or award** on the ZPBA platform: The event can be a seminar, a lecture, a public debate. It can be company branded or in honour of your outstanding product or personality etc. It can be a motivational tool, use it to recognise excellence
- ZPBA can be a **platform where ideas are tried, tested, incubated and come to life**. ZPBA promotes a culture of research freedom conducted within the laws of Zimbabwe. Individuals can seek their funding and conduct their research on ZPBA platform. ZPBA can conduct studies/ research in the interest of its members, results of which members are free to adapt to their specific situation. ZPBA offers incubation platform if you have an idea you want to try out
- ZPBA offers a **mentoring platform**. For the retired, you can remain active as well as mentor young professionals
- ZPBA can **provide services** as requested by their membership- ZPBA is open for suggestions

6. ZPBA CONTACT DETAILS

ZPBA mobile phone: + 263 (0)784 618719; (send your name if you want to be on the ZPBA WhatsApp group)

ZPBA email: zimplantbreedersassociation@gmail.com

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