



ZPBA NEWSLETTER Issue 1 of 2017

1. WHO ARE WE

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**.

Read more <http://zimbabweplantbreedersassociation.org.zw/about-us/>

2. IN THE NEWS

CELEBRATING 2016 – THE INTERNATIONAL YEAR OF PULSES (cont.)

2016 was declared as the INTERNATIONAL YEAR OF PULSES by the 68th UN General Assembly and FAO facilitated implementation of the year, read more www.fao.org/pulses-2016/about/en/

We continue featuring pulses in this issue of ZPBA newsletter, ENJOY !!!

A) 'Break and Rejoin': Legume Improvement

by Gwata E.T. (ectgwata@gmail.com)

The importance of grain legumes in human diet, soil fertility and income generation in smallholder farming systems particularly in Zimbabwe is well documented. Tropical types of legumes such as cowpea, pigeonpea and tepary bean stand out among the wide range of leguminous crop species partly because of their high tolerance to moisture stress. Therefore these tropical legumes can be useful in many cropping systems that are prone to drought in Zimbabwe. However, with the exception probably of cowpea, relatively little effort has been exerted in the genetic improvement of these legumes. There is a variety of reasons for this situation. The objective of this article is to highlight tangible evidence for a successful and practical approach for improving tropical legumes in order to benefit growers and users.

The breeding approach that was used in the study involved artificial induction of mutation using either a chemical mutagenic agent (ethyl methane sulphonate) or ionizing radiation (gamma rays) that essentially work by 'breaking and rejoining' the chromosomes in the target genetic material, thus creating new desirable gene combinations.



Early maturity in a cowpea mutant line derived through gamma radiation.

(Original Source: Matova P.M., Crop Breeding Institute, Harare)

The findings were published recently in a book chapter (see Gwata *et al.*, 2016). The take home message from the article is that induced mutation was used for developing improved cultivars of tropical legumes in a relatively short period. Because of the random nature of the mutation, the resulting mutants were evaluated for distinctiveness, uniformity and stability following the standard procedures. In an ideal environment such as Save Valley (Zimbabwe), cowpea mutant lines attained markedly high grain yields (>5.0t/ha). Similar results were obtained recently in Namibia (see Horn *et al.*, 2016). In view of the frequent droughts particularly in southern Zimbabwe, there is merit in intensifying the evaluation of the germplasm of these three highly drought-tolerant legumes in the region. The impact on the livelihoods of rural communities in the region could be huge. In conclusion, it is important to mention that the research work is still on-going. Scientists are now evaluating the mutant lines for reaction to various biotic stresses, nutritional aspects as well as their potential to fix atmospheric nitrogen in the root nodules.

References

Gwata, Shimelis and Matova (2016). Potential of improving agronomic attributes in tropical

Legumes using two mutation breeding techniques in southern Africa *In: Alternative Crops and Cropping Systems* (ed) P. Konvalina, pp. 71-85. ISBN 978-953-51-2279-1; DOI: 10.5772/62262 (<https://www.intechopen.com/books/alternative-crops-and-cropping-systems/potential-of-improving-agronomic-attributes-in-tropical-legumes-using-two-mutation-breeding-technique>) (Full article in pdf attached).

Horn LN, Ghebrehiwot HM and Shimelis HA. (2016). Selection of novel cowpea genotypes derived through gamma irradiation. *Front. Plant Sci.* 7:1-13.



B) Dry Bean Breeding isn't a Dry Topic- NAPB Webinar

<http://articles.extension.org/pages/70440/dry-bean-breeding-isnt-a-dry-topic:-napb-webinar#.VO95nnY7QZ0>

This is a webinar on bean breeding by Dr James Kelly of Michigan State University, a simple and enriching presentation.

C) Legume potential goes begging while the world goes hungry

<http://grainlegumes.cgiar.org/legume-potential-goes-begging-while-the-world-goes-hungry/>

An interesting blog posted by Dr Joyce MulilaMitti in 2014 – has the situation changed

Hope you found the presentations on Pulses stimulating

ZPBA HOST ITS FIRST ANNIVERSARY EVENT

ZPBA hosted its first anniversary event on 27 January, 2017. Various presentations were given during this Climate change themed event. For more information on the presenters visit <http://zimbabweplantbreedersassociation.org.zw/category/events/>

HIGHLIGHTS are summarised below, ideally you should have been there to hear it all and participate in discussions that followed:

The ZPBA President gave a summary of achievements to date. Major focus has been to

- ✚ introduce ZPBA to key institutions such as DR&SS, our parent ministry, ZSTA, ARC, African Plant Breeders Association, AAAPD,
- ✚ set up structures so as to make ZPBA functional. Notably in place are office space at ARC, bank account with FBC, a logo, a dedicated phone and email address; critical documents such as the constitution & code of ethics
- ✚ membership drive activities included making presentations at 3 institutions, organised 3 events in 2016, resulting in 31 paid-up members in 2016.

Mr AT Mushita opening remarks brought to the fore the need to be aware of the changes in the environment we operate in

- ✓ Policy environment at national, regional and global levels- currently the regional PVP & Seed Harmonisation protocols; mergers and buy-outs of seed companies are some of the topical issues
- ✓ Socio-economic considerations- need for an integrated seed system approach to enhance food and nutrition security
- ✓ Technological advances
- ✓ Bio-cultural and Environmental issues e.g. there are profound dietary changes that are rapidly redefining health and nutrition priorities- how are breeding programs and seed systems responding



Dr L Unganai 'Climate change and its implications for agriculture in Zimbabwe'

- There is evidence of climate change in Zimbabwe as shown by increasing surface temperatures, changes in rainfall trends (increased droughts & heavy rainfall events, changes in season onset or cessation, timing & intensity of dry spells), increased frequency of extreme events such as drought, heat waves, heavy rainstorms
- Secondary challenges which include soil degradation, increased or new pests and disease incidences, damage to infrastructures etc.
- Whilst breeders have responded well to drought tolerance & new pest and diseases incidences, they need to also consider heat tolerance and, in some cases water-logging.
- Farmers' ready access to improved varieties well adapted to climate change will be important to building their resilience to climate change but also remember 'farmers do not grow crops but they create right conditions for crops to grow'

Dr Jill Cairns 'Climate change & maize'

- Climate change is for real as evidenced by droughts, heat stress, warming temperatures,
- Using GIS and modelling there is a better understanding of future scenarios. Modelling showing surface temperatures will warm up, increase in rainfall but delay in the onset resulting in changes in maize mega environments.
- Breeding programs need to consider the future scenarios. Through breeding efforts CIMMYT has identified material better adapted to climate change with some even tolerant to heat stress. National programs need to take advantage of such material
- In other continents eg Americas, rapid variety replacement has allowed farmers to benefit from genetic gains early hence reducing the impacts of climate change
- An interesting review article 'Rapid breeding and varietal replacement are critical to adaptation of cropping systems in the developing world to climate change' Gary N Atlin, Jill E Cairns, Biswanath Das
<http://www.sciencedirect.com/science/article/pii/S2211912416300931>

Dr J MulilaMitti 'Climate smart agriculture and the role and implications of crop improvement'

- Climate smart agriculture aims - increase productivity, increase resilience (adaptation), reduce/remove GHG (mitigate) hence achievement of food security and development goals. Crop improvement and seed systems should support climate smart agriculture
- To support climate smart agriculture crop improvement should consider crop varieties with resource use efficiency traits, well adapted crops and varieties, support effective/greater crop and variety diversity, introduce crops and varieties that allow diversification of farming systems & support changing agricultural production systems
- Conservation agriculture mitigates Climate change- shouldn't breeders evaluate varieties under such systems
- There is need for strong seed systems to ensure availability of good quality seed and planting material to the farmers
- It has been noticed breeders voice missing at Climate Smart Agriculture forums
- FAO Climate smart agriculture initiatives are through FAO-adapt, MICCA, UN-REDD



Mr Mtetwa 'Regional policies and their implications on formal seed systems in Zimbabwe'

- ❖ **COMESA seed trade & harmonisation**- Aimed at removing non-tariff barriers to seed trade. It is the most advanced and legally can be implemented. Currently, working on building capacity within the country so that it is operational.
- ❖ **SADC HSRS**- It was the first initiative, not significantly different from the COMESA HSRS. It went into force in July in 2013. Zimbabwe not yet a signatory to the MoA hence no voting rights
- ❖ **SADC Protocol for the Protection of New Varieties of Plants**- It would allow SADC to apply for UPOV membership as a bloc
- ❖ **ARIPO- The Arusha protocol on PVP** was adopted in July 2015 but the regulations still being reworked on
- ❖ **UPOV**- Zimbabwe still not a member of UPOV although all the necessary drafts are in place.

3. SCHOLARSHIP FUNDING OPPORTUNITIES

LIST OF SCHOLARSHIPS FOR AFRICAN UNDERGRADUATE AND POSTGRADUATE STUDENTS 2017/2018*

1a. 2017/2018 Fully Funded Scholarships – APPLY NOW

<http://worldscholarshipforum.com/20172018-fully-funded-scholarships-apply-now/>

1b. List of DAAD Scholarships 2017/2018 – Apply Now

<http://worldscholarshipforum.com/list-of-daad-scholarships-20172018-apply-now/>

2. APPLY:Korean Government Scholarships for 170 Bachelors, 800 Masters & PhD for Developing Countries 2017-2018

<http://worldscholarshipforum.com/applykorean-government-scholarships-170-bachelors-800-masters-phd-developing-countries-2017-2018/>

3. TOP 15+ Scholarships Opportunities for Africans to Study Abroad 2017-2018

<http://worldscholarshipforum.com/top-15-scholarships-opportunities-for-africans-to-study-abroad-2017-2018/>

4. Joint Japan/World Bank Scholarship 2017-2018 Application Is Ongoing!

<http://worldscholarshipforum.com/joint-japanworld-bank-scholarship-2017-2018-application-ongoing/>

5. Erasmus Mundus Scholarships for All Countries 2017/2018 – Apply Now

<http://worldscholarshipforum.com/erasmus-mundus-scholarships-countries-20172018-apply-now/>

6. List of Mastercard Foundation Scholarships 2017/2018 for Various Countries[Apply Now]

<http://worldscholarshipforum.com/list-mastercard-foundation-scholarships-20172018-various-countriesapply-now/>

7. LIST Of African Student Scholarships to Study In USA(HOT)

<http://worldscholarshipforum.com/list-african-student-scholarships-study-usa/>

8. Top 20+ commonwealth scholarships 2017-2018

<http://worldscholarshipforum.com/20-commonwealth-scholarships-2017-2018/>

9. LIST OF SCHOLARSHIPS IN AUSTRIA FOR INTERNATIONAL STUDENTS 2017-2018 [FULLY FUND] -APPLY

<http://worldscholarshipforum.com/list-scholarships-austria-international-students-2017-fully-fund-apply/>



10. Shanghai Government Scholarship for International Bachelors, Masters and PhD Students
<http://worldscholarshipforum.com/shanghai-government-scholarship-international-bachelors-masters-phd-students/>

11. Latest Canada Scholarships for Undergraduates, Masters and PhD Programmes 2017/2018
<http://worldscholarshipforum.com/latest-canada-scholarships-for-undergraduates-masters-and-phd-programmes-20172018/>

12. 230 Fully-funded Commonwealth Shared Scholarships for Students from Developing Countries
<http://worldscholarshipforum.com/230-fully-funded-commonwealth-shared-scholarships-for-students-from-developing-countries/>

13. Top 10 UK Scholarships 2017-2018 For International Students
<http://worldscholarshipforum.com/top-10-uk-scholarships-2017-2018-for-international-students/>

14. ONGOING: \$50,000 OPEC/OFID Scholarships for Developing Countries 2017/2018 – APPLY
<http://worldscholarshipforum.com/ongoing-50000-opecofid-scholarships-for-developing-countries-20172018-apply/>

15. New Zealand Aid Programme Scholarship for African Countries, 2017
<http://worldscholarshipforum.com/new-zealand-aid-programme-scholarship-african-countries-2017/>

16. APPLY For British Chevening Scholarships 2017
<http://worldscholarshipforum.com/apply-british-chevening-scholarships-2017/>

4. WHAT ZPBA EXPECTS FROM MEMBERS

- ✚ Paid-up membership
- ✚ Participate in activities e.g. sponsor a branded event in honour of your product or outstanding professional, sponsor an award to promote healthy competition & excellence, make presentations, attend events, be part of the leadership
- ✚ Help shape ZPBA into an association you will be proud to be associated with
- ✚ The ZPBA Newsletter currently has 3 issues per year (end April, end August, end December). Send your contribution by the 21st of April/ August/ December

For more <http://zimbabwepantbreedersassociation.org.zw/work-with-us/>

5. WANT TO BECOME A ZPBA MEMBER

Membership to the association is **open to all Zimbabwean professionals** and **corporates** actively involved with or interested in any activity **involving scientific plant breeding** in Zimbabwe based locally or abroad following application to and approval by the Executive Committee. Members should accept terms and conditions of the association and pay up subscriptions. The categories and **annual membership fees** are as follows:

i.	Ordinary membership	\$100.00
ii.	Student membership	\$10.00
iii.	Retired membership	\$50.00
iv.	Corporate membership	\$250.00

The fees can be paid quarterly or half-yearly but this will attract an extra \$5.00 charge.

Read more <http://zimbabwepantbreedersassociation.org.zw/membership/>



6. ZPBA CONTACT DETAILS

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