

Welcome!

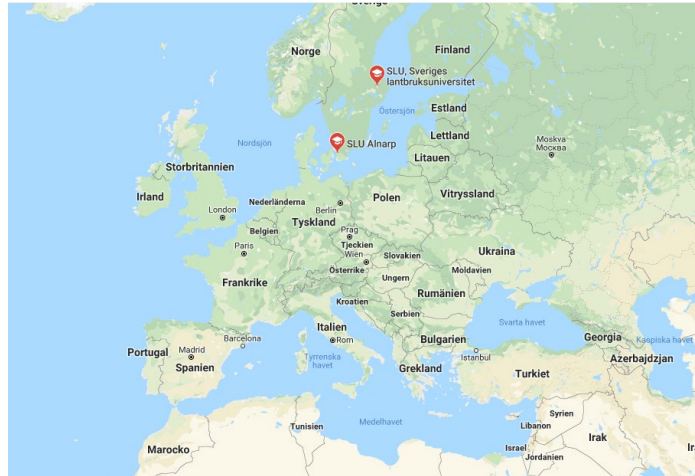
Plant Biotech in sub-Saharan Africa – technology transfer and new policies

Erik Alexandersson (coordinator)

Associate Professor Department of Plant Protection Biology, SLU Alnarp



Swedish University of Agricultural Sciences – SLU



Ca 3000 staff, 4000 undergraduate students, 600 PhDs



Research network grant for international collaboration – Swedish research links



Themes

- **Work package 1:** Plant biotechnology in sub-Saharan Africa (SSA) for Cassava and Potato crop improvement (Leaders: Erik Andreasson, SLU, Leena Tripathi, IITA, and Marc Ghislain, CIP)
- **Work package 2:** Implications of converging and/or diverging plant biotechnology policies in the EU and Africa (Leaders: Barbara Mugwanya Zawedde, UBIC, and Dennis Eriksson, SLU)
- **Work package 3:** Coordination, dissemination, and outreach (Leaders: Erik Alexandersson, SLU and Livia Stavolone, IITA)

Priscilla and Isaac



Priscilla Olayide



Isaac Ongu

Main goals

- (i) improve knowledge-exchange and capacity building to better implement plant biotech in SSA, especially the emerging technique of genome editing
- (ii) explore the implications of converging and/or diverging plant biotechnology policies in the EU and Africa.

Focus countries

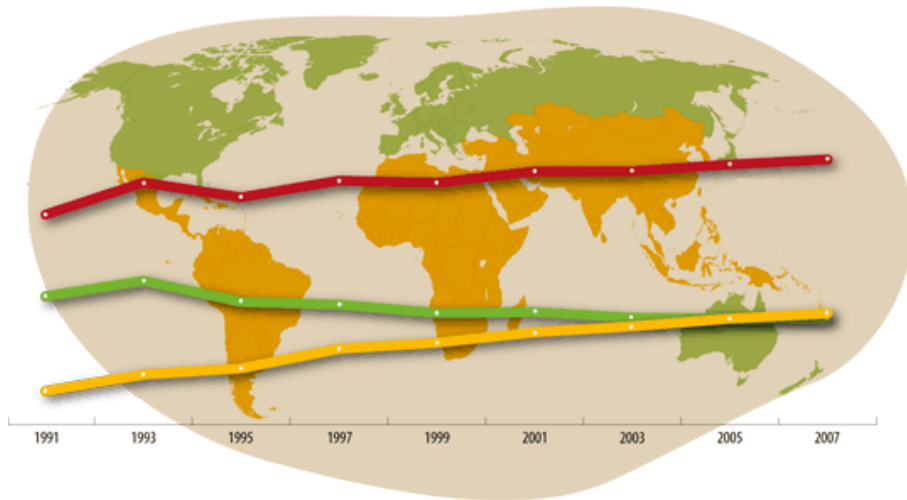


Focus on cassava and potato



Why potato?

- 3rd most important food crop with increased importance in developing countries
- Late blight causes worldwide loss of ~7 billion USD/year
- Increased importance in low-income countries



FAO, 2008

Quiroz, R., Harahagazwe, D., Condori, B., Barreda, C., Mendiburu, F. D., Amele, A., ... & Demo, P. (2014). Potato yield gap analysis in SSA through participatory modeling: Optimizing the value of historical breeding trial data.

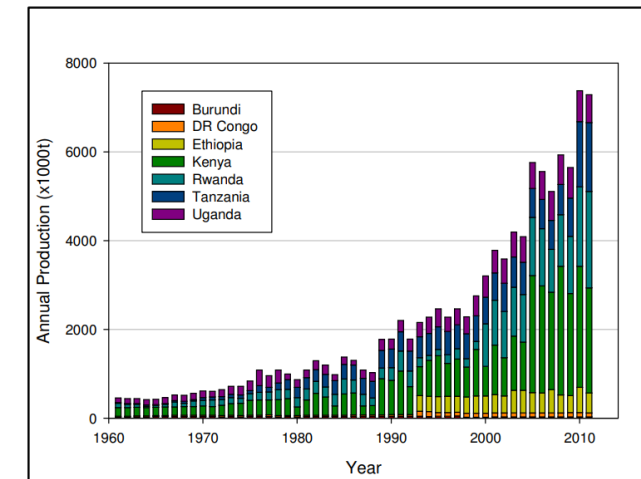


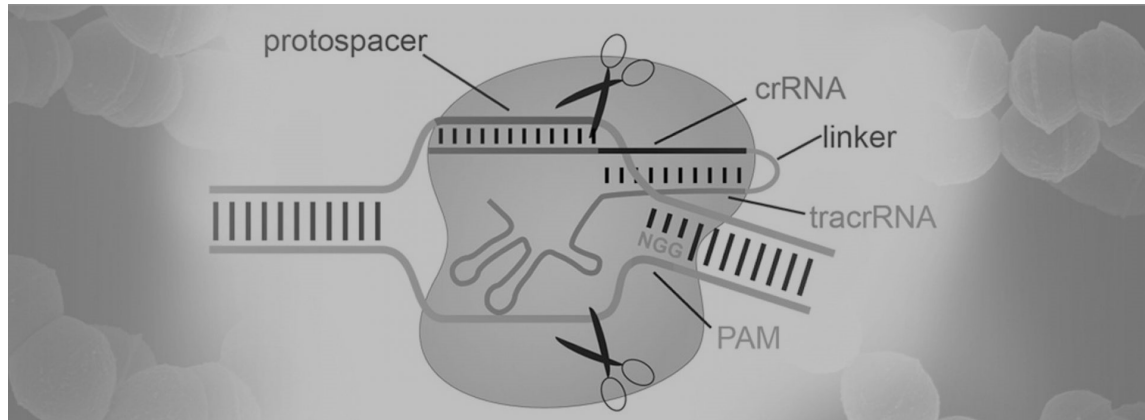
Figure 7. Cumulative Annual Potato Production in Eastern and Central Africa (data from FAO, 2013).

Why cassava?

- a major source of carbohydrates in tropical areas
- one of the most drought-tolerant crops
- poor in many nutrients
- Challenge! Combine high starch and high b-carotene



Gene editing: Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR/Cas9)



Potato GM field trials

”Minskat motstånd mot GMO” (SvD 16 Aug 2014)



Foto: LINUS SUNDAHL-DJERF/SVD

New collaboration on genetic engineering in African plant breeding

PUBLISHED: 16 APRIL 2019

Can genetic engineering contribute to more efficient plant breeding in Africa? That is what researchers believe in an SLU-led project that strives for cassava varieties with better nutritional value and potato varieties with better resistance to diseases.

One aim of the project is to strengthen African plant breeding through technology transfer. The second is to support the development of regulations on the use of genetic engineering in plant breeding.



Achievements so far in project...

- **Policy mapping** to identify similarities and differences in standards for plant biotech policy between Nigeria, Uganda, Kenya and EU by Isaac Ongu. Questionnaire constructed for experts and users of gene editing and plant biotech. Deep interviews in SSA aimed at a query-based publication. 2 months internship at SLU Alnarp in 2019.
- **Knowledge transfer:** Priscilla Olayide has been working in Leena Tripathi's lab with tissue culture and transformation for cassava. Create a triangular exchange between IITA Nairobi, IITA Ibadan and SLU Alnarp. Work ongoing.
- **Field trials** with 3 R-gene cassette potato material from CIP run in Sweden and outcomes exchanged. Field demos to the general public.
- **Policy advisory group** set-up with Marc Heijde (IPBO, VIB Ghent) and John Komen (Komen Bioscience Consultancy)

Schedule (all times CET), see www.plantlink.se

Today: **Implications of converging and/or diverging plant biotechnology policies in the EU/Sweden and selected sub-Saharan African countries**

- 10:00 Welcome, project presentation “Plant Biotechnology in sub-Saharan Africa”. *Project coordinator Erik Alexandersson, SLU, Sweden*
- 10:15 “Plant biotechnology in Kenya, Nigeria, Uganda and the European Union: convergence or divergence of policies and regulatory practice?”. *Isaac Ongu, SCIFODE, Uganda*
- 10:45 Panel discussion with the possibility for the audience to ask questions. The challenges for gene editing and genetic engineering for R&D in SSA and the EU: policy influences, lessons from other countries, and other pertinent issues. *Barbara Mugwanya (UBIC), Isaac Ongu (SCIFODE), and Marc Heijde (IPBO, VIB Ghent) and John Komen (Komen Bioscience Consultancy) who are members of the Advisory group. Moderator: Dennis Eriksson, SLU, Sweden*
- 12:00 Close

Tomorrow: **Plant biotechnology in SSA for cassava and potato crop improvement**

- 9:00 Welcome and presentation of today’s program. *Livia Stavolone, IITA, Nigeria*
- 9:05 “Happy Tropics: Molecular Innovations, Technology Transfer, Education and Beyond”. *Herve Vanderschuren, University of Liège, Belgium*
- 10:00 “Profiling, tissue culture and gene editing of Nigerian cassava landraces”, *Priscilla Olayide, IITA, Nigeria*
- 10:30 “Bioengineered potato with late blight disease resistance in field trials in Sweden and East Africa”, *Erik Andreasson, SLU, Sweden and Marc Ghislain, CIP, Kenya*
- 10:50 Wrap-up
- 11:00 End

Today

“Plant biotechnology in Kenya, Nigeria, Uganda and the European Union: convergence or divergence of policies and regulatory practice?”, Isaac Ongu

Panel discussion: The challenges for gene editing and genetic engineering for R&D in SSA and the EU. Barbara Mugwanya (UBIC), Isaac Ongu (SCIFODE), and Marc Heijde (IPBO, VIB Ghent) and John Komen (Komen Bioscience Consultancy). Moderator: Dennis Eriksson, SLU, Sweden



Tomorrow from 9:00 CET

“Happy Tropics: Molecular Innovations, Technology Transfer, Education and Beyond”. *Herve Vanderschuren, University of Liège, Belgium*

“Profiling, tissue culture and gene editing of Nigerian cassava landraces”, *Priscilla Olayide, IITA, Nigeria*

“Bioengineered potato with late blight disease resistance in field trials in Sweden and East Africa”, *Erik Andreasson, SLU, Sweden and Marc Ghislain, CIP, Kenya*



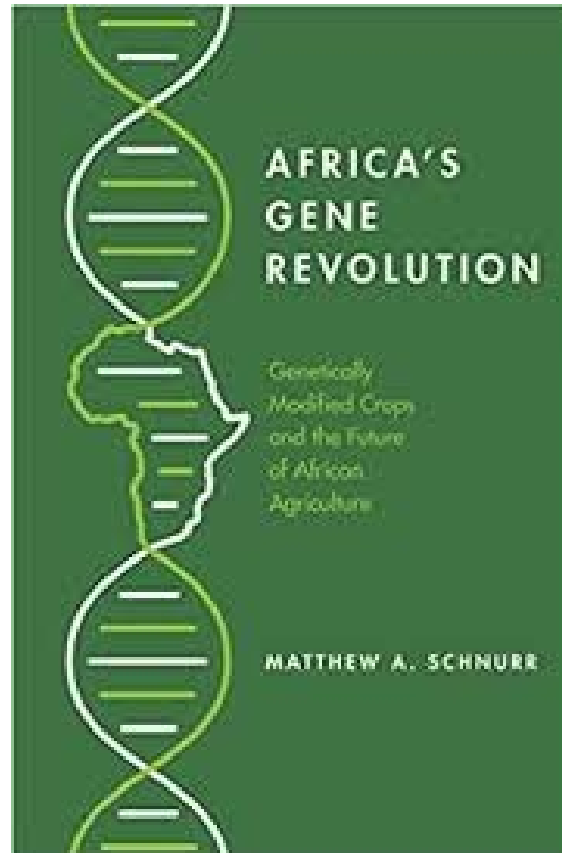
Some questions we might encounter during these two days!

- What is the current status of plant breeding innovations in SSA countries?
- Suitable traits for gene editing in potato and cassava
- New ideas for capacity building
- Can smallholder farms benefit?

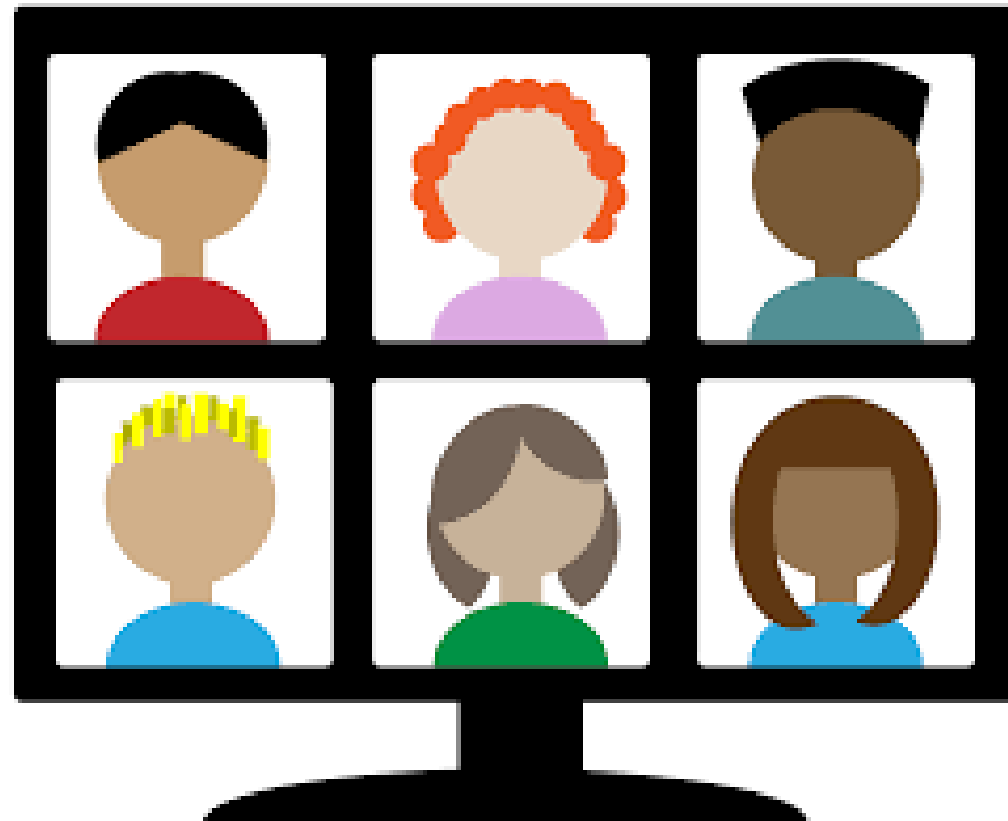
PLEASE USE THE ZOOM CHAT AND Q&A FIELD FOR YOUR QUESTIONS AND COMMENTS

Book club!

3 December 2020 at 12:00 CET for an open lunch discussion over zoom!



Who are you?



Thanks to

