FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Overview of the Global Peanut Breeding Initiative during the 2012-2016 Project Term of the Peanut & Mycotoxin Innovation Lab. M. DEOM*, P. OZIAS-AKINS, J. RHOADS and D. HOISINGTON, and the entire PMIL Research Team.

In most low-input peanut production systems in Africa, the greatest potential for improved productivity and income is through the use of improved germplasm. During the 2012-2017 PMIL project cycle, a global breeding initiative was supported that included national program breeders from Burkina Faso, Haiti, Ghana, Malawi, Mozambique, Senegal, Uganda and Zambia, in partnership with breeders and scientists from US universities, including University of Florida, University of Georgia, New Mexico State University, and Texas A&M University. This effort resulted in the release of numerous varieties, the exchange and evaluation of new germplasm in multiple locations, and the establishment of better working relationships with regional breeding initiatives. In addition, efforts were made to evaluate the impact of improved varieties introduced during this and a previous research initiative.

INTRODUCTION

Previous and present breeding initiatives have focused on intensifying peanut production and enhancing quality by developing and releasing new and improving high yielding varieties through US and PMIL target country collaborative breeding programs.

Mitigating yield losses from biotic stresses have focused on developing varieties with resistance to economically important pathogens and pests – such as groundnut rosette disease (GRD), leaf spot diseases (LSD), groundnut leaf miner – while the primary abiotic stress has been drought tolerance.

As a result of that work, numerous varieties have been released, including the Serenut 4-14 series in Uganda with GRD and LSD resistances and drought tolerance (Okello et al., 2013).

The breeding programs have and continue to focus on such value-added traits as high oleic content with the release of NuMex 01 (Puppala and Tallury, 2013) and Schubert (Burow et al., 2014) in the US market, micronutrient density (Fe and Zn), high oil content, and seed size (edible markets).

We continue to pursue our objectives with new/upcoming releases, including improved landraces.

CONCLUSION

The research has resulted in the development and adoption of new and improved cultivars with increased yields, quality, marketability. Benefits have and will result in improved peanut value chains, increased food security, better nutritional and dietary traits, and increased income throughout PMIL target countries as well as other developing countries via spillover. For a more comprehensive view of the peanut breeding projects visit www.pmil.caes.uga.edu for more information, publications, and reports.

Moyo et al., (2007), Peanut Research and Poverty Reduction: Impacts of variety Improvement to Control Peanut Viruses in Uganda. Amer. J. Agr. Econ. 89:448-460. Okello et al. (2013). Groundnut Production Guide for Uganda: Recommended Practices for Farmers. Entebbe: National Agricultural Research Organization. ISBN: 978-9970-401-06-2. http://oar.icrisat.org/7385/1/GroundnutProuction_1-42_2013.pdf. Puppala, N. and Tallury, S.P. (2013). Registration of 'NuMex 01' High Oleic Valencia Peanut. J. Plant Reg. 8:127-130.

This poster was made possible through support provided by the Office of Agriculture, Research and Policy, Bureau of Food Security U.S. Agency for International Development, under the terms of Award No. AID-ECG-A-00-07-0001. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

USAID FROM THE AMERICAN PEOPLE — UNITED STATES AGENCY INTERNATIONAL DEVELOPMENT

IMPACT

Research has documented the significance of the breeding programs (Moyo et al., 2007; Kassie et al., 2011). A more recent study has verified the lasting impact in adapting and adopting improve varieties in Uganda (Jelliffe et al., 2015). This study used unique data to validate impact and spillover many years after the initial program was concluded. In addition, as advanced varieties have become available, they have been disseminated to PMIL target countries collaborators and PMIL value chain projects for evaluation as well as other developing countries such as, Burundi, Ethiopia, Mali, Southern Sudan, Democratic Republic of the Congo, Ivory Coast and Kenya.

New Improved Varieties of Groundnut to be Released in 2017 and 2018

Variety	Botanical	Maturity (days)	Yield (kg/ha)	Positive attributes	Country
DOK 1T	Spanish - tan	75-85	2500-3000	Drought tolerant, groundnut rosette disease (GRD) resistance, high yielding, easy to shell, ease of harvest and oblong tan seed. Target - drought prone regions.	Uganda
DOK 1R	Spanish - red	75-85	2500-3000	Drought tolerant, GRD –resistance, high yielding, easy to shell, ease of harvest and oblong red seed. Target - drought prone agro-ecologies.	Uganda
SGV 10010-ER	Virginia - red	100-110	2500-3700	Drought tolerant (stay green), GRD and late leaf spot (LLS) resistance, high yielding, erect, easy to shell, ease of harvest, round red seeds.	Uganda
SGV 990400	Virginia - red	100-110	2500-3700	Drought tolerant (stay green), GRD and LLS resistance, high yielding, erect, easy to shell, ease of harvest, round red seeds. Sweet-confectionary type	Uganda
ICGV SM 01711	Virginia - tan	120-130	2500-2800	GRD resistance, high yielding, large seed, easy to shell, stable across environments	Zambia
ICGV SM 01514	Spanish - tan	100-110	1500-1800	First early maturing variety with GRD resistance, 15% yield increase over old Spanish varieties.	Zambia
Nagouri 1	Spanish - tan	105	1540	Early leaf spot (ELS) and LLS resistance, erect growth, high yields.	Burkino Faso
Nagouri 2	Runner - tan	120	2000	ELS and LLS resistance, spreading growth, high yields.	Burkino Faso
TAARU	Spanish	90	2500	Fresh seed dormancy	Senegal
GAF 1723	Runner - tan	120	3700	ELS and LLS resistance, high haulm and kernel yield, high oleic profile	Ghana
GAF 1665	Runner - tan	105	2400	ELS and LLS resistance, high yielding	Ghana
ICGV-IS 08837			2600-2800	Resistance to rust, high yielding, moderate resistance to ELS and LLS, large seeds, high haulm yield.	Ghana
TamVal OL14	Valencia - red	135-140	4388	High yielding, high oleic profile, partial resistance to Sclerotinia blight.	USA
NuMex-02 (308-R)	Valencia – red	125-130	4205	High yielding, high oleic profile, partial resistance to Sclerotinia blight.	USA
NuMex-03 (309-T)	Valencia – tan	130-135	4150	High yielding, normal oleic profile	USA

DOK1R

DOK1T

SGV 990400

TEAM

Philippe Sankara, Burkino Faso; Nicholas Denwar, Ghana; Justus Chintu, Malawi; Patrick Okori, ICRISAT-Malawi; Amade Muitia, Mozambique, David Okello, Uganda; Lutangu Makweti, Zambia; Boris Bravo-Ureta, Mark Burow, Michael Deom, Naveen Puppala, and Barry Tillman, USA.