



Potato Research in Africa to Improve Farmers' Livelihoods: Priorities in Crop Improvement, Seed System, Crop Management, Nutritional Value, Policies and Marketing

Elmar Schulte-Geldermann¹



Published online: 8 June 2018

© European Association for Potato Research 2018

Abstract The harvested area and production of potato in Sub-Saharan Africa has greatly increased over the last decades. However, yields are still low due to various agronomic, institutional and marketing problems. This paper provides an overview of the most urgent research issues to enhance crop improvement, development of locally adapted, effective seed systems, integrated crop technologies and value chains.

Keywords Crop improvement · Potato seed system · Productivity · Sub-Saharan Africa

Introduction

Although potato is often neglected or overlooked for agricultural development and food security in Sub-Saharan Africa (SSA), it is here where some of the largest increases worldwide in harvested areas and production have occurred over the last 20 years. Despite the generally low national consumption rates for many African nations (approximately 5–15 kg per capita per year), the crop is very important in potato-producing regions, with annual consumption often surpassing 100 kg per capita per year and demand increases by about 3% p.a. Yields in SSA range from 6 to 15 t ha⁻¹, far below attainable yields of 25–35 t ha⁻¹. Increasing demand for potato has been met by increased area often by encroachment into forests rather than increasing productivity. The major bottlenecks to higher yields are, among others, limited or no access to quality seed of suitable varieties, poor crop husbandry and poor post-harvest management combined with an ineffective marketing system, limited access of

✉ Elmar Schulte-Geldermann
e.schulte-geldermann@cgiar.org

¹ International Potato Center, Regional Office Sub-Saharan Africa (CIP-SSA), P.O. Box 25171, Nairobi 00603, Kenya

smallholder farmers to inputs and financial services as well as inadequate policy environment.

Priorities for Research and Development

To tackle the low productivity, the International Potato Center (CIP) and its local partner organizations have identified the following seven priority areas for R&D activities.

1. *Business models for accelerated access to high quality seed and genetic gains.* This involves the development of integrated seed health strategies which integrate improved clean seed production and dissemination systems combined with disease management and host plant resistance tailored for respective socio-economic and biophysical conditions. Further, we will test different business models targeting entrepreneurs engaged in seed production depending on their location along the seed value chain. This will accelerate much-needed access to and adoption of improved varieties through an efficient seed system.
2. *Robust, market-demanded candidate varieties.* This involves improvement of potato breeding efficiency and delivery of varieties, targeting population improvement and variety development against major biotic and abiotic stresses with user-preferred table, processing and nutritional qualities (Fe and Zn biofortified). Research includes engagement of farmers, traders and breeding companies in the selection process, conducting genotype-by-environment evaluations to help identify markers for trait selection, and addressing intellectual property issues.
3. *Seed technologies for seed production.* This targets specialized and decentralized seed multipliers by conducting research on and implementation of rapid multiplication technologies for different seed categories alongside equitable business models to stimulate the seed sector, inclusive of cost-benefit analysis.
4. *Integrated crop management technologies.* Focus is on adaptive research for on-farm seed quality management, integrated crop management (ICM) and post-harvest management. Improving and maintaining soil fertility will receive special emphasis. Research on modelling seed degeneration, pest and disease epidemiology and major drivers of yield gaps will provide the scientific basis to improve current ICM technologies and approaches.
5. *Locally adapted protocols for seed quality control.* This entails evidence-based advocacy actions for adapting and implementing protocols for seed quality control, and research on affordable novel disease diagnostic techniques and pests and disease surveillance.
6. *Marketing tools and gender sensitive value chain approaches.* The focus on understanding current and shifting user preferences and demands along potato value chains to address changing food habits and activities to increase the use of seed and ware potato through identifying, adapting, implementing and documenting effective methodologies to raise awareness of the value of potato, quality seed and improved varieties.
7. *Evidence-based strategies to scale out seed systems.* This involves testing and implementing methodologies to generate innovations at large scale through

effective linkages among value chain actors, paying special attention to private investments. This entails identifying, documenting and promoting replicable and scalable methodologies to reach new areas and users.

Research should take into account the general challenges of technology uptake by smallholder farmers.

Acknowledgements This work is supported by the CGIAR Research Program on Roots, Tubers and Bananas, USAID, IRISH AID and BMZ/GIZ.

Reproduced with permission of copyright owner.
Further reproduction prohibited without permission.