



Lessons from Rapid Innovation Uptake Programs

Southern Africa and the Great Lakes Region 2022-2025



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CONTEXT

In response to food and fertilizer price spikes in 2022 linked to the COVID-19 pandemic and exacerbated by Russia's invasion of Ukraine, the U.S. Government (USG) deployed \$70 million in emergency funding to jump-start the productivity and resilience of the agricultural sector, with the dual goals of improving food availability and affordability in areas facing high rates of hunger and malnutrition. The urgency of this investment only grew as El Niño-driven drought and heat swept through the 2023 and 2024 growing seasons.

The investment focused on two key agricultural zones: (1) mixed maize-based production zones in Malawi, Tanzania, and Zambia in Southern Africa; and (2) highland cropping and livestock production areas in the Great Lakes region of Burundi, Rwanda, and eastern DRC. The goal was to rapidly expand the uptake of existing innovations — such as improved and drought-tolerant seeds and agronomic practices — that would increase crop yields, production, and profitability in ways that benefited low-income producers. The program was executed in a unprecedented way, modeled in part after the Government of Mexico's MasAgro investment.

In each zone, the investment was built upon many years of research aimed at integrating component technologies and improved natural resource management (e.g. soil fertility, water) to enable market-led and sustainable gains in productivity that increased incomes, reduced malnutrition and promoted diversification of mixed crop-livestock systems. In the mixed-maize based systems, the Australian-funded Sustainable Intensification of Maize-Legume Cropping Systems and USAID-supported Africa RISING (Research in Sustainable Intensification for the Next Generation) and related efforts had demonstrated over time suites of technologies and interventions (e.g. crop rotations, small-scale irrigation) with proven attractiveness to farmers. Similarly, in the Great Lakes highland region, the Belgian-funded Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA) invested in root, tuber, banana and legume-based systems aimed at increasing productivity and reducing poverty and malnutrition in those highly diverse farming systems.

A NEW WAY OF DOING BUSINESS

Typically, USAID would issue bilateral Requests for Proposals (RFPs) on specific issues and then contract with different implementers for individual projects driven by different objectives and approaches — a process measured in months or years. Given the challenges of expiring funds, an unfolding crisis, and the expectation of rapid results from Congress and the Executive Branch, a faster and more nimble pathway was needed. Program design directly linked research and innovation partners (e.g., agricultural research centers, seed companies, and university-led R&D efforts) with last-mile partners (local agribusiness, cooperatives, One Acre Fund, and many other organizations reaching millions of farm households) that could offer the most suitable innovations to meet local needs in time for the next planting season.

To implement this novel approach, USAID selected an international organization with the capacity and experience to lead a de facto consortium in each region. U.S. procurement regulations allowed for direct awards, without competition, to international organizations meeting specific standards, and also permitted grants rather than contracts — a more flexible vehicle that allows the U.S. program manager and implementer to collaboratively develop and adjust interventions in real time, enabling a genuinely adaptive management approach.

The U.S. selected CGIAR centers to lead in each region: CIMMYT in Southern Africa and IITA in the Great Lakes. While these centers were the leads, they relied on local organizations, government departments, and other implementers with the deepest community ties to do the bulk of the work, especially for last-mile delivery. Implementers accelerated, deepened, and expanded existing activities rather than creating new ones, maximizing reach through established networks. To maximize collective impact, CIMMYT and IITA convened agricultural organizations with extensive links to farmers and a strong understanding of local contexts — including NGOs, national programs, agribusinesses, and other innovation providers (other CGIAR centers, Innovation Labs, NARS, etc.) — and jointly mapped their networks and capabilities to achieve a coordinated, integrated, and maximally scaled approach.

Local partners included small and medium-scale enterprises (such as input and output dealers), farm service providers, farmer cooperatives and other producer groups, seed companies, international and local NGOs, and public sector research and extension partners. Working closely with community stakeholders, these local partners identified the most promising and in-demand innovations and ensured they reached farmers capable of using them.

By involving the private sector, the program ensured offerings were demand-driven and sustained over time. New varieties of publicly available drought-resilient seeds were made available to local seed suppliers, along with small, one-time catalytic grants for capital expenses to expand seed multiplication capabilities. Partners simultaneously raised public awareness about seed availability and complementary agronomic practices to maximize resilience — enabling private seed suppliers to expand their inventory and meet existing farmer demand at market rates.

Recognizing the central importance of local seed systems in reaching scale, and as part of a commitment to market-led approaches, the Seed Systems Group (SSG) was a critical partner, especially in areas where private sector seed investment was weak or lacking. Similarly, access to improved bean and other legume seed was strengthened by a CIAT/PABRA collaboration with seed companies of all sizes in ways that removed obstacles to multiplication of foundation seed.

Over a three-year period, the program increased access to improved, drought-resilient seed for millions of smallholder farmers in time for planting during the El Niño year. It also delivered extensive educational and outreach campaigns covering locally tailored agronomic practices, including those responsive to real-time weather patterns. Almost six million people participated — reached by extension information and using improved seed and practices. Local markets were also strengthened, with market actors incorporating new products and services into their business models and continuing to provide them to farmers beyond the life of the project (2022–2025).

Spotlight: Building Sustainable Seed Systems — The Seed Systems Group

In regions where seed markets had long remained underdeveloped, the Seed Systems Group (SSG) worked to establish sustainable, demand-driven seed supply chains from the ground up. Within the innovation accelerators, SSG supported nine local private seed companies across Burundi and eastern and southern DRC, providing intensive training in seed production, processing, quality control, and marketing. The results were significant: 600 tons of improved maize and bean seed — enough to plant roughly 30,000 hectares — and branded 100-gram sample packs distributed to more than half a million farmers. This sample-pack strategy addressed a critical barrier in weak seed markets: by allowing farmers to test improved varieties on a limited area before committing to larger purchases, it lowered perceived risk and helped seed companies convert first-time trials into repeat sales. Notably, private seed companies that both produced and sold their own hybrid maize seed had not previously existed in Burundi or DRC, and six of the nine SSG-supported firms began producing hybrid maize seed on their own land — a meaningful institutional shift that also spurred policy reforms by the Burundian Government and attracted new investment attention in DRC.

RESULTS

The project came close to its ambitious target of 6 million farmers, ultimately engaging nearly 6 million people across Southern Africa and the Great Lakes region in the dissemination and adoption of improved technologies and practices. Through a combination of farmer field days, demonstration plots, and free seed packs, the program achieved substantial reach across both regions. In Southern Africa alone, over 4.3 million individuals participated in USG food security programs over the life of the project, with more than 3.1 million applying improved management practices or technologies — covering nearly 920,000 hectares of farmland. See the annex for additional regional results.

Table 1: High-level Reach and Adoption Indicators

Outcome	Year 1 Oct 22–Sept 23	Year 2 Oct 23–Sep 24	Year 3 Oct 24–Sept 25	LOP
Individuals participating in USG food security programs				
Southern Africa	1,427,691	3,856,519	1,154,565	4,372,970
Great Lakes	529,227	774,965	285,523	1,589,715

Outcome	Year 1 Oct 22–Sept 23	Year 2 Oct 23–Sep 24	Year 3 Oct 24–Sept 25	LOP
Individuals who have applied improved management practices or technologies with USG assistance				
Southern Africa	9,312*	2,860,216	1,365,290	3,135,136
Great Lakes	452,747	565,820	n/a**	1,018,567
Hectares under improved management practices or technologies				
Southern Africa	4,029*	857,120	297,145	917,355
Great Lakes	2,902	20,465	n/a**	23,367

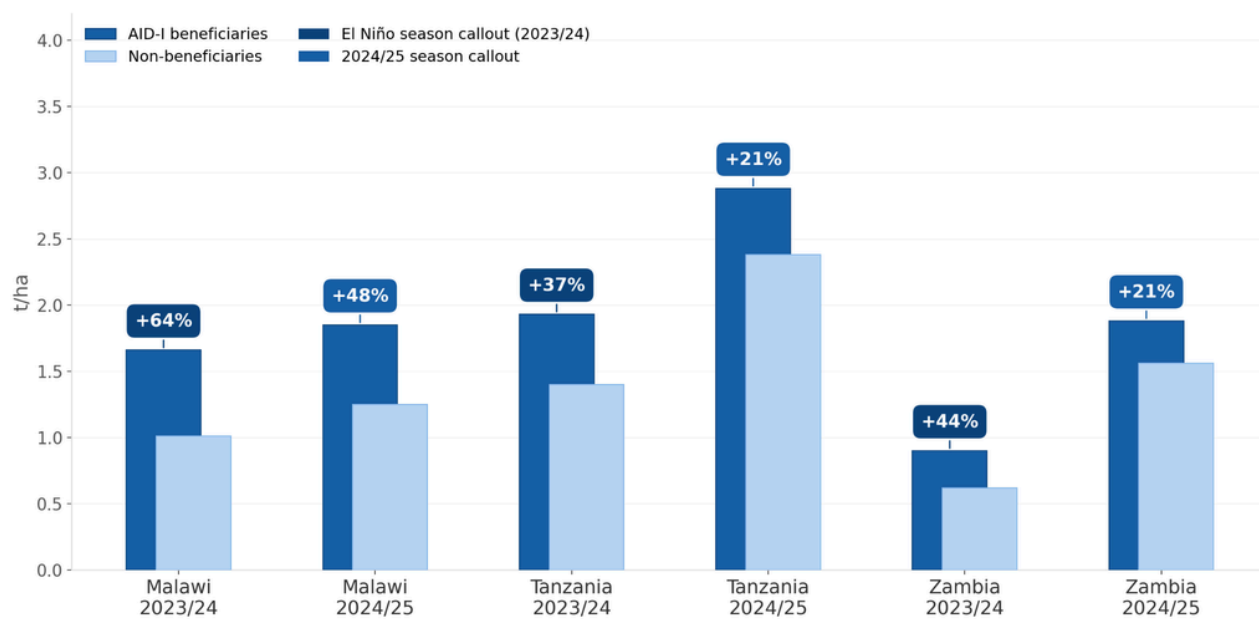
Table Notes: Year 3 was not a complete implementation year. For Southern Africa LOP, an 80% participant overlap was assumed across years.

*Year 1 Southern Africa: sub-grant signing commenced in May and concluded in June, leaving insufficient time for participants to complete the full crop cultivation learning cycle.

**This indicator is measured through an outcome survey. However, no outcome survey was conducted during the reporting period of October 2024 to September 2025. The survey is instead planned for the end of 2026, at which point the indicator will be assessed and reported.

Even more notable were the yield gains among participating farmers. As seen in Figure 1, across Malawi, Tanzania, and Zambia, beneficiaries consistently outperformed non-participating farmers — and the gap was largest during the 2023/24 El Niño season, when drought and heat placed crops under severe stress. In Malawi, beneficiaries achieved maize yields 64% higher than non-participants that season; in Zambia the advantage was 44%, and in Tanzania 37%. Even in the more favorable 2024/25 season, beneficiaries maintained a yield edge of 21–48% across all three countries, suggesting that gains reflect lasting changes in practice rather than favorable weather alone.

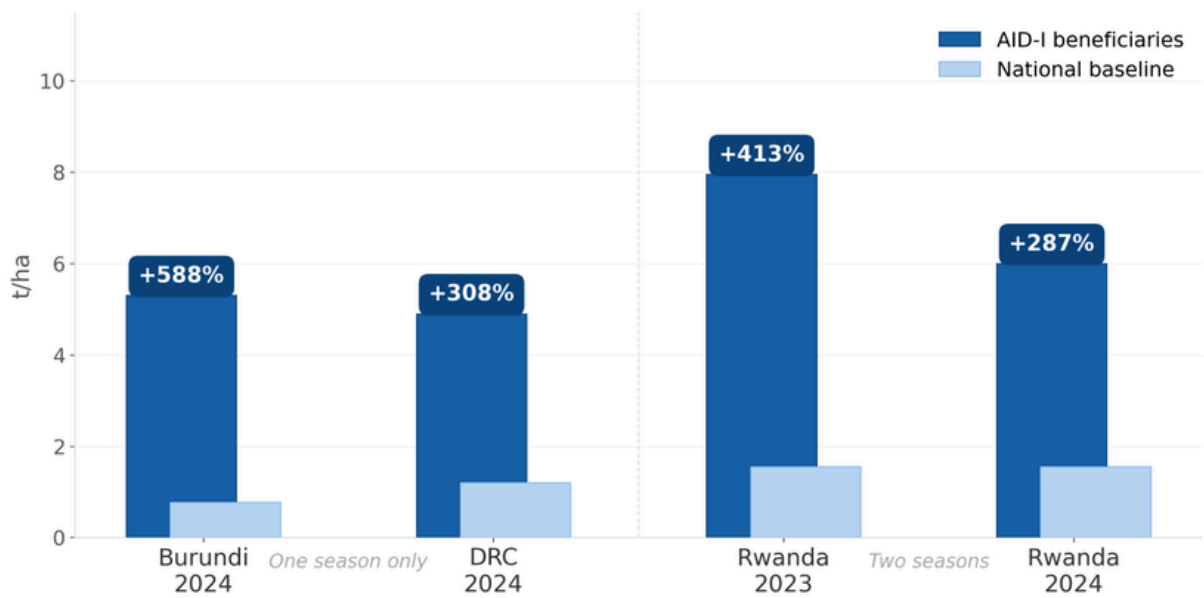
Figure 1: Southern African Maize Yields (Beneficiaries vs. Non-Beneficiaries)



Note: Non-beneficiaries identified via referral from beneficiary farmers in the same communities.

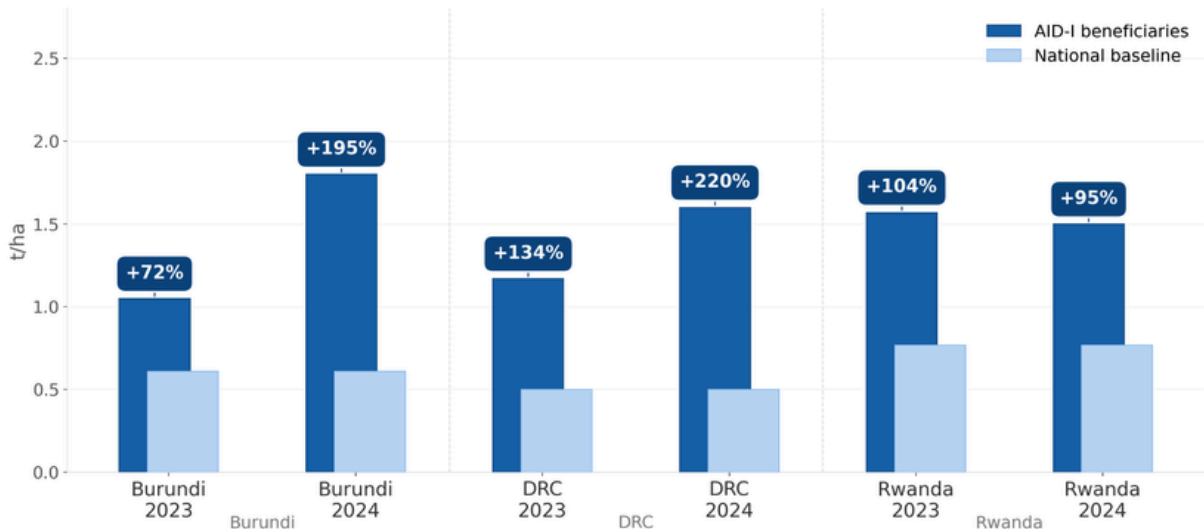
In the Great Lakes region, beneficiaries achieved maize yields far exceeding national averages across Burundi, DRC, and Rwanda. As seen in Figure 2, gains ranged from roughly 3x above baseline in Burundi and DRC to over 4x in Rwanda, where two years of data show consistent performance. These results reflect both low national baselines and the transformative potential of improved seed and agronomic practices when delivered effectively to smallholder farmers. As seen in Figure 3, bean yields among beneficiaries were consistently above national baselines across all three countries and both seasons — gains that carry significant nutritional as well as economic weight, given the central role of beans in household diets and income.

Figure 2: Great Lakes Maize Yields (Beneficiaries vs. National Average)



Note: No 2023 actuals available for Burundi or DRC maize. Compared against national yield baselines.

Figure 3: Great Lakes Bean Yields (Beneficiaries vs. National Average)



Note: Compared against national yield baselines.

KEY OPERATIONAL LESSONS

In the Great Lakes region, beneficiaries achieved maize yields far exceeding national averages across Burundi, DRC, and Rwanda. As seen in Figure 2, gains ranged from roughly 3x above baseline in Burundi and DRC to over 4x in Rwanda, where two years of data show consistent performance. These results reflect both low national baselines and the transformative potential of improved seed and agronomic practices when delivered effectively to smallholder farmers. As seen in Figure 3, bean yields among beneficiaries were consistently above national baselines across all three countries and both seasons — gains that carry significant nutritional as well as economic weight, given the central role of beans in household diets and income.

1. Focus on geographies with both high need and high scaling potential

Target geographies should combine severe food insecurity with clear opportunities to achieve large-scale impact. Two of Africa's most important food production systems were central to this response: mixed maize-based systems in southern Africa covering Zambia, Malawi, and Tanzania, and diversified high-elevation farming systems in the Great Lakes region spanning Rwanda, Burundi, and South Kivu in the DRC. These systems are home to millions of smallholder families experiencing high levels of extreme poverty and child stunting.

2. Build on a strong research foundation

Rapid uptake was most feasible where prior research had already generated both component technologies and integrated production system approaches combining technologies, soil and water management practices, and market access — and where these matched farmer demand. The U.S. Government, along with other funders, had made significant investments in international agricultural research centers, universities, private sector R&D, and national research organizations, producing field-tested innovations shaped by farmer-led decision making.

3. Work through existing organizations with a strong local presence

The emergency nature of this program left no time to build new organizations or import capacity. Instead, the approach prioritized organizations with established on-the-ground presence, deep relationships with agricultural stakeholders, and strong knowledge of local production and market systems. This was faster, more effective, and significantly less costly than approaches relying on newly procured projects bringing together new partners in unfamiliar geographies.

4. Link research organizations with last-mile implementers, rather than turning researchers into implementers

Research organizations partnered with local groups to co-develop strategies and plans for large-scale adoption, rather than implementing development activities alone. Last-mile partners included local businesses (seed multipliers, input and output dealers), farm service providers, farmer organizations (many led by women), seed companies, philanthropy-linked organizations (e.g., One Acre Fund, Catholic Relief Services, Welthungerhilfe), local NGOs (e.g., Total Land Care, Rikolto), and public sector research and extension services.

5. Ensure lead innovation partners have deep systems and market knowledge and promote integrated packages

Lead partners should combine a strong regional presence with a deep understanding of farming systems, market constraints, and policy contexts. Since no single institution can provide all necessary innovations, a systems approach involving multiple research centers, universities, private firms, and seed system support organizations is essential. CIMMYT and IITA directed their respective regional efforts, while other CGIAR centers, university programs, private-sector companies, and local research organizations contributed vital innovations and capacities.

6. Let farmers, through last-mile partners, select which innovations to scale

Rather than prescribing technologies from the top down, the selection of innovations is best made by farmers and markets. Those who understand farmer demand determine which technologies, practices, and bundled approaches should feature most prominently. This demand-driven approach encourages more responsive, two-way communication between technology developers and the organizations that support uptake.

7. Tailor strategies to the context and leverage the private sector where possible

Countries and farming systems vary greatly in how much public or private actors control information, innovation, and market access. Where private actors can be involved, they are essential for expanding and sustaining impact. Where they are limited, complementary mechanisms — such as village-based advisors, mobile service providers, aggregators, and NGOs — can fill the gaps, benefit producers, and set the stage for greater private investment in agricultural and food systems.

8. Make market-led innovations the centerpiece for near-term success and long-term sustainability

Innovation portfolios should from the outset prioritize options that increase productivity and incomes for farmers and other food-system actors. Farmer willingness to pay for improved seeds and services provides a practical test of both value and sustainability, and should be built into the delivery model. Productivity gains and reduced risks translate into higher incomes, reinvestment in production systems, and stronger market linkages.

9. Use diversification to strengthen nutrition and livelihoods

Major crops often dominate smallholder farms, but innovations that increase yields and reduce risks open the door for higher-value crops — vegetables, legumes, trees, small livestock, fish, and other more profitable products — that make nutritious foods more accessible and affordable. For example, as Zambian smallholder maize yields increased, farmers allocated more land to cowpeas, groundnuts, vegetables, and trees. This diversification proved especially important during El Niño-related shocks.

10. Deploy cost-effective communication tools, including digital solutions

Success in sustainable intensification depends heavily on knowledge — timely information on agronomic practices, soil and water management, fertilizer use, pest and disease risks, markets, and weather. Digital tools, including platforms as simple as WhatsApp groups disseminating video animations on good agricultural practices, are increasingly effective even in remote areas. Mobile tools dramatically lower the cost and time required to share critical information with large numbers of farmers.

11. Develop a strong monitoring, evaluation, and learning (MEL) framework

The project developed a strong, aligned MEL framework from the outset, with a clear theory of change linking activities (seed distribution, demos, extension) to outcomes (adoption, yields, incomes). A few high-level indicators were shared across both leads to enable program-wide aggregation. Significant focus was placed on building partner MEL capacity and ensuring rigor in data collection. The project utilized methods that significantly shortened the time from data collection to availability, enabling near real-time visualization and adaptive management. Careful documentation of results — including adoption rates, yield and income gains, and market effects — increases transparency and helps attract future investment.

END NOTE

The extraordinary speed, impact, and resulting sustainability of these market-led innovation partnerships reflects the sense of urgency shared by all participants, generating both seriousness and transparency that led to rapid achievement of impact at scale. In light of persistently high rates of child stunting and accompanying extreme poverty, that sense of urgency remains fully justified today. Fully 22% of children globally — nearly one in four — are stunted, with inadequate diet constituting a major driver. Agricultural productivity gains achieved at scale, hastened by cost-effective, market-led approaches and informed by digital tools, are essential to turning the tide — towards a future in which households, communities, and countries are well-nourished, food secure, and increasingly self-reliant.

Acknowledgements

The efforts, outcomes and impacts described in this paper would not have been possible without the leadership and efforts of CIMMYT, IITA, SSG, and other international agricultural research centers and development partners. In addition, support and encouragement from USAID Missions and American Embassies were critical in convening local organizations of all kinds, and helping broker and support partnerships that were truly demand-driven and locally led. Finally, “last-mile” organizations—private sector seed companies and agro-input dealers, cooperatives, local and national researchers and extension partners, NGOs and most especially farmers themselves—were the ultimate guarantors of gains, both those achieved and continuing.