

SCALING-UP PULSE INNOVATIONS FOR FOOD AND NUTRITION SECURITY IN SOUTHERN ETHIOPIA

TEASER HIGH-YIELDING SEEDS, PRACTICAL FARMING AND PROVEN BUSINESS PRACTICES IMPROVE THE HEALTH OF MOTHERS AND CHILDREN

WHAT CANADIAN KENYAN COLLABORATORS DISCOVERED:

- ✓ A proven approach for scaling up the production of high-yielding, soil-building pulse crops, as well as agronomic practices (e.g., row planting) in ecologically diverse regions
- ✓ Increased farmer incomes from producing two crops (cereals and chickpeas) on the same land in one growing season
- ✓ Improved dietary diversity and fewer people with macro and micronutrient deficient diets
- ✓ Participatory radio programs that educated farmers on the benefits of improved seeds and growing practices, and the nutritional benefits of pulses
- ✓ Regional Pulse Innovation Platforms to ensure better coordination between various stakeholders and programs across Ethiopia

BY THE NUMBERS

- 51,068 farmers (42% women) directly benefited from growing improved pulse varieties
- Farmers earned CAD\$849/ha and CAD\$277/ha by producing improved varieties of chickpea and haricot bean respectively, which also mitigated risk if the cereal crop failed
- 35,000 consumers in 15 districts introduced to ready-to-eat, pulse-rich complementary food products by women micro-franchise groups
- Yields increased from 2.0 to 2.5 t/ha for chickpeas and from 1.2 to 1.5 t/ha for haricot (common) beans
- 23,059 female farm households in 52 villages benefited from nutrition education, cooking demonstrations, and skill training programs
- 3,324 farmers organized into 665 seed-producing clusters with links to Ethiopia's largest field crop seed producer and supplier (South Seed Enterprise)
- 9 new primary seed production cooperatives established (3 women-only)
- 246,526 households reached via radio on the benefits of producing and consuming pulse crops

THE IMPACT:

A unique partnership between male and female farmers, processors, consumers, universities and government has developed proven approaches for transforming subsistence agriculture into a dynamic and market-oriented enterprise. Tens of thousands of farmers now have access to high-yielding seeds and know-how—applicable to their specific growing region—to sustainably produce pulses rich in protein, zinc, iron, and other nutrients for those most in need of



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enhanced nutrition: mothers, infants and young children. Farmers increased their incomes by planting pulses on land that often was left idle after the cereal harvest. A type of rhizobium bacteria was isolated that helps pulses fix nitrogen from the air to improve the extremely degraded Ethiopian soil, which also increases yields of cereals—the main staple crop of farmers. Recipe demonstrations and nutritional education produced nutritious dishes that people want to eat.

THE CHALLENGE:

Ethiopia has made significant progress in combatting child malnutrition, but undernutrition remains a challenge in many rural regions. Livelihoods and diets in Ethiopia's southern highlands are heavily dependent on cereals and root crops which contain minimal protein and deplete the soil of nitrogen. The CIFSRF Phase 1 project generated a portfolio of successful innovations and technologies—including improved pulse varieties, and better processing techniques and farming practices—to increase yields in regions with huge untapped potential. The next challenge was to identify proven approaches to increase farmer adoption of these practices, and to encourage families, particularly mothers, to include pulses in food preparation for infants and young children

TRANSLATING RESEARCH INTO ACTION

Scaling up proven approaches

"Initially, we pretended to accept the new technology only to please you but witnessed its benefits. Now we have obtained four times chickpea yield increment (from 0.75 to 3 t ha⁻¹) by using a high yielding variety of chickpea together with improved practices that you provided us."

Awol Masoro, Farmer, Silti District

- Sustainable seed production models were field tested using 1 of 2 distribution models:
 - Providing 25 kg of seed that required 4-5 farmers to cluster part of their land to increase efficiencies (e.g. pest control, fertilizer application) and knowledge sharing (the Farmer Field-Based Cluster approach). This model has been adopted by some district agricultural offices (e.g., Sodo and Silti), as well as Farm Africa for farmers in Halaba area.
 - Providing 2 kg packs of seeds to farmers, particularly women, with access to smaller pieces of land. Yields produced enough seeds for household consumption, the next growing season, additional income, and for sharing 2 kg of seed from their harvest with another farmer (the "Model Follower" approach). This informal approach is now widely recognized as the most sustainable and affordable mechanism for seed management.
- Farmer's field days, trainings and radio broadcasts were effective at reaching farmers with messages about improved seeds, best practices and the health benefits of pulses.
- Subject Matter Specialists and Development Agents from the 15 districts received training on improved agronomic practices (e.g., sowing times, fertilization).
- Women farmers were empowered through training in agronomic practices, marketing, finance and establishing cooperatives to sell nutritious pulse foods and seeds.
- Rhizobial varieties and fertilizer application contributed to higher yields and improved soil fertility in the region.
- Policymakers now recommend the double cropping model, whereby farmers produce two crops (cereals and pulses) from the same piece of land.
- Establishment of Regional Pulse Innovation Platforms which bring together various players in the pulse value chain (e.g., public research institutions, universities, traders, processors and the private sector) to jointly solve

problems that hinder the scaling up of pulse innovations. The regional platforms are linked to the National Chickpea and Common Bean Platforms.

Encouraging the consumption of pulses in family diets

Farmer Alemitu Biramo credits Farm Radio International programs for teaching her about the importance of beans in family nutrition. She used to make only boiled beans, but now prefers to prepare dishes of beans mixed with maize and enset (“Ethiopian banana”). Since eating beans in this way, she said her children, who were occasionally sick, are now in better health.

- Pulse-nutrition education interventions improved the dietary diversity of children and lactating mothers.
- Recipe demonstrations, complementary food preparation training, improved children feeding practices, and nutrition education increased pulse consumption, especially among children and lactating mothers.
- The women micro-franchise model increased employment for women and their participation in production and marketing, improved household nutrition, and popularized pulse products. Support from the Government of Ethiopia was valuable.
- A partnership with Guts Agro Industry PLC, a certified food processing company in Ethiopia, developed cereal-pulse blend food products—snacks, precooked flours, porridges—which were incorporated into recipes and sold by 5 women groups under micro-franchising agreements.
- More than 3,810 educational materials (manuals, quick guides and posters) on dietary diversity and household pulse processing techniques were disseminated to caregivers, households and communities.

WHAT’S NEXT?

There is a need for additional resources, including partnerships, to meet the growing demand from farmers for high-yielding seeds and other agronomic techniques, such as insect control. There has been particular interest in the Hawassa Dume variety of seed which proved highly resilient during the 2016 heavy rainfalls and flooding, produced higher yields, and is preferred by consumers. Future projects will seek opportunities to employ more adolescent girls in food processing, promote women entrepreneurship, and foster an enabling environment for more women enterprises to prosper. IDRC and its partners also worked with a high-level group of public and private sector experts to develop an internationally coordinated pulse crop productivity and sustainability research strategy for the next 10 years.

LEARN MORE ABOUT THIS PROJECT:

Project abstract: <https://www.idrc.ca/en/project/scaling-pulse-innovations-food-and-nutrition-security-southern-ethiopia-cifsr-phase-2>

Project website: <http://www.theplusesofpulses.com/>

KEY OUTPUTS

POLICY BRIEF

Pulses for food and nutrition security in southern Ethiopia: a snapshot of stories of change. University of Saskatchewan, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) 01/02/2017 Tilahun Amede
<http://www.theplusesofpulses.com/wp-content/uploads/2017/05/Brief-No.-6.pdf>

ACADEMIC PAPERS

Strengthening Nutrition-sensitive Agriculture Through Bio-Fortification: Introducing A Comprehensive Framework Based on Findings from a Canadian/Ethiopian Project. Carol J. Henry, Patience Elabor-Idemudia, Sheleme Beyene, Susan J. Whiting, Nigatu Regassa. Journal of Nursing, Social Studies, Public Health and Rehabilitation (2016) <http://casopis-zsfju.zsf.jcu.cz/journal-of-nursing-social-studies-public-health-and-rehabilitation/clanky/1-2~2016/126-strengthening-nutrition-sensitive-agriculture-through-bio-fortification-introducing-a-comprehensive-framework-based-on-findings-from-a-canadian-ethiopian-project>

The Challenges of Empowering Women: The Experience of Pulse Innovation Project in Southern Ethiopia. Esayas Bekele Geleta, Paitence Elabor-Idemudia, Carol Henry, and Nigatu Reggassa. Sage Open (2017) <https://idl-bnc-idrc.dspacedirect.org/handle/10625/56718>

Scaling-up: Gender integration and women's empowerment in Southern Ethiopia. Esayas Bekele Geleta, Patience Elabor-Idemudia, Carol Henry & Fatih Yildiz (2017) Cogent Food & Agriculture, 3:1, DOI: 10.1080/23311932.2017.1415100

Performance variation among improved common bean (Phaseolus vulgaris L.) genotypes under sole and intercropping with maize (Zea mays L.). Rediet Abera, Walelign Worku and Sheleme Beyen African Journal of Agricultural Research (2017) <https://academicjournals.org/journal/AJAR/article-full-text-pdf/8D0217762677>

A Peer-Led Pulse-based Nutrition Education Intervention Improved School Age Children's Knowledge, Attitude and Practices (KAP) and Nutritional Status in Southern Ethiopia. Felegush Dargie, Carol Henry, Hailu Hailemariam, Nigatu Geda. Journal of Food Research (2018) <https://doi.org/10.5539/jfr.v7n3p38>

OTHER

Country report: scaling up pulse innovations for food and nutrition security in Southern Ethiopia Löwe, Alexandra; Teshome, Amdissa (2018-07) <https://idl-bnc-idrc.dspacedirect.org/handle/10625/57264>

Canadian Geographic. *Charting Change: Pulse power* (Jan 2018).

Pulses for food and nutrition security in Southern Ethiopia: A snap shot of stories of change.
<http://www.theplusesofpulses.com/wp-content/uploads/2017/05/Brief-No.-5.pdf>

Key lessons – Project brief: Examining the Scaling-up Approaches: Lessons from SPIFoNS Project.
<http://www.theplusesofpulses.com/wp-content/uploads/2017/01/Appendix-III-Brief-No-1.pdf>

Powered by pulses. Article from 2015 Young Innovators series. <https://news.usask.ca/articles/research/2016/powered-by-pulses.php>

VIDEO:

Presentation about Pulse innovations to improve livelihoods of millions in Southern Ethiopia by Sheleme Beyene.
<https://www.youtube.com/watch?v=OzcgnBkSZBw>

View all related project outputs in the IDRC Digital Library <https://idl-bnc-idrc.dspacedirect.org/browse?type=project&value=107984>

QUICK FACTS

Project location(s): Ethiopia

Institutions: University of Saskatchewan (Canada); Hawassa University (Ethiopia)

Project website: <http://www.theplusesofpulses.com/>

Project duration: March 18, 2015— March 18, 2018

Project budget: CA\$ 3,845,000

Project number: 107984

THE CANADIAN INTERNATIONAL FOOD SECURITY RESEARCH FUND IS JOINTLY FUNDED BY GLOBAL AFFAIRS CANADA AND THE INTERNATIONAL DEVELOPMENT RESEARCH CENTRE.