

Evidences

Study #2735

Contributing Projects:

- P699 - 3.2.3 Linking Smallholders to Dynamic Markets

Part I: Public communications

Type: OICR: Outcome Impact Case Report

Status: Extended

Year: 2020

Title: Direct Seed Marketing boosts seed availability and improves crop yields and commercialization in Ethiopia (26% increase in maize yield)

Short outcome/impact statement:

Ethiopia's Direct Seed Marketing (DSM) innovation, scaled up to 290 woredas and 1.5 million smallholder farmers in 2019, improved seed availability for maize, wheat, and teff and led to significantly positive effects on maize productivity (26% increase in yield) and commercialization (5% increase in the share of harvest sold). PIM research had informed the scaling of DSM and a PIM team conducted an ex-post impact assessment of DSM in 2020.

Outcome story for communications use:

Several factors contribute to the low level of improved seed use in Ethiopia. Among those is the limited availability of improved seed. In 2011, to rationalize the use of public resources, the Government of Ethiopia in collaboration with development partners introduced the Direct Seed Marketing (DSM) approach – a novel approach to the distribution of high-quality seed in which private and public seed enterprises working with crop breeders multiply and distribute improved varieties directly to farmers, in contrast to the conventional seed marketing system managed by the government.

Past PIM studies [1][2][3] have highlighted the important benefits of DSM in terms of improving high-quality seed availability, increasing farmer's satisfaction and reducing public expenditures. These studies have informed the decision of Ethiopia's Agricultural Transformation Agency (ATA) to scale up the program, from 7 woredas in 2012 to 100 in 2016, 290 in 2019 and 320 in 2020, now covering 10 crops, reaching close to 2 million smallholder farmers and accounting for 67% of the seed used in Ethiopia's four main agricultural regions (Amhara, Oromia, Southern Nations, Nationalities, and Peoples' (SNNP), and Tigray). Since inception, DSM has grown both in terms of numbers of private seed producers and individual input dealers participating in the program and in terms of crop coverage (from maize only to maize, wheat, teff, barley, beans, sesame, sorghum, and chickpea).

Considering this expansion, a key question was to determine whether DSM had any impact on smallholders' access to seeds, productivity, and commercialization. In 2020, to answer that question, PIM researchers completed a quantitative evaluation of DSM's impact on indicators of a healthy seed system, including access to quality seeds, on-farm productivity, and market participation of smallholder producers [4]. The study finds that DSM has led to improvements in seed availability for all three major cereal crops (maize, wheat and teff). The effects of DSM on productivity and commercialization are mixed across crops: DSM has led to a 26 percent increase in maize yields and 5 percent increase in the share of maize harvest that is marketed, with no significant effects on the productivity and commercialization of wheat and teff.

These differences in DSM performance between crops are likely related to the dominance of maize in DSM and to biological differences between hybrid maize and openly pollinated varieties of wheat and teff which incentivize private sector participation in maize seed markets over those of wheat and teff.

Links to any communications materials relating to this outcome:

- <https://tinyurl.com/yzqlkca>
- <https://tinyurl.com/y6qgp87h>
- <https://tinyurl.com/yearpmmk>

Part II: CGIAR system level reporting

Link to Common Results Reporting Indicator of Policies : Yes

Policies contribution:

- 197 - Scaling up of Direct Seed Marketing Program by Ethiopia's Agricultural Transformation Agency

Stage of maturity of change reported: Stage 3

Links to the Strategic Results Framework:

Sub-IDOs:

- Reduced market barriers
- Increased livelihood opportunities

Is this OICR linked to some SRF 2022/2030 target?: Yes

SRF 2022/2030 targets:

- Increased rate of yield for major food staples from current 1%/year
- # of more farm households have adopted improved varieties, breeds or trees

Description of activity / study: <Not Defined>

Geographic scope:

- National

Country(ies):

- Ethiopia

Comments: <Not Defined>

Key Contributors:

Contributing CRPs/Platforms:

- PIM - Policies, Institutions, and Markets

Contributing Flagships:

- F1: Technological Innovation and Sustainable Intensification
- F3: Inclusive and Efficient Value Chains
- F2: Economywide Factors Affecting Agricultural Growth and Rural Transformation

Contributing Regional programs: <Not Defined>

Contributing external partners:

- ATA - Agricultural Transformation Agency (Ethiopia)
- ISSD - Integrated Seed System Development Programme
- MoANR - Ministry of Agriculture and Natural Resources (Ethiopia)

CGIAR innovation(s) or findings that have resulted in this outcome or impact:

Direct Seed Marketing (DSM) is a novel approach to the distribution of high-quality seed in which private and public seed enterprises working with crop breeders multiply and distribute improved varieties directly to farmers. PIM studies compared DSM to the traditional government-managed system and found that this system leads to positive outcomes [1][2][3]. A 2020 impact evaluation estimated the impacts of DSM on availability, productivity, and marketing of specific crops [4].

Innovations:

- 591 - Involving the private sector to improve the multiplication and marketing of high quality seed: the Direct Seed Marketing program in Ethiopia

Elaboration of Outcome/Impact Statement:

Following the expansion of Direct Seed Marketing (DSM) to 290 woredas and over 1.5 million beneficiaries in 2019, a team of PIM researchers undertook an evaluation to look at the effects of the approach on smallholder's access to seeds, crop productivity, and commercialization [4]. They used data from surveys conducted by Ethiopia's Agricultural Transformation Agency and IFPRI in 2012, 2016 and 2019 and a quasi-experimental difference-in-differences econometric approach that allows for a comparison in performance with respect to selected outcomes between smallholder farmers in DSM and non-DSM woredas.

First, DSM has led to a significant improvement in maize yields, a 26 percent increase in 2019 compared to 2012. Second, DSM has led to a 5 percent increase in the share of maize harvest sold to the market in 2019. The impacts of DSM on wheat and teff yields and shares of harvest sold are not statistically significant. Third, to understand the mechanisms through which DSM affects yields and commercialization, the analysis looked at the impact of DSM on seed availability, quality, and purchases. DSM led to improvements in seed availability for all three crops in 2019. In addition, DSM led to a 27 kg increase in wheat seed purchased per hectare in 2019 compared to 2012 (no effect for maize and teff). These findings show that improved seed availability is the main mechanism through which DSM improves maize yield and commercialization in Ethiopia. It appears that the improvements in teff seed availability and in wheat seed availability and quantity purchased due to DSM are not large enough to result in improved yields and commercialization for these two crops.

These differences in the impacts of DSM between crops are likely related to the dominance of maize in DSM and to biological differences between hybrid maize and openly pollinated varieties (OPVs) of wheat and teff, which incentivize private sector participation in maize seed markets over those of wheat and teff. Maize hybrids require that farmers purchase fresh seed each season to realize productivity gains; this provides profit-maximizing firms a financial incentive to aggressively produce and market them to farmers. OPVs offer limited incentives to the private sector as farmers can reuse improved seeds saved from their own harvest or obtained through farmer-to-farmer exchanges for several years without observable deterioration in yields.

References cited:

- [1] Mekonnen, Leulseged; Minot, Nicholas; Warner, James; and Abate, Gashaw T. 2019. Performance of direct seed marketing pilot program in Ethiopia: Lessons for scaling-up. ESSP Working Paper 132. Washington, DC and Addis Ababa, Ethiopia: International Food Policy Research Institute (IFPRI) and Federal Democratic Republic of Ethiopia Policy Studies Institute.
<https://doi.org/10.2499/p15738coll2.133289>
- [2] Benson, Todd; Spielman, David; Mekonen, Leulseged. 2014. Direct seed marketing program in Ethiopia in 2013: An operational evaluation to guide seed-sector reform. IFPRI Discussion Paper 01350. Washington, DC: International Food Policy Research Institute (IFPRI).
<https://www.ifpri.org/publication/direct-seed-marketing-program-ethiopia-2013-operational-evaluation-guide-seed-sector>
- [3] Mekonen, Leulseged; Minot, Nicholas; Warner, James; Abate, Gashaw. 2013. Performance of Direct Seed Marketing Pilot Project in Ethiopia: Lessons for Scaling up
https://www.researchgate.net/publication/332170895_Performance_of_Direct_Seed_Marketing_Pilot_Project_in_Ethiopia_Lessons_for_Scaling_up/
- [4] Mekonnen, Dawit Kelemework; Abate, Gashaw Tadesse; Yimam, Seid; Benfica, Rui; Spielman, David J.; and Place, Frank. 2021. The impact of Ethiopia's direct seed marketing approach on smallholders' access to seeds, productivity, and commercialization. IFPRI Discussion Paper 1998. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.134247>

Quantification:

Type of quantification: a) Actual counts or estimates from a particular study (please provide reference)

Number: 26.00

Unit: percent maize yield increase (from 2012 to 2019)

Comments: Findings from Impact Assessment Study [4].

Type of quantification: a) Actual counts or estimates from a particular study (please provide reference)

Number: 5.00

Unit: percent increase in share of maize harvested that is marketed (from 2012 to 2019)

Comments: Findings from Impact Assessment Study [4].

Gender, Youth, Capacity Development and Climate Change:

Gender relevance: 0 - Not Targeted

Youth relevance: 0 - Not Targeted

CapDev relevance: 0 - Not Targeted

Climate Change relevance: 0 - Not Targeted

Other cross-cutting dimensions: No

Other cross-cutting dimensions description: <Not Defined>

Outcome Impact Case Report link: [Study #2735](#)

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