

CSISA-MI Newsletter

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Editor's note

As CSISA-MI enters its second year this month, I am pleased to announce that since we began last July, about 3,131 hectares of land have been brought under CSISA-MI supported resource conserving and productivity enhancing agricultural machineries in the Feed the Future (FtF) zone in Southern Bangladesh. Most importantly, the supply of these machineries was delivered by the project's private sector partners in RFL and ACI, through business models that demonstrated that the commercial viability of these machineries. Even more impressively, total of 8,251 farmers in the FtF zone contracted with service providers who supplied these technologies. Last but not least, CSISA-MI has developed a cutting-edge research program to support the assessment and improved targeting of these technologies, considering agronomic, engineering, and environmental science perspectives. Ultimately, our goal is to facilitate sustainable intensification in the FtF zone, through science led, but private sector driven interventions supported by the public sector institutions.

CSISA-MI is still young, however, and we will work to improve the timely communication of progress and activities with staff, partners, and other stakeholders like yourself. This newsletter is a part of that effort. This first issue highlights achievements and activities from the project's 3rd quarter. Most importantly, I wish to thank all the members of CSISA-MI, its partners and stakeholders, scientists, and field staff, for supporting the project in so many ways. We can not succeed without your tireless efforts. My deepest thanks to everyone involved in our work in the field, and in publishing this issue.

Timothy J. Krupnik
Project Leader



It's Not Just the Men

It's no secret that women perform a large portion of agricultural work in Bangladesh. Often unrecognized, however, are the women who manage their own agricultural businesses. Rehana Begum, 30, of Nalchity Upazila in Barisal, is one such entrepreneur. For years, Rehana has managed investments and accounting for her family's farm. Following her recent decision to invest in an Axial Flow Pump (AFP) on 13 February, 2014, she is also managing their business of selling irrigation services to other farmers. Although people inevitably credit Rehana's husband Md. Halim Howlader for the quality of their AFP business, Halim credits his wife. CSISA-MI's business management training, he says, gave her the tools she needed to apply her management skills. Like Rehana, Fatima Begum of Wazirpur Upazila in Barisal has stepped into the traditionally male role of agricultural entrepreneurship. With the help of the AFP, marketed by CSISA-MI's private sector partner RFL, Fatima and her husband have provided irrigation services to 86 households in Barisal during the first quarter of 2014. And these women are not alone; at least 30 women headed households came forward to seek AFP services from the LSPs in their communities.



Axial Flow Pump (AFP) securing market in Barisal

In Barisal, during the quarter of January - March, 2014, a total of 85 Axial Flow Pumps (AFPs) were used by service providers in the field. Out of these, 45 were purchased by Local Service Providers (LSPs) and 40 were handed over as demos. These pumps irrigated around 1,113 total hectares of land during the quarter. Promoted by CSISA-MI, the AFP is a relatively inexpensive surface water irrigation technology that reduces fuel consumption — and thus irrigation costs — by up to 50% at low lifts. It has been commercialized and used for the first time in the country during this dry season.

About the effectiveness of the technology, Md. Mosharraf, an LSP of Wazirpur of Barisal said, "It used to require seven days to irrigate 6 hectares of land by centrifugal pumps; the AFP takes only four days to irrigate the same parcel of land. It saved me fuel and time as well as from the hassle of priming the machine." Syed Md. Asraf, 55, Director of Machinery Stores, one of the AFP dealers in Barisal, shared that the pump actually reduced 40% of his fuel cost. This is only the first year of marketing the machine; he expects demand for the machines to double next season.

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CSISA-MI working areas



US Ambassador visits wildly successful char



The farmers of Tungibaria Union in Barisal Sadar Upazila caught the attention of the US Ambassador to Bangladesh, His Excellency Mr. Dan Mozena, who travelled there for a visit in February. Three years ago, farmer switched from cultivating traditional legumes to growing more wheat, a more stable and lucrative crop. This year, CSISA-MI helped them make the most of this new crop by introducing the Power Tiller Operated Seeder (PTOS) and Axial Flow Pump (AFP). Now, with the new crops and technologies, agriculture is four times more profitable than they were three years ago. In

Laharhat Char, an inner-island of Tungibaria Union, local farmer Kamal Mallik, 45, shared with Mr. Mozena, "We've never seen such machinery... Earlier, lentil production was around 1.5 tons per hectare, but now it seems that wheat production will be around 15 tons from the same parcel of land." During his visit, Mr. Mozena also visited a fair of CSISA-MI promoted agricultural machinery and a block of wheat sown by a Local Service Provider (LSP) who used a PTOS and best agronomic practices. He also observed a demonstration of the PTOS and AFP in action.

Seeder Fertilizer Drill (SFD) securing market in Barisal

The LSPs of Barisal are thrilled with the Seeder Fertilizer Drill (SFD) securing market in Barisal SFD marketed and sold by the agricultural retailer RFL, one of the private sector partners of CSISA-MI. Compared to a traditional power tiller, this two wheel tractor attachment can be used to seed and fertilize in lines while preparing land. With minor modification, it can also be used for conservation agriculture based crop management which lowers production costs, conserves soil moisture, and that can help boost yields. LSPs love the machine because it simultaneously tills, plants, and fertilizes crops in lines and with greater precision. In strip tillage, it results in per hectare savings of around 30% in fuel, 13,000 taka (US \$167.62) in cost, and about 60 hours in labor. Strip tillage is a conservation agriculture system that results in reduced tillage, improved soil moisture, and cost savings for farmers, by tilling only small strips of land into which seed and fertilizer are placed. When practiced in the long term, these methods can improve soil quality.

Since CSISA-MI started in July 2013, 57 LSPs have adopted the seeder-fertilizer drill, which is also known as a PTOS (Power Tiller Operated Seeder) mostly in Rajbari, Faridpur, and Patuakhali districts. These LSPs have cultivated



132 hectares of land for over 205 farmers so far, mostly for wheat, pulses, sunflowers, mung beans, and maize. "One pass with an SFD is enough, whereas at least three passes are required with the traditional power tiller," shared farmer and LSP Rezaul Karim Pannu, 37, of Patuakhali. "We are hopeful to have 300 kilograms more mung bean per hectare this season." According to RFL's dealers, who are marketing the SFD, the machine's prospects in Bangladesh are good. Md. Muzahidul Islam, Proprietor of New Islam Enterprise, an RFL dealer, shared, "Although this is a very new technology in the country, it will have a great effect in our agricultural sector due to its traits of time and cost savings, as well as increase in production."

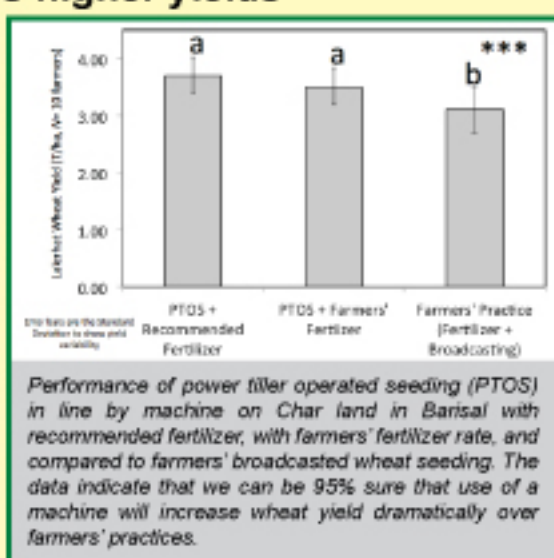
Local Service Providers (LSPs) get more financing options

CSISA-MI has recently signed a Memorandum of Understanding (MoU) with Jagarani Chakra Foundation (JCF), a microfinance institute in Jessore, to provide tailored financial services for the LSPs. The MoU stipulates that JCF will provide up to 100,000 taka (US \$1,288) loans to LSPs for the Reaper machine which is promoted by ACI, one of the private sector partners of CSISA-MI. Loans may be repaid in weekly or monthly instalments at a standard local interest rate. To date, four LSPs have received such loans for the Reaper machines, and another five loan applications are in process.

Demonstrations prove PTOS produces higher yields

Rapid up scaling of an agricultural technology depends on a number of critical factors, most importantly on their comparison to farmers' own current practices. Secondly, new technologies must be compatible with general practices of the farmers, and importantly they must demonstrate observable benefits. CSISA-MI is focusing on sustainable intensification in Barisal's Char lands (semi-permanent islands comprised of alluvium) by encouraging wheat cultivation with precision seeding machinery. To assess the feasibility of this machinery, CSISA-MI worked with 13 farmers who planted large 0.25 hectare blocks of wheat comparing their own practices to machine "Power Tiller Operated Seeding" (PTOS) with their own chosen levels of fertilizer, and PTOS with recommended fertilizer rates.

The results were clear. As farmers harvested and measured yield with CSISA-MI's field scientists, they found that yield of PTOS with recommended fertilizer was highest, but not statistically different than PTOS with their own fertilizer rates. By comparison, farmers' practice of broadcast seeding with their fertilizer rates was statistically lower yielding than use of PTOS. As such, farmers are now planning to expand PTOS cultivation by contracting with the nearby village's local service provider in the next dry season. This is a good example whereby large scale, science backed demonstrations can create real-world impact and foster adoption of precision agricultural machinery.



Applied research for real-world impact

Science-based interventions form the core of CSISA-MI's work. Within the project, CIMMYT scientists are leading on applied research to develop appropriate irrigation and nitrogen regimes for maize grown in the FtF region. Further research uses remote sensing and GIS to identify the appropriate environments and soils on which bed planters can be used, and where AFPs can be employed to bring dry season fallow and poorly productive land into intensified cropping. These efforts are combined with applied econometric analyses to identify the factors that influence LSP's investment in agricultural machinery, and to uncover the predominant structure of irrigation water pricing in southern Bangladesh to develop improved business models to facilitate affordable surface water irrigation. Additional research considers the trade-offs between crop residue use for livestock vs. conservation agriculture, and in partnership with Wageningen University, CSISA-MI is supporting one PhD and one MS student using advanced crop and farming systems design models to propose solutions to these pressing issues.

Some insights

- CSISA-MI, collaborating with public and private sector stakeholders facilitates the promotions and marketing of efficient agricultural technologies, like AFP, SFD, Bed Planter and Reaper.
- CSISA-MI works in partnership with public and private sector stakeholders to facilitate the promotion and marketing of efficient agricultural technologies like AFP, SFD, Bed Planter and Reaper.
- The machineries help boost yields through maximizing the productive use of soil moisture, fertilizer, and seed, while saving farmers' time, labor, and money.
- 2103.74 hectares of land were irrigated with the use of AFP, 637.82 hectares were cultivated by SFD and Bed Planter, and crops of 389.60 hectares were harvested using the Reaper.
- 5,480 people – 4,931 male and 549 female – have received short term food security training. 245 entrepreneurs have received business development services from the project.
- In the public sector, CSISA-MI has partnered with Bangladesh Agricultural Research Institute, Department of Agricultural Extension, Bangladesh Agricultural Development Corporation and Bangladesh Agricultural University and its private sector partners are agricultural machinery importer and trader ACI and RFL.
- To date, the value of private sector investment in agricultural machinery and equipment resulting from CSISA-MI interventions is US \$612,738.11.

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