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POLICY BRIEF

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Supply of Improved Rice Seed in Eastern Uganda: The Gap and Required Investment

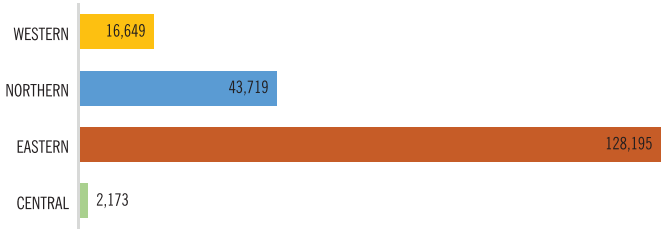
Executive Summary

This brief explains the challenges limiting use of improved rice seed in three Eastern Uganda major rice growing districts. Insufficient supply of improved seed is a core constraint to intensification in rice production. There are only four rice seed producers in the three study districts, which renders rice seed to be the hardest input to access by farmers compared to fertilizer, herbicides, and fungicides. Rice seed inaccessibility is further compounded by producers having contractual obligations with external seed companies. The volume of seed required by farmers exceeds the supply capabilities of the four seed producers, creating a gap in the rice seed supply chain. Furthermore, the seed producers rarely multiply the varieties grown by farmers, but rather those demanded by seed companies outside the region. The estimated seed supply gap is about 90 percent of what farmers would require. Therefore, in order to meet local farmer's requirement for improved rice seed, at least 40 new seed production enterprises should be established and this is estimated to cost slightly over one billion Uganda shillings (US $ 300,000).

Introduction

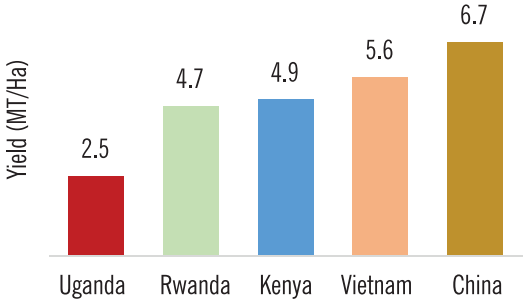
Rice is one of the strategic commodities with potential to remarkably contribute to rural incomes and livelihood enhancement (MAAIF, 2010; 2012). Eastern region is the leading rice producer in Uganda (**Figure 1**), accounting for 48 percent of the total area under rice production, and over 67 percent of rice harvest in the country. Rice yield in Eastern Uganda (3.6 MT/Ha) is above the national average of 2.5 MT/Ha, but compared to other countries within the region and elsewhere, rice yield in Uganda is still remarkably low (**Figure 2**). The relatively low yield is attributed to factors related to the fact that farmers hardly use productivity enhancing technologies (e.g. improved seed, fertiliser and herbicides). This brief is an output from data collected in May 2015, through community and market surveys of actors along the rice value chain in Bugiri, Butaleja and Tororo - the leading rice producing districts in Eastern Uganda. The overarching objective here is to provide insights on what actions or investments are needed to increase the supply of improved rice seed – an input that is hardest to access in the region.

Figure 1: Rice production by region (MT)



Source: Computed from UBOS – UCA (2008/09)

Figure 2: Yield Comparsion across countries



Source: FAO (2014)

Use and accessibility of rice yield-augmenting inputs

It is apparent that the most strenuous input to access is rice seed (Table 1). Farmers have to travel for longer distances in pursuit of rice seed than fertilizer and other inputs. It is more than twice longer to access improved rice seed compared to fertilizer and the rest of inputs. This finding is not surprising, first, due to scarcity of improved rice seed in the study region. Secondly, most agro-input stockists (79%) in the three study districts do not deal in improved rice seed, partly for the reasons that there are only 4 seed producers (with limited capacity) in the three districts (Bugiri, Butaleja and Tororo), and three of the four rice seed producers, are located in one district of Butaleja, and one in Tororo (Figure 3).

Table 1: Accessibility of inputs - distance to suppliers

Input type	Time (in minutes)
Improved rice seed	118
Inorganic fertilizer	47
Organic fertilizer	30
Herbicides	51
Fungicides/insecticides	36

Source: Computed by author based on EPRC's fieldwork data

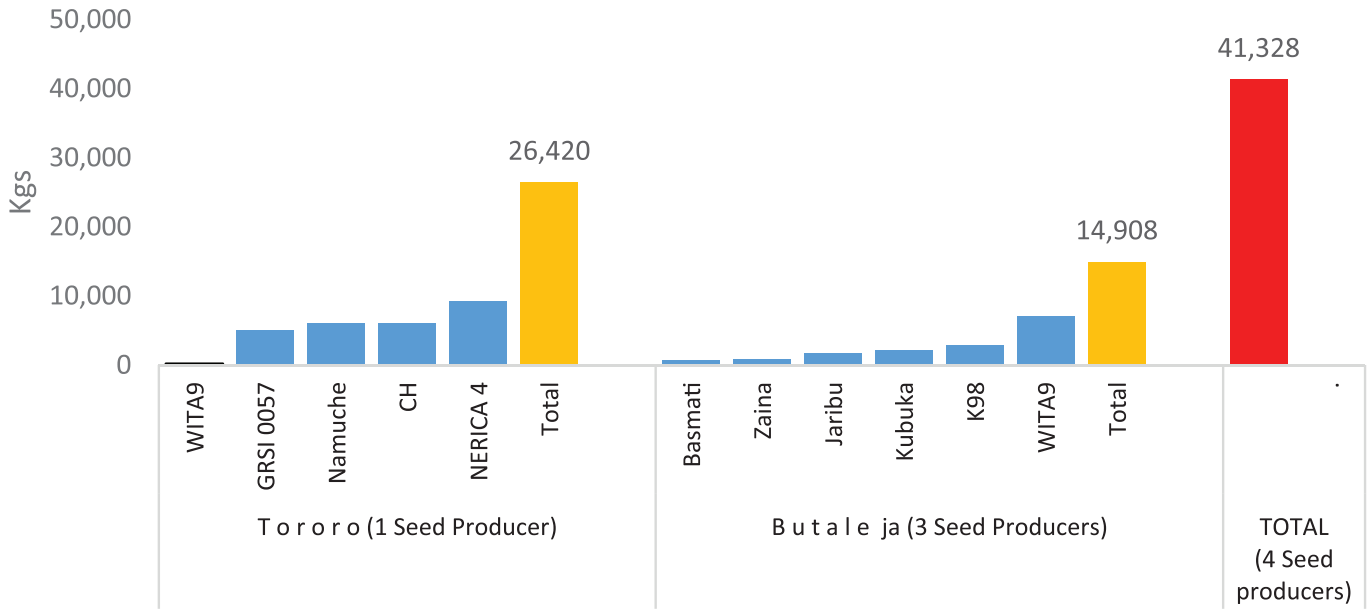
Low use of improved rice seed: Out of the communities interviewed, about half reported that members of their groups do not use improved rice seed in rice production. At individual level, only 22 percent of farmers who participated in community level survey use improved rice seed. Information from PASIC project baseline household socio-economic survey from the three districts reveal that about 81 percent of rice producing households recycle seed, which is plausible indication of use of unimproved seed. Accordingly, majority of responses indicate that farmers are using rice seed that is not improved in nature (local) or of poor quality

Mismatch in Supply of Rice Seed Varieties Multiplied and Farmer's Seed Requirement

The study reveals that the four rice seed producers multiply over ten rice varieties (Figure 3), but the main ones are Nerica, Namuche, CH, CRS10057 and Wita9 (Figures 3 and 4) . It is also evident that none produces *Kaiso*[1] and *Super* - two major varieties grown by farmers (Figure 4B). This implies that there is a mismatch between

1 Kaiso is one of the rice seed varieties as perceived by seed multipliers and farmers. However in technical terms, it may be a conglomeration of improved rice seed varieties

Figure 3: Limited Capacity in Rice Seed Production



the rice varieties commonly multiplied for seed and what is grown by farmers, with the exception of Wita9 (Figures 4A & 4B). Two reasons contribute to this phenomena i.e.: (i) the seed producers are under contractual obligation to produce seed for varieties like *Nerica*, *Namuche*, *CH* and *CRS10057* demanded by the seed companies; and (ii) It also happens that these are the varieties for which the foundation seed is available from sources like; International Fertilizer Development Centre (IFDC); and National Agricultural Research Organization (NARO).

Figure 4: Rice seed varieties multiplied vs those grown by farmers

Figure 4A: Major rice varieties multiplied (% of total seed produced)

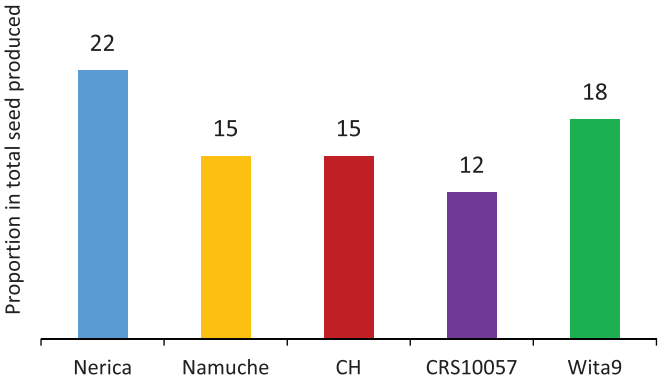
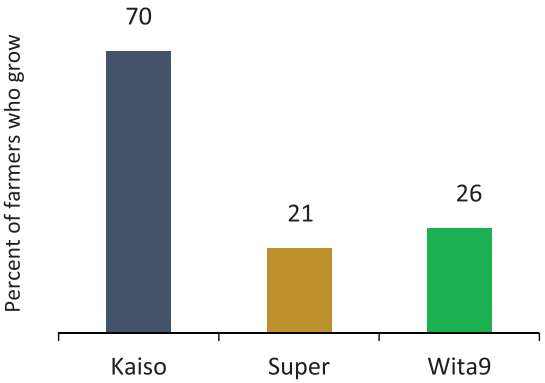


Figure 4B: Major varieties grown by farmers



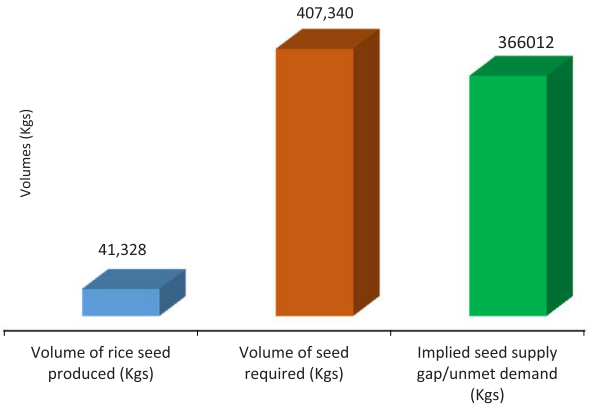
Source: Fieldwork – survey of rice seed multipliers and FGDs with rice farmers (May, 2015)

The Rice Seed Supply Gap

The study gives an indication that the total area under rice cultivation in the three study districts during major season[2] is 5,495 hectares[3], which translates to about 13,578 acres. But an acre requires 30 kilograms of rice seed for planting. This implies that the total volume of rice seed required by farmers for rice cultivation would amount to about 407,340 kilograms. However, rice seed multipliers are producing only about 41,328 kilograms, which is only 10% of what is required in the three districts in a major season (Figure 5). The deficit is aggravated by the fact that most of the seed produced by the seed multipliers is sold to seed companies under contractual arrangements and the seed companies distribute part of the seed to other regions and export considerable volumes to countries such as South Sudan, Kenya, Zambia and Djibouti.

Accordingly, farmers in the three districts do not benefit from the entire 10% that is produced by the existing rice seed multipliers, implying that the amount of rice seed left for farmers who can afford is inconsiderable. Majority of farmers are even not aware about the existence of the few seed multipliers, and in Bugiri district, no seed multiplier exists at all. The existing rice seed multipliers are not capable of meeting local farmer's demand, and at the same time not serving the befitting interests of farmers in the Eastern region in the transfer of improved rice seed, hence creating huge deficits in seed supply. Also of the four seed multipliers, only one is registered and certified by MAAIF, raising serious concerns about the authenticity of rice seed being produced.

Figure 5: Estimated rice seed gap



Source: Fieldwork – survey of rice seed multipliers in Tororo, Butaleja and Bugiri districts (May, 2015).

Investment required to close the seed supply gap

The current rice seed production capacity is 41,328 kilograms (Figures 4 & 5) in a major season, with an average of about 1,252 kilograms of rice seed produced per acre. Average seed production capacity per seed multiplier is estimated at about 10,332 kilograms in a major season, and total demand for seed from farmers in the three districts is 407,340 kilograms (detailed computations are in the main report [1]). Production of rice seed involves purchase of inputs, particularly foundation seed, fertilisers and herbicides. It also entails land and labour hire to accomplish activities such as

2 Major season runs from January/February – June/July.
3 Computed based on UCA data 2008/09 (3,603 Ha for Bugiri, 903 Ha for Butaleja, and 989 Ha for Tororo districts).

land preparation, planting weeding, fertilizer and herbicide application, wading off of birds and other pests, harvesting, and post-harvest handling. On the basis of seed multiplier field data, all labour and non-labour related inputs considered, it costs UGX 3,083,300 to produce rice seed in one acre of land (see main report for detailed computations [2]).

This study establishes that an additional 40 seed multiplication sites (of the same capacity as the existing 4 in the sub-region) are required to meet farmer's requirement for improved rice seed in every major rice production season. The 40 new seed multiplication sites can be spread across the three districts depending on the distribution of rice farmers per district. This investment requires at least 325 acres of land[4]. Given that the estimated cost of seed production per acre in a major production season is UGX 3,083,300, then producing seed on 325 acres would cost Uganda shillings (UGX 1,002,072,500).

4 From the total of 407,340 kgs of rice seed required per season and based on the current yield of 1,252 kgs of seed produced per acre, the proposed investment requires at least 325 acres of land.

Conclusion & Recommendation

There is a mismatch between the rice varieties commonly grown by farmers and those multiplied by seed multipliers. Lack of access to improved rice seed presents the most serious hurdle for intensification and there are stern capacity gaps in supply of improved seed. The total volume of rice seed produced by existing seed multipliers during the main growing season is less than what farmers would actually require by 90 percent. The study estimates that in order to meet local farmer's demand for improved rice seed, at least 40 new seed production enterprises should be established; and this is estimated to cost slightly over one billion Uganda shillings. Establishing seed multiplication enterprises is supportive of the national rice development strategy of increasing access and adoption of productivity enhancing technology. The suggested community level rice seed multiplication enterprises should specifically serve the seed needs of local farmers.

Endnotes

1 Barungi, M; Odokonyero, T. (2015). Understanding the rice value chain in Uganda: Opportunities and challenges to increased productivity. Draft research report, Economic Policy Research Centre.

2 Barungi, M; Odokonyero, T. (2015). Understanding the rice value chain in Uganda: Opportunities and challenges to increased productivity. Draft research report, Economic Policy Research Centre.

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