

# OPPORTUNITIES FOR SELF-FINANCING THE USE OF HIGH-YIELDING SUNFLOWER SEEDS AMONGST SMALLHOLDER FARMERS IN TANZANIA: PERCEPTIONS VS. REALITY OF LIQUIDITY LIMITATIONS

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## ABSTRACT

This paper investigates the opportunities for smallholder farmers to self-finance the use of high-yielding sunflower seeds, by considering their marketable noncommercial asset levels and their perceptions versus the reality of liquidity limitations. The study used a cross-sectional survey covering 416 randomly selected smallholder sunflower farmers in the study area of Tanzania. It makes use of the crafted choice experiment approach to assess the degree of liquidity constraints among smallholder farmers in buying high-yielding seeds, and their willingness to receive a low-interest credit or loan to purchase high-yielding seeds given before or after sowing. Results reveal that liquidity limitation is a perceived rather than a real problem, and it is feasible for farmers to self-finance the use of high-yielding seeds using their own marketable noncommercial liquid assets like livestock and chickens. The results further indicate however, that smallholder sunflower farmers are lacking adequate knowledge of the value of their liquid assets and of the opportunity cost or benefit of taking a credit/loan to finance the use of high-yielding seeds. The implications of these findings is that educating and sensitizing farmers about their potential resources, financial base, and the real cost of credit may influence their choice for self-financing and borrowing options as a way to improve their productivity.

**Key words:** liquidity limitation, self-financing, high-yielding sunflower seeds, productivity, smallholder farmers, Tanzania

**JEL codes:** Q14, G51, Q16, Q12

## INTRODUCTION

Improving the welfare of the people through strategies to increase agricultural productivity has been one of the preoccupations for most sub-Saharan African economies after attaining political independence. The rationale for this is obvious, given that more than 60% of the population live in rural areas, the majority being smallholders with agriculture as the mainstay [Kuzilwa et al. 2017]. Use of high-yielding inputs such as high-

yielding seeds by smallholder farmers have been shown to improve productivity and farm incomes [Kassie et al. 2011, Bravo-Ureta et al. 2012, Nata et al. 2014, Shiferaw et al. 2014, Afolami et al. 2015, Khonje et al. 2015, Mpet<sup>2</sup> 2015, Emerick et al. 2016]. However, the use of high-yielding seeds is low among smallholder farmers in Sub-Saharan Africa, including Tanzania [Schroeder et al. 2013]. The low use of high-yielding seeds has been associated with market imperfections for inputs [Asfaw et al. 2012]. Efforts have been put

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in place to address the problem of market imperfection in Sub-Saharan Africa. These have included, for example, credit programs through government budget allocations for inputs credit [United Republic of Tanzania 2016a], input subsidies programs [Chibwana et al. 2014, Takeshima and Liverpool-Tasie 2015, Mason et al. 2017, Jayne et al. 2018], and high-yielding seed varieties production programs [Amare et al. 2011, Asfaw et al. 2012]. Most of these intervention options have been based on external sources of financing.

The potential options or sources for financing the use of high-yielding seeds are grouped into internal sources e.g., own savings/self-finance, and external sources e.g., credit / loans. However, self-financing of farm inputs is less promoted and advocated among smallholder farmers despite the potentials that exist. Fostering high-yielding seed use requires knowledge about the possibility of self-financing to purchase these seeds in relation to the reality and perceptions of liquidity limitations. The elimination of liquidity limitation through credit has to go hand in hand with willingness to obtain credit at the existing opportunity cost. The existence of many studies on credit and productivity among smallholders – with new studies still being conducted – suggest a lack of congruency and still-unanswered questions on the factors related to supply and demand for credit by these farmers.

Studies on possible options for self-financing the use of high-yielding inputs are scanty. Few studies [Bank of Tanzania 1997, The Foundation for Development Cooperation 1992, Diagne and Demont 2007, Shiferaw et al. 2015] focus on factors that constrain the capacity of the rural smallholders from helping themselves in the use of improved farming technologies. The constraining factors revealed include lack of skills, unawareness of economic opportunities or markets of what they are capable of doing [The Foundation for Development Cooperation 1992]. Failure to properly identify factors that influence smallholders' choices and hence borrowing decisions could lead into establishing credit programmes that are supply led and hence prone to failure.

This study assesses the possibility and feasibility of self-financing the use of high-yielding sunflower seed among smallholder farmers in the Iramba and Mkalama districts in Central Tanzania by: (1) Examining the

liquidity limitation through credit or loan preferences and liquid asset ownership; (2) Analyzing the possibility of self-financing the use of high-yielding sunflower seeds through liquid livestock ownership. The aim is to determine whether there is a real link between the non-use of high-yielding seeds and any revealed internal financial inability to finance additional resources for switching from local to high-yielding seeds. Sunflower is a crop whose seeds are used globally for production of cooking oil, with the by-product used as animal feed. The crop is a source of livelihood for smallholder farmers in central parts of Tanzania. As the significance of sunflower has increased with current global preferences for vegetable cooking oil as opposed to animal fat, the ability to increase production by using high-yielding seeds would greatly benefit the smallholder farmers and the people of Tanzania.

## REVIEW OF LITERATURE

This study is informed by general investment finance theory, which is considered relevant to any type of business including small farming businesses. Irrespective of the type of crop cultivated, farm size, and age, finance is normally required for at least two standard uses: for capital investment (start-up farm or expansion) in land and farm equipment, and for the purchase of agricultural inputs including seeds, fertilizers and pesticides; these are referred to as “uses of funds” in business analysis [Gittinger 1984]. Sources of funds or finance may include income from the business or operating income before depreciation, short- and long-term loans and income from other sources [Hodgetts 1980, Hotstrand 2014]. Availability of finance is also important in the event of adoption of new technology. Financing of additional costs arising from the need to adopt a new technology such as the use of high-yielding seeds can as well be undertaken from various sources including own savings, generated internal funds or external funds through credit. However, there has to be willingness on the part of smallholder farmers to spend additional resources on the improved technology for the expected benefits to be realized.

Extant literature shows limited access to credit as one of the major constraints hindering adoption of modern technologies amongst smallholder farmers

in developing countries [The Foundation for Development Cooperation 1992, Bank of Tanzania 1997, Shiferaw et al. 2015]. This has led to the design and development of various credit intervention programs to overcome this constraint. The problem of liquidity limitation as an obstacle to adoption of high-yielding seeds has been extensively studied [Diagne and Demont 2007]. Some research has been found to highly overstate the importance of institutional hindrances, and the idea that problems faced by smallholder farmers arise as a result of poor institutional credit and other institutional limitations [Tomecko 1998, Kuzilwa 2005, Christen and Anderson 2013]. Studies that assess the opportunity for smallholder farmers' self-financing of agricultural inputs in relation to liquid asset ownership are scanty [The Foundation for Development Cooperation 1992, Bank of Tanzania 1997, Diagne and Demont 2007, Shiferaw et al. 2015]. More importantly, studies assessing the factual basis of liquidity constraints as a measure of the internal resources of farmers (i.e. savings in liquid assets) and credit-time preferences using choice experiments, are even more scarce. This study therefore undertakes to investigate the possibility and feasibility of self-financing the use of high-yielding sunflower seeds in Tanzania.

## MATERIAL AND METHODS

The study used a cross-sectional survey of smallholder sunflower farmers in two districts of Mkalama and Iramba in Singida, in the central agricultural zone of Tanzania. The region is known for its high production of sunflower on the smallholder farming system [United Republic of Tanzania 2016b]. The survey covered

416 smallholder farmers in 24 villages. Information was collected on the plot size allocated for sunflower production in the 2015/2016 farming season, the amount of high-yielding seeds needed on the basis of the plot size, yields, price and profit margins for different categories of sunflower seeds, and the amount of high-yielding seeds the farmer was willing to purchase for cash, or credit. Data were also collected on household and socioeconomic characteristics, ownership of liquid livestock assets, perceptions on liquidity limitations and market limitations on access to high-yielding seeds, and willingness to pay for high-yielding seeds by cash or credit or through neither of the two. The multi-stage sampling technique was used whereby a purposive selection of two districts of Mkalama and Iramba was done, followed by a stratified random sampling whereby 24 villages were proportionally divided into three strata, each with eight villages from which eight cash non-constrained, eight credit non-constrained, and eight neither credit nor cash non-constrained farmers were randomly selected (Table 1).

The stratification of farmers at village level was based on pre-questions during the preliminary survey on their willingness to purchase high-yielding seeds with cash, credit, and neither cash nor credit. Cash non-constrained farmers villages' stratum is a stratum with farmers in the villages who were willing to buy high-yielding seeds with cash. Cash or credit constrained farmers in villages are farmers who were willing to buy high-yielding seeds on credit due liquidity limitations. The credit and cash constrained farmers villages' stratum is a stratum with farmers in villages facing both credit and cash limitations that make them not willing to buy high-yielding seeds.

**Table 1.** Categories of Farmers used in Survey

Farmer village groups	Contract farmer	Non-contract farmer	Non-sunflower farmer	Total
Cash non-constrained	56	70	7	<b>133</b>
Cash or Credit non-constrained	67	74	10	<b>151</b>
Either cash or credit constrained	70	54	8	<b>132</b>
<b>Total</b>	<b>193</b>	<b>198</b>	<b>25</b>	<b>416</b>

Source: Survey data.

From the village stratification farmers were then non-proportionally stratified based on size and variation within each stratum into contract farmers, non-contract farmers and non-sunflower farmers. Against that classification, a random selection was done to obtain a total of 416 smallholder farmers (193 contract farmers, 198 non-contract sunflower farmers, 25 non-sunflower farmers) in 24 villages. In each of the 24 villages, eight contract farmers (CF), nine non-contract farmers (NCF) and three or less non-sunflower farmers (NSF) were selected in each village, whereas the ratio between selected non-contract sunflower farmers and selected non-sunflower farmers was set to be equal.

A test of liquidity limitation was done at two levels. The first level entailed assessing smallholder farmers' liquid constraints using simple choice experiments. The second level consisted of assessment of farmers'

asset ownership level, focusing on livestock assets (seen as their alternative form of savings), which could be turned into cash easily. The number and value of different livestock kept by smallholders in the sample were assessed. The data were analyzed descriptively using tables and figures, and using independent sample *t*-test.

## RESULTS AND DISCUSSION

### Descriptive statistics

Table 2 presents results of analysis of means and standard deviations, and frequency and percentages for variables of interest between the users of high-yielding seeds and non-users of high-yielding seeds obtained using independent sample *t*-test. The results suggest that users of high-yielding seeds and

**Table 2.** Descriptive statistics results between users and non-users of high-yielding seeds

Variable	All (mean)	Users of high-yielding seeds	Non-users of high-yielding seeds	<i>P</i> -value
Sunflower area (in acres)	5.28 (0.40)	5.32 (0.87)	5.28 (0.44)	0.9676
Extension services access (binary)				0.0000 ***
Yes	53 (12.7%)	32 (60.4%)	21 (39.6%)	
No	363 (87.3%)	319 (87.9%)	44 (12.1%)	
Membership (binary)				0.0000 ***
Yes	33 (7.9%)	15 (45.5%)	18 (54.5%)	
No	383 (92.1%)	50 (13.1%)	333 (86.9%)	
Contract farming (binary)				0.4218
Yes	193 (46.4%)	33 (17.1%)	160 (82.9%)	
No	198 (53.6%)	28 (14.1%)	170 (85.9%)	
Off-farm employment (binary)				0.0055 ***
Yes	30 (7.2%)	10 (33.3%)	20 (66.7%)	
No	386 (92.8%)	55 (14.2%)	331 (85.8%)	
Livestock (in numbers)	10.56 (0.87)	6.94 (1.03)	11.23 (18.86)	0.0748 *
Perception on liquidity (binary)				0.0153 **
Yes	339 (81.5%)	46 (13.6%)	293 (86.4%)	
No	77 (18.5%)	19 (24.7%)	58 (75.3%)	

\* =  $p < 0.10$ ; \*\* =  $p < 0.05$ ; \*\*\* =  $p < 0.01$ ; Figures in brackets are standard deviations

Source: Survey results.

non-users of high-yielding seeds differ significantly in terms of access to extension services, membership in farm groups and perception on liquidity limitation for high-yielding sunflower seed access. There is also a significant difference in levels of off-farm employment. Users of high-yielding seeds tend to have more access to extension services compared to non-users of high-yielding seeds. Similarly, users of high-yielding seeds have more access to social capital through group membership, and tend to perceive liquidity limitation for high-yielding sunflower seeds as less stringent than non-users of high-yielding seeds.

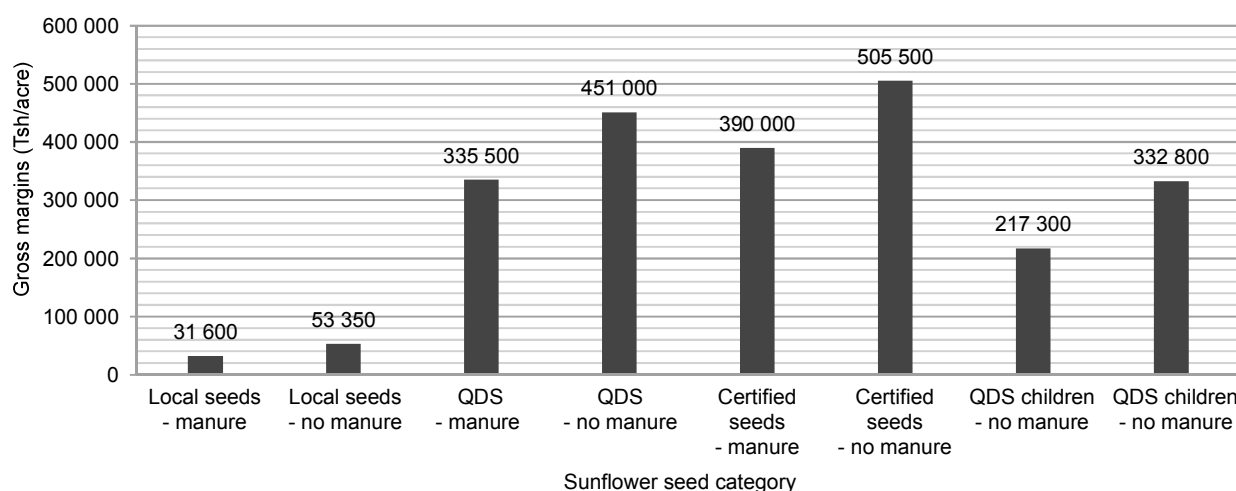
The perception on liquidity limitation is severe for non-users of high-yielding seeds (86.4%) compared to users of high-yielding seeds (13.6%), with significant difference at a 5% level of significance. Group membership reveals significant difference at 1% level of significance; for users of high-yielding seeds the percentage is 45.5% and for non-users of high-yielding seeds it is 54.5%. Results also suggest that chances of participating in contract farming are equal between non-users of high-yielding seeds and users of high-yielding seeds, with no significant difference in the probability of participation. In general terms users of high-yielding seeds are better than non-users of high-yielding seeds in almost all fronts of the analysis.

When it comes to profitability, the gross profit margins per acre on average vary from (1 USD =

= approx. 2319 Tanzanian shilling – TZS) TZS 31,600 on use of local seed variety without manure to TZS 505,000 for use of certified seeds with manure. Some sunflower farmers use Quality Declared Seed (QDS) which is supplied in plenty relative to other high-yielding seeds in the villages through farming contracts at a price of TZS 2,500, which is about 50% less than that of certified seeds priced at TZS 4500 from the National Agricultural Seed Agency (ASA). With use of QDS, the gross profit is on average TZS 335,500 without manure and TZS 451,000 with manure planting. Comparing QDS and local seeds, results suggest that it is more profitable to use QDS even without manure than to use a local variety. Thus, a farmer can increase his/her gross profit margin from TZS 31,600 to around TZS 335,550 per acre, by simply switching to use of improved high yielding seeds (Fig. 1).

#### Reasons for non or low usage of high yielding seeds

Despite many benefits gained when good seeds are used in the different seed varieties, only about 10% of the farmers sampled in the study are found to use high-yielding seeds – either certified seed of hybrid varieties, certified seeds of open pollinated variety (OPV) particularly RECORD variety, or quality declared seeds (QDS).



**Fig. 1.** Gross margin per acre for different categories of seeds planted without and with manure  
Source: Survey results.

**Table 3.** Reasons for non-use or low use of high-yielding seeds

Reason	Frequency	(%)
I was not aware of high-yielding seeds	7	<b>1.8</b>
I did not have sufficient cash to buy high-yielding seeds	264	<b>67.7</b>
It is not profitable to use high-yielding seeds	5	<b>1.3</b>
Improved seeds were not available in the shops	34	<b>8.7</b>
Improved seeds were only available in shops that are too far away	41	<b>10.5</b>

Source: Survey data.

Results in Table 3 indicate that 67.7% of smallholders in the sample did not have sufficient cash to buy high-yielding seeds, while 10.5% said high-yielding seeds were only available in shops that are too far away. About 8.7% of the respondents said high-yielding seeds were not available in shops, while 1.8% said they were not aware of high-yielding seeds, and 1.3% of the respondents said it was not profitable to use high-yielding seeds. Thus, the key reason as to why the majority of farmers were not using high-yielding seeds is lack of sufficient cash to buy the seed.

This study thus went further to investigate whether a liquidity limitation amongst the smallholder farmers was a real or a perceived problem, especially considering the relatively low cost associated with using QDS introduced in the villages for use by farmers.

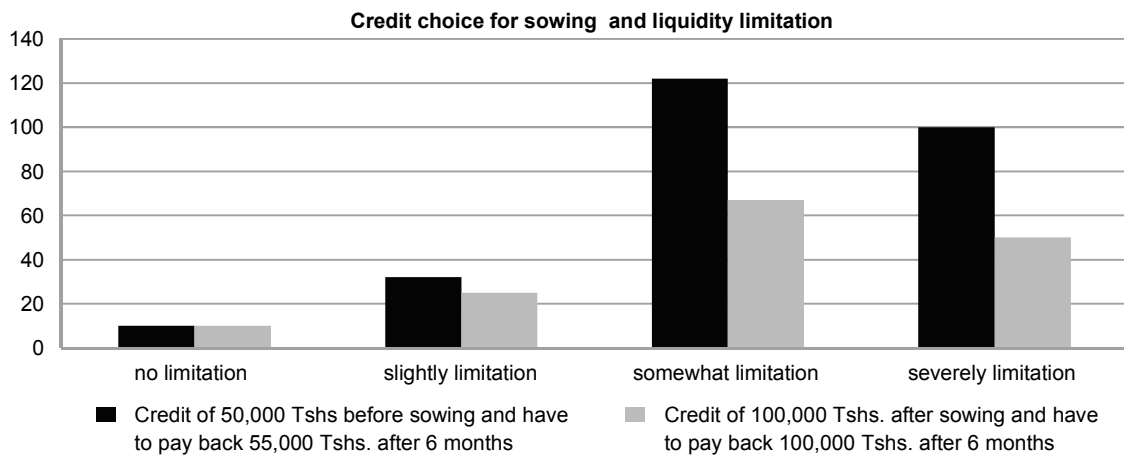
### Assessment of Liquidity Limitation using Choice Experiment

The sowing of sunflower seeds is the main farming activity analyzed in context of this study. In the first-choice experiment, farmers were asked hypothetical questions on the different amounts of money they would choose to have on credit in order to buy high-yielding seeds before planting season and pay back after harvest. This experiment aimed at assessing their time preference and their sense on liquidity constraint. For example, if a farmer would be willing to receive a credit of TZS 50,000 prior to planting season and pay TZS 55,000 six months later, after harvest, or receive TZS 100,000 after planting season and pay the same amount back six months later, the farmer's choices would indicate if he or she has liquidity limitation or

not in a given period of time. In particular, it is expected that a farmer with better liquidity status would choose to receive a higher amount of money (TZS 100,000) later rather than (TZS 50,000) now, which would finance a critical activity of purchasing seeds before planting season. Thus, such a farmer would be revealed to have a low liquidity limitation.

Figure 2 presents results on the relationship between amount of credit preferences at sowing period and perception on severity of liquidity limitation in purchase of QDS. The results show that 64.6% of farmers indicated to have liquidity limitation and would choose to receive a credit of TZS 50,000 now and pay TZS 55,000 after six months, rather than receive TZS 100,000 after sowing and pay back the same amount after six months. This suggests that farmers with high liquidity limitation have a high time preference. The implication of these results is that farmers with high liquidity limitation have a high time preference and would be willing to pay higher opportunity cost to get cash before a farm activity i.e., sowing of QDS, instead of cash at lower opportunity cost after the farm activity.

The second-choice experiment concerned choosing credit/loans with different conditions including amount of loan, interest rate charged, and time of payment. It was expected that an individual with liquidity limitation would choose to have a loan(s) even at a high interest rate, if it were available, to finance a critical activity and pay after harvest. Farmers were asked to assume that a microfinance institution was willing to offer them a loan that they would receive before the growing season starts and that



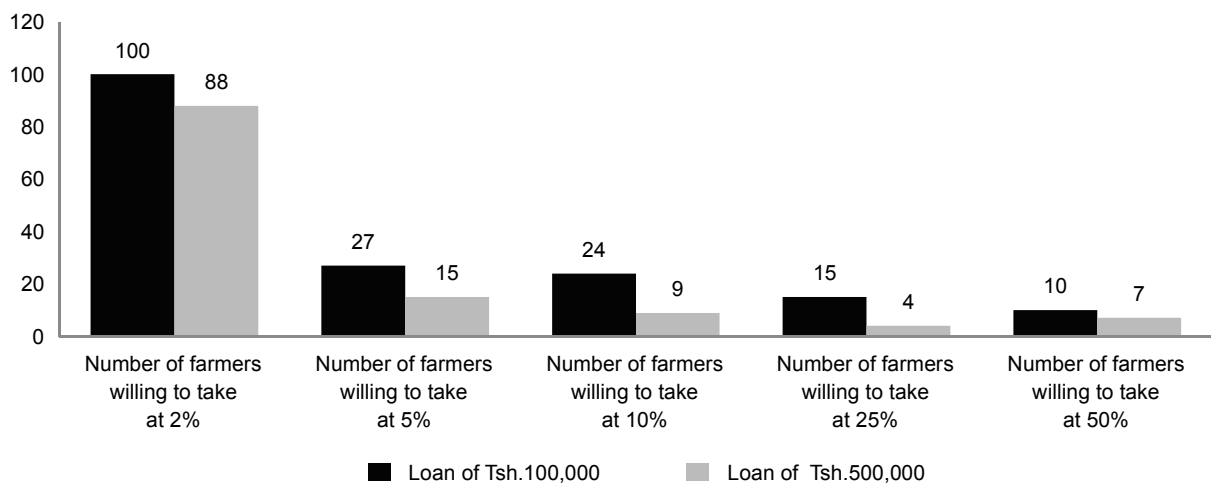
**Fig. 2.** Hypothetical time choice for credit with different severity of liquidity constraints

Source: Survey results.

they had to repay the loan within two months after harvesting at different interest rates. Since according to the acre budget analysis, the total cost of producing sunflower per acre ranged between TZS, 168,500 and TZS 250,000, with the cost of high-yielding seeds per acre ranging between TZS 10,000 and TZS 18,000, and the loan size between TZS 100,000 and TZS 2,000,000 was the most preferred, our interest was on this range of loan size.

Results as shown in Figure 3 are rather startling and contradictory. Only 23% of the farmers indicated

that they would be willing to take either TZS 100,000 or TZS 500,000 loan at 2%. As the rate of loan interest increased from 5 to 50% fewer farmers were willing to take any loan and pay the interest deductions two months after harvest. The implication is that even if a loan is available, say at 5% or above interest rate, farmers would not be willing to borrow. This is a bit strange, as by using a loan of 5% interest rate to purchase high-yielding seeds, the resulting return would be more than 100%, much more than 5% on the loan taken.



**Fig. 3.** Willingness to take loans with different interest rates

Source: Survey results.

### Liquid Asset Ownership and Revealed Liquidity Situation

The cash demand to finance seed purchases can be met through informal borrowing, from formal institutional credit, and also through internal sources such as the sale of domestic animals / poultry owned. The ultimate opportunity cost will be different depending on the terms of the credit. Given the existence of the market for livestock and poultry, and with proper knowledge, sensitization, and planning, livestock and poultry habitually owned by smallholders could be converted into cash and have timely financing of farm inputs. Livestock sold could be replaced after selling harvested output. Results in Table 4 show that about 77% of the sunflower smallholder farmers own chickens and keep livestock. Our interest was on poultry that multiplies fast, and that can be converted into cash

easily relative to other livestock. Our sample shows that on average the smallholder farmers keep up to 8 chickens valued at TZS 134,000 at the time of the field survey. An acre of sunflower farm requires 4 kilograms of seeds. During our field survey a kilogram of QDS was being sold at TZS 2500. This means an acre would require TZS 10,000. Average plot size allocated to sunflower by farmers in the sample was between two to three acres, implying that TZS 20,000 to 30,000 was needed for QDS.

Table 5 indicates that the credit-preferring farmers on average have higher animal / poultry ownership than cash-preferring farmers. Overall, the majority of farmers with ownership of liquid livestock assets prefer credit. This suggests that farmers do not understand the value of their assets in financing the use of high-yielding seeds, e.g., QDS. They are likely to opt

**Table 4.** Household Livestock Ownership

Livestock ownership	Frequency	(%)
Yes	319	76.7
No	97	23.3
Total	<b>416</b>	<b>100</b>

Source: Survey results.

**Table 5.** Comparison of cash and credit preferring farmers, and liquid livestock assets

Valuable animals owned	(Cash farmers) (mean)	(Credit farmers) (mean)	All (mean)	Difference (mean)
Draught animals	2.09 (11.7)	2.09 (0.34)	2.53 (0.35)	-0.44 (0.49)
Cattle	3.01 (0.80)	4.49 (1.06)	3.79 (0.68)	-1.48 (1.36)
Sheep	1.71 (0.37)	1.74 (0.36)	1.73 (0.26)	-0.02 (0.52)
Goats	3.31 (0.51)	4.57 (0.66)	3.98 (0.42)	-1.26 (0.83)
Pigs	0.69 (0.21)	0.11 (0.06)	0.38 (0.10)	0.59 (0.21)***
Poultry	4.29 (0.58)	7.61 (0.82)	6.06 (0.52)	-3.32 (1.03)***
Rabbits	1.06 (0.40)	0.29 (0.19)	0.65 (0.21)	0.77 (0.42)*

\*= $p < 0.10$ ; \*\* =  $p < 0.05$ ; \*\*\* =  $p < 0.01$ ; Figures in brackets are standard errors

Source: Survey results.



**Table 6.** Willingness to pay for high-yielding seeds in relation to liquid livestock owned

	Livestock ownership		
	Yes	No	Total
Cash pay for seed	71 (22.3%)	28 (28.9%)	99 (23.8%)
Pay for seed on credit	124 (38.9%)	27 (27.8%)	151 (36.3%)
Neither cash pay nor pay for seed on credit	124 (38.9%)	42 (25.3%)	166 (39.9%)
Total	319 (76.7%)	97 (43.3%)	416 (100%)

Source: Survey results.

for credit even though they have liquid assets such as livestock that can be used to finance purchases of needed high-yielding seeds.

Table 6 shows that about 38.9% of farmers own liquid livestock but still want, and are willing to pay for, high-yielding seeds on credit; those who are willing to pay cash for high-yielding seeds are only 22.3% of farmers with liquid livestock assets. This means even though farmers have poultry and other livestock as liquid assets, they are willing to get or pay for high-yielding seeds on credit instead of directly paying for them using their liquid assets. This suggests a prevalence of inadequate knowledge on the opportunity cost and benefits of owning liquid assets and credits in financing farming inputs.

## DISCUSSION

One of the challenges facing smallholder farmers' adoption of new technologies is failure to properly identify possible sources for financing the additional costs arising from such adoptions. There is a tendency to overemphasize the credit needs which leads to creation of supply driven credit schemes by way of input credit or cash. The study, however, has revealed that liquidity limitation is a demand rather than a supply side problem. Contrary to the findings of some other researchers [Chibwana et al. 2014, Takeshima and Liverpool-Tasie 2015, Mason et al. 2017, Jayne et al. 2018], the results from this study have indicated that farmers do not usually choose to sell poultry to finance the use of high-yielding seeds. This suggests that institutional interventions directed at improving

adoption of high-yielding seeds among smallholder farmers are not focused on the real problem farmers have. Unwillingness of farmers to use internal resources / assets to finance the use of high-yielding seeds may be suggesting that there is a lack of understanding of the cost of credit. This is because the differential income that can be received from use of high-yielding seeds can replace the poultry/livestock assets sold, many times over.

While farmers' indication of a high rate of time preference on their hypothetical cash choice seems to suggest the existence of severe liquidity limitations, the majority of the same farmers were not willing to take any credit before growing and to pay two months after harvest at an interest rate above 2%. This is contrary to the studies by Hotstrand [2014] and Hodgetts [1980]. The unwillingness to take any loan at above 2% suggests that they are either not aware or convinced of the gains from using high-yielding seeds, although the sunflower seed performance assessment showed an increase of gross profit margin of more than 50% by merely switching from the local to high-yielding seed varieties like QDS.

## CONCLUDING REMARKS AND POLICY IMPLICATION

This paper investigated whether liquidity limitation of smallholder sunflower farmers is a real or a perceived problem and whether there is an opportunity of financing high-yielding seeds through smallholder farmers' own resources. The study has shown that the real problem in making choices between institutional

credit and farmers' own resources is the capacity to see the opportunity. Data on different varieties of sunflower seeds with and without manure use, demonstrate clear the productivity and profitability supremacy of QDS. Assessment of household assets and particularly poultry and livestock ownership, show that with the existence of a market to convert some of the livestock into cash, least of all a few poultry, farmers can finance the procurement of QDS and hence obtain competitive advantage on productivity. It is thus possible to self-finance the use of high-yielding seeds using internal finance sources, in particular liquid livestock owned by smallholder sunflower farmers, but only if farmers are educated on potential benefits in terms of credit costs and opportunities of transforming livestock resources into needed cash to finance input purchases.

The policy implications of the study include: Farmers need to be sensitized to discover their potentials and capabilities. An emphasis on awareness campaigns on internal farm input financing sources (e.g., own liquid assets) for smallholder sunflower farmers may work well in transforming farmers' productivity. Policies that would ensure development of effective credit demand and a corresponding self-reliance spirit among stallholder farmers are needed. We suggest further research on smallholder farmers' wealth dynamics and disposition, perhaps to know more about why farmers don't realize that the money assets they possess are truly a convertible substitute in times of cash constraint for investment.

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## **MOŻLIWOŚCI SAMOFINANSOWANIA WYKORZYSTANIA WYSOKO PŁONNYCH NASION SŁONECZNIKA WŚRÓD MAŁYCH ROLNIKÓW W TANZANII: PERCEPCJE VS. RZECZYWISTOŚĆ OGRANICZEŃ PŁYNNOŚCI**

### **STRESZCZENIE**

W artykule zbadano możliwości samofinansowania się przez drobnych rolników wykorzystania wysoko-wydajnych nasion słonecznika, biorąc pod uwagę ich rynkowe poziomy aktywów niekomercyjnych i ich percepcję w porównaniu z rzeczywistymi ograniczeniami płynności. W artykule wykorzystano przekroje-

we badanie obejmujące 416 losowo wybranych drobnych rolników uprawiających słonecznik na badanym obszarze Tanzanii. Wykorzystano podejście spreparowanego eksperymentu wyboru, aby ocenić stopień ograniczeń płynności wśród drobnych rolników przy zakupie wysokowydajnych nasion oraz ich chęci do otrzymania nisko oprocentowanego kredytu lub pożyczki na zakup wysokowydajnych nasion udzielonych przed zasiewem, lub po zasiewie. Wyniki pokazują, że ograniczenie płynności jest raczej postrzegane niż rzeczywistym problemem, a rolnicy mogą samofinansować wykorzystanie wysokowydajnych nasion przy użyciu własnych, nadających się do obrotu, niekomercyjnych aktywów płynnych, takich jak żywy inwentarz. Wyniki wskazują ponadto, że drobni rolnicy uprawiający słonecznik nie mają wystarczającej wiedzy na temat wartości ich aktywów płynnych oraz kosztów alternatywnych lub korzyści wynikających z zaciągnięcia kredytu / pożyczki w celu sfinansowania wysokowydajnych nasion. Konsekwencje tych ustaleń są takie, że edukacja i uwrażliwianie rolników na temat ich potencjalnych zasobów, podstawy finansowej i rzeczywistego kosztu kredytu może wpłynąć na ich wybór opcji samofinansowania i zaciągania pożyczek jako sposobu na poprawę ich produktywności.

**Słowa kluczowe:** ograniczenie płynności, samofinansowanie, wysokowydajne nasiona słonecznika, produktywność, drobni rolnicy, Tanzania