AFFORDABILITY AND WILLINGNESS TO PAY FOR HYBRID DROUGHT TOLERANT MAIZE SEED: ANCHORING AND LEARNING

Webinar meeting report held on 4th June, 2021,

Integrated Seed Sector Development Uganda

Report prepared by Josephine Nakanwagi (Consultant ISSD)

June, 2021

Table of content

1.0 Introduction

Maize is an important crop grown in most parts of the Uganda for food, feed and income (Asea. et al, 2014). Given climate risk to agricultural seasons, drought tolerant maize varieties can play an important role in maintaining production and protecting livelihoods. Potential barriers for uptake of advanced seed technology could be that farmers lack information to assess benefits of drought tolerant maize, or because of liquidity constraints, or downside risk. Recent empirical literature argues that downside risk, for example risk of substantial income loss associated with weather shocks, may deter farmers to invest in production enhancing technology such a certified seed (Emerick et al., 2016). This despite the fact that the seed has a much higher yield potential and is often more drought tolerant than the varieties traditionally grown by farmers (CCAFS, 2019). Farmers rely mostly on home-saved seed and low quality products from local markets.

Research shows that Drought Tolerant Maize (DTM) varieties provide higher and stable yields under dry spells, and provide a risk management strategy in absence of institutional insurance mechanisms (Asfaw et al., 2012; Kostandini et al., 2015; Wossen et al., 2017). Yet despite these benefits' adoption remains persistently low (Fisher et al., 2015). The literature describes the main barriers to adoption as either related to downside risk, incomplete markets and credit constraints, or related to access, awareness, availability and affordability of DTM (Simtowe et al., 2019).

When asking smallholder farmers in Uganda Farmers they perceive (hybrid) maize seed as not affordable. The literature on expanding access to agricultural inputs in Africa and serving bottom of the pyramid consumers consider affordability as a liquidity constraint; the ability to pay for products, without being further defined. Proposed solutions to the affordability constraints tend to focus on offering inputs in smaller packages and/or to improve access to credit. (Axmann et al., 2019; Fisher et al., 2015). Therefore, the research team is interested in understanding the concept of affordability from the demand perspective and as a barrier to adoption of DTM varieties.

The Integrated Seed Sector Development (ISSD) under Wageningen UR Uganda Limited in collaboration with Wageningen University and Research, Development Economics, The Netherlands, intend to conduct a study on **Affordability of hybrid Drought Tolerant Maize seed:** under a project entitled: **Promoting Climate Resilient Maize Varieties in Uganda (PROMO)**

To enhance the understanding of why farmers are not buying quality seed, but mainly use home-saved seed and re-plant grain from the local market, Promoting Climate Resilient Maize Varieties in Uganda (PROMO) project intends to conduct a research study on **Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed: Anchoring and learning** and economic barriers to adoption of hybrid drought tolerant maize seed and other agricultural inputs. The research team under ISSD Uganda invited participants to an online webinar with the major objective of seeking their contributions on perceptions of affordability and anchoring of willingness to pay for DTM seed on grain. This webinar is a follow-on webinar from the earlier one held in May 2021 on adoption of drought tolerant maize varieties in Uganda.

1.1 Objectives

The main objectives of the webinar were;

1. To share proposed tools, materials & methods with a wider audience along the maize value chain
2. To provide a platform for feedback on tools, materials and methods for improvement of the proposed study on Affordability of hybrid drought tolerant maize varieties
3. To get methodological knowledge on how to prepare the study from different maize value chain actors

1.2 Expected outcomes

1. Information or ideas on how to improve tools, materials and methods incorporated in the study experimental design
2. A report on the proceedings of the webinar compiled and shared accordingly

2.0 Methodology

2.1 Presentation

A webinar meeting was conducted with stakeholders along the maize value chain in Uganda and beyond on Friday 4th of June, 2021, starting at **15:00 to 16:00 hours EAT**. A presentation on the tools, materials and methods of the study Entitled: **Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed** was made**.** A total of 27 participants from different organization including; universities, government, private organization attended the webinar meetings. Details are given in table 1 below

2.2 Discussions

The discussion questions were prepared using www.menti.com where participants accessed the questions and gave their responses. Two discussants (Issa Byenya- DPO Kiryandongo & Denis Beesigamukama PhD student) were contacted prior to the meeting to prepare their views on question 3 and 4 which they presented during the meeting.

The participants were also allowed to raise questions for clarification on the presentation and via the chart during the meeting. Responses to the questions were given (see annex)

3.0 Proceedings of the webinar

This section presents the proceedings of the webinar meeting including; opening remarks, presentation on the study on affordability of drought tolerant maize varieties, discussions from the plenary and panel discussants.

3.1 Welcome remarks from Josephine Nakanwagi (consultant ISSD Uganda)

She welcomed all participants and thanked them for accepting the invitation and turning up for the meeting. She informed participants that the meeting is going to be recorded for internal purposes of writing the report so if anyone is not comfortable with it, should feel free to leave the meeting.

Integrated Seed Sector Development (ISSD) Uganda is implementing PROMO project. PROMO is Promoting Climate Resilient Maize Varieties in Uganda. In our first webinar, we shared results from a study on community-based risks and barriers to adoption of DTM varieties in Uganda. The project team is planning to conduct another study on affordability and willingness to pay for hybrid Drought Tolerant Maize seed. The main objective of this webinar was to seek contribution from participants on materials and methods we are to use for the study.

3.2 Presentations on affordability and willingness to pay for hybrid Drought Tolerant Maize seed

The presentation was made by Astrid Mastenbroek, the principal investigator for the study on affordability and willingness to pay for drought tolerant maize seed in Uganda.

Background

- Promoting drought tolerant maize varieties in Uganda – collaboration between WUR, ISSD, Makerere University, IFPRI, CCAFS & Colombia University
- Problem statement: Low adoption of Drought Tolerant Maize (DTM) varieties, farmers perceive (hybrid) DTM seed expensive / unaffordable
- Interested in understanding the concept of affordability from the demand perspective and as a barrier to adoption of DTM varieties

Implication of perception that seed is expensive

- Farmers continue to use home saved seed and grain from local markets, resulting in low yields
- Even though farmers receive free or subsidized seed, farmers are not continuing to buy seed for the full price in the subsequent seasons
- Low level of purchase at agro dealers' shops and seed companies, hampers development of healthy seed sector. Low turn over by seed companies

Unpacking affordability barriers

Four possible explanations

- Farmers are worried that investment does not cover production costs (risk aversion)
- Farmers fear risk of losing the capital investment (loss aversion)
- Farmers do not have the money to buy seed (capital/ liquidity constraint)
- Farmers take maize grain as a reference point for determining willingness to pay for maize seed (anchoring)

Reference point/ anchoring for maize

- Maize seed and maize grain look the same
- No difference between grain price for grain produced by recycled seed or hybrids
- Hard to distinguish the two products and connect a different willingness to pay for it
- Not willing to pay the full price of DTM varieties

Research questions

1. Do farmers use maize grain as a reference point to decide how much they are willing to pay for hybrid drought tolerant maize seed?
   - How can we measure the anchor/ reference point?
2. How can we break this reference point to make farmers refer to grain and seed as two different products?
   - How can we break the unconscious automatic connections between grain and seed in the farmer's mind?

3.3 Discussion & feedback from Participants

Questions for clarification on the presentation

Question 1: The presentation is looking at tackling a phycological issue in the mind of the farmer. Is this problem of confusing maize seed and grain only in Uganda or worldwide?

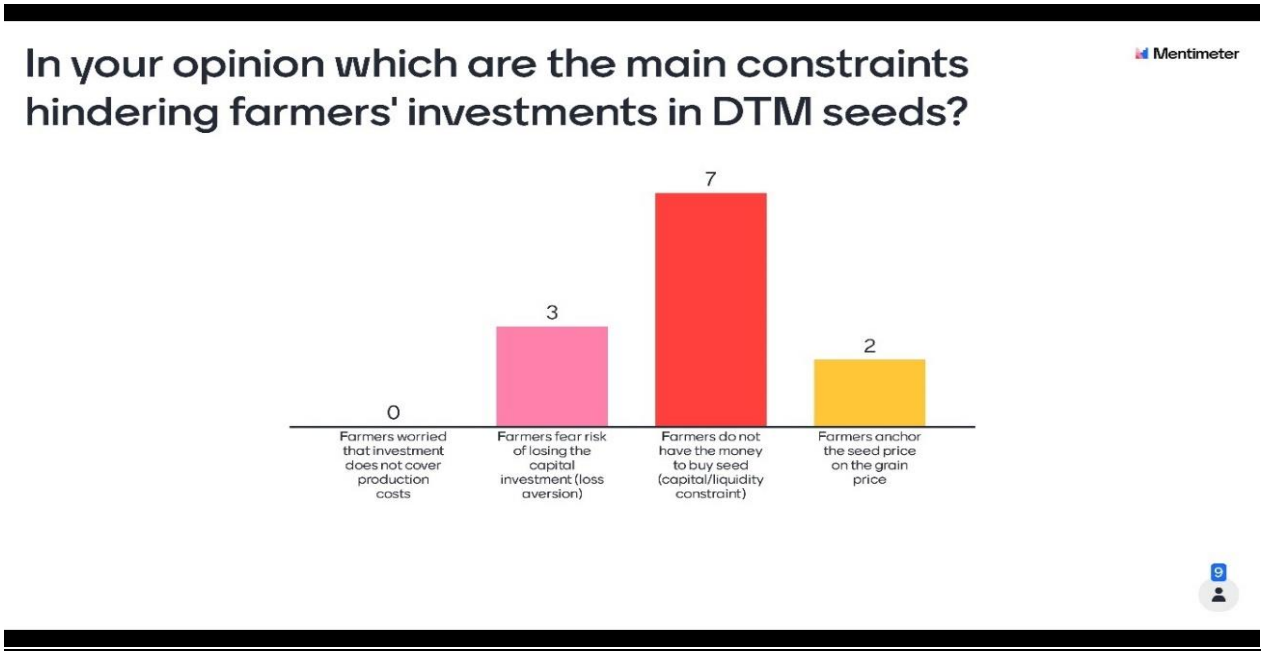
Response: if the anchor actually exists, it is a wide issue even in other countries.

Mentimeter Question session

Connect to website www.menti.com, password is 38092086

Question 1: In your opinion, which are the main constraints hindering farmers investment in DTM seed?

Responses:

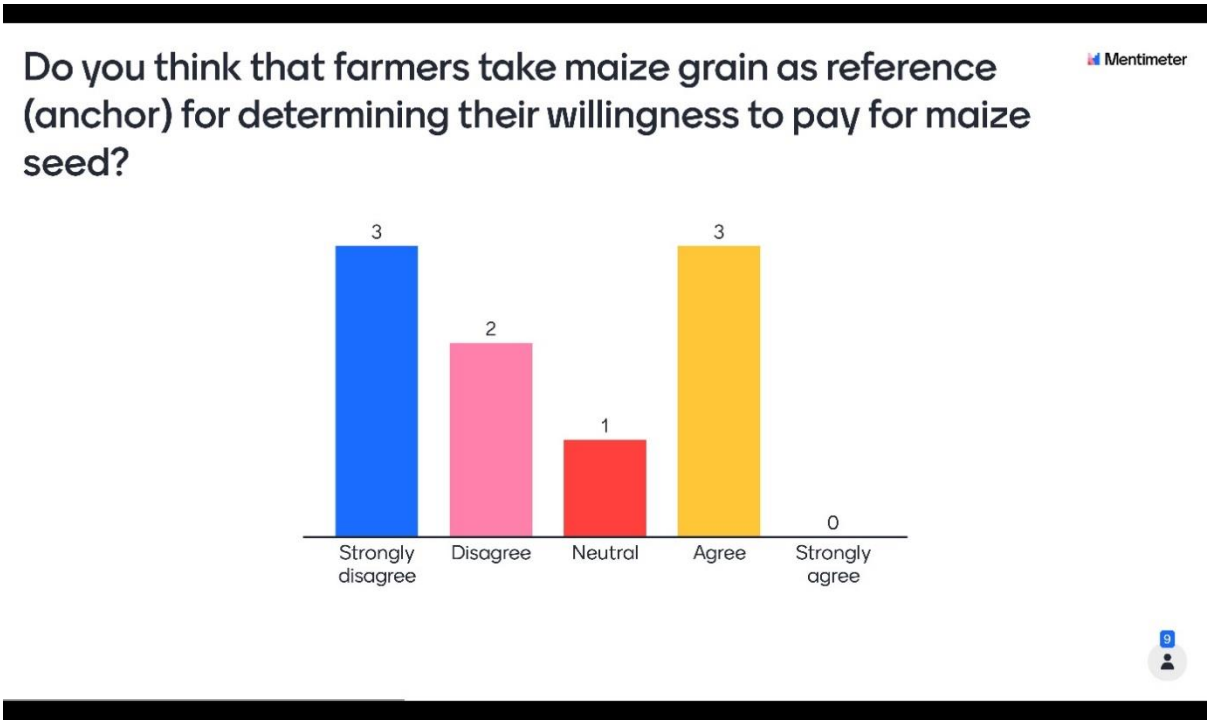


Question from the chart: Are you looking at the entire country Uganda?

Response: We shall narrow down to one or two districts to make sure we have no variation and don't have to control for differences because we want to establish if this mechanism works or not. It is important to select the right place that is very representative to be able to explain the results we get. If the participant who asked the question wants to comment on why we should control for differences, we would be very happy to hear that.

Question 2: Do you think that farmers take maize grain as reference (anchor) for determining their willingness to pay for maize seed?

Response



Explanations to the responses on Question 2

Strongly disagrees because there are other factors that hinder farmers, production requirements for instance. Fertilizers among other complimentary inputs limit farmers. In Uganda, farmers due to limited awareness believe that those varieties are GMOs. Thus, there is no political will to support GMOs yet. Therefore, limited awareness and lack of accurate information are some of the factors stopping farmers from taking up some of those varieties.

Disagrees (meaning the statement is partly correct) because it is to do with our culture in Uganda, looking at grandfathers and -mothers, they did not study agriculture, so no need to go to school and no need to buy seed, they just keep recycling. Mindset change is needed to improve adoption of DTM seeds.

Disagrees because when farmers consider maize, they will be looking at the whole cob of maize, they don't sell maize grain rather they sell grain still on cob. Farmers will be considering the size of the cob with grain. In reference to the tomato example she disagrees.

Disagrees with the statement because of the Uniqueness. In fact, in Bukwo district, where he was, they kept confusing seed with grain until early 2000. Currently in Bukwo farmers perspective changed towards the habit of using certified seed and they know that it is possible to get higher yields compared to when home-saved seed are used.

Neutral because from experience farmers are no longer just looking at the price of seed versus price of grain. They look at other factors such as investment costs, soil fertility, weather condition, pests and diseases control. If these factors are not taken into account, farmers cannot realize the expected potential. Farmers think that even if they would have bought DTM seeds the output will not be different to the one obtained from home-saved seed. Extension workers have to ensure those other factors are considered.

On the other hand, he **agrees** with the presenter. There are some farmers who want to take up DTM seeds. They then compare the price of 1kg of DTM seed, which is 6,000/=, with the price of 1 kg of maize grain, which is 500/=. So they wonder which benefit do they get from growing DTM seed. However, these farmers who ask are still few.

Question 3: Why do (or don't) you think that farmers refer to the maize grain prices when they say that seed is expensive

Responses from Mentimeter:

Additional response:

Farmers say that improved seed is expensive because there is a way you need to manage them looking at all production costs compared to home-saved seed with less management. That is why farmers say seed is expensive.

Response from discussant (DPO Kiryandongo)

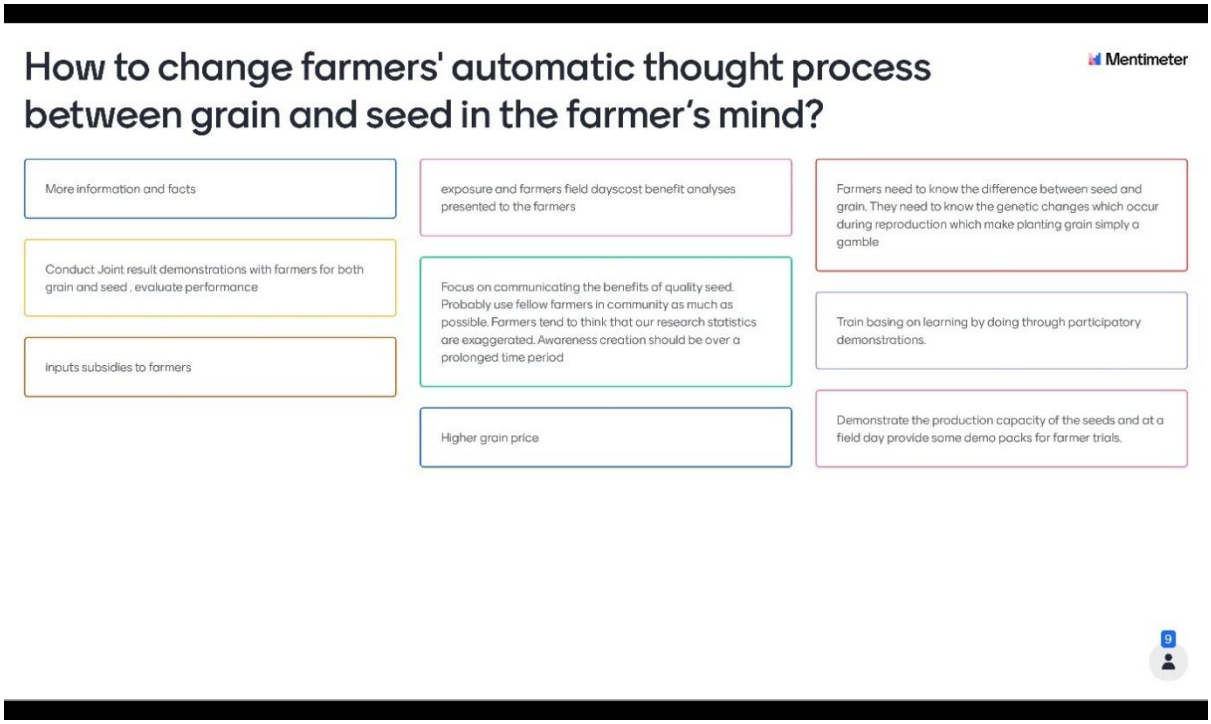
The price of maize is a key factor for them to make up their minds to take up these improved varieties or not. The issue is that the maize grain price is highly volatile can pick at 1000/= then can go as low as 200/=, it is very difficult to predict. Maize farmers, unlike tomato farmers, have the alternative of using home-saved seed which is free. They can get it from their social connections. Many of the farmers look at maize as a source of food rather than income. If a farmer has a perception that he will not get the price he expects, he will not put in extra to buy seed so they opt to go for free seeds that is home-saved seeds. A farmer needs 70,000/= to buy improved seed for planting an acre which is psychologically high compared to zero price for home-saved seed.

From experience farmers get low yields even from improved varieties because of soil fertility, weather condition, pests and diseases etc. They don't see themselves different from those who bought seed.

Regulation of quality of improved seed, some farmers say if I invest 70,000/= to buy improved seed and there is a possibility that they may get seed which is fake then that will be a loss, so this pushes them back to use home-saved seed.

Question 4: How to change farmers automatic thought process between grain and seed in the farmers' mind?

Response



Discussant response (PhD student Denis)

Looking at the previous discussions and some of the challenges hindering farmers' willingness to take up improved seeds, the following measures can be taken;

- Change mindsets of farmers by presenting facts about these seeds eg. Performance. Most farmers think there is no yield difference between certified seed and home-saved seed
- Stop looking at seed as the only input required to increase maize production. This should be taken as a whole package. In addition to having seed outlets, let us also have fertilizer outlets so that farmers after buying seed can get the other inputs. In this way, it becomes a complete common agronomic practice to get high yields and other farmers can learn from that
- Engage with government to ensure reduced inputs adulteration so that farmers can gain trust in some of these inputs like improved seeds

Additional responses

Seed breeders do a lot and don't envision the whole value chain of producing seed and roll out to smallholder farmers. Private sector (agro dealers) multiply the seed but don't have most of the information. It is up to the agro dealer to give information to the farmers if they have it. Breeders should design small seed packs for farmers to try out and see the difference between local seed and hybrid seed. This will improve adoption of improved varieties.

4.0 Closing remarks by Astrid

She complimented the moderator for keeping time and thanked all participants for the lively discussion. She added that from the meeting participants are sending the research team back to do a little bit more homework. Saying yes anchoring could be possible but we have to look at the location because it can be in certain places or group of farmers and also check whether the farmers look at grain or cobs with grain. We have to look at other risks, information as well as the entire package. There are many different gaps, we need to narrow down on a topic and hoped that when we have done our homework, participants will be interested to have another discussion with the research team to see if we have narrowed down

better and hoping such feedback will be equally use to the participants too. Finally, she appreciated all participants for their time and looking forward at having the next engagement soon.

References

Asea, G., Serumaga, J., Mduruma, Z., Kimenye, L., Odeke, M., (2014). Quality protein maize production and post-harvest handling manual, Association for Strengthening Agricultural Research in East and Central Africa (ASARECA). Accessed from utamu.ac.ug on 12th January, 2021.

Asfaw, S., Shiferaw, B., Simtowe, F., Lipper, L., 2012. Impact of modern agricultural technologies on smallholder welfare: Evidence from Tanzania and Ethiopia, Food Policy, Volume 37, Issue 3, 2012, Pages 283-295, ISSN 0306-9192, https://doi.org/10.1016/j.foodpol.2012.02.013.

Axmann, N., Fischer, T., Keller, K., Leiby, K., Stein,D., Wang and P. Access and Adoption of Hybrid Seeds: Evidence from Uganda, *Journal of African Economies*, Volume 29, Issue 3, June 2020, Pages 215–235, https://doi.org/10.1093/jae/ejz019.

Climate Change Agriculture and Food Security (CCAFS 2019). Promoting climate resilient maize varieties in Uganda | Global Challenges Programme project (cgiar.org).

Emerick, K., de Janvry, A., Sadoulet, E., Dar, M.H., 2016. Technological Innovations, Downside Risk, and the modernization of agriculture. Am. Econ. Rev. 106, 1537–1561.

Fisher, M., Abate, T., Lunduka, et al., 2015. Drought tolerant maize for farmer adaptation to drought in sub-Saharan Africa: Determinants of adoption in eastern and southern Africa. *Climatic Change* 133, 283–299 (2015). https://doi.org/10.1007/s10584-015-1459-2.

Kostandini, G., Abdoulaye, T., Erenstein, O., Sonder, K., Guo, Z., Setimela, P., and Menkir, A. Potential Impacts of Drought Tolerant Maize: New Evidence from Farm-trials in Eastern and Southern Africa. Contributed Paper prepared for presentation at the 89th Annual Conference of the Agricultural Economics Society, University of Warwick, England 13 - 15 April 2015.

Simtowe, F., Amondo, E., Marenya, P., Rahut, D., Sonder, K., Erenstein, O, 2019. Impacts of drought-tolerant maize varieties on productivity, risk, and resource use: Evidence from Uganda. Land Use Policy, Volume 88, 2019,104091, ISSN 0264-8377, https://doi.org/10.1016/j.landusepol.2019.104091.

Wossen, T., Abdoulaye, T., Alene, A., Haile, M.G., Feleke, S., Olanrewaju, A. and Manyong, V. Impacts of extension access and cooperative membership on technology adoption and household welfare, Journal of Rural Studies, Volume 54, 2017, Pages 223-233, ISSN 0743-0167, https://doi.org/10.1016/j.jrurstud.2017.06.022.

5.0 Annexes

Table 1: List of people who participated in the 2nd Webinar on Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed slated for Friday 4th June, 2021.

No.	Institution	Name	Contact	Email
1.	MAAIF (Inspection & certification department)	Adwar Sunday Brenda (Inspector)	0785612648	brendahadwar@gmail.com
2.	MAAIF (Agriculture Cluster Development Project)	Ogwang Francis (ZSLMC)	0776658273	ogwatab@gmail.com
3.	National Agricultural Research Organization (BugiZARDI)	Kagoda Frank (Maize Breeder/Senior Research Officer)	0772898988	fkagoda@gmail.com
4.	National Agricultural Research Organization (NaCRRI)	Kwemoi Daniel Bomet (Breeder)	0782711892 0770737563	kdbomet@gmail.com
5.	National Agricultural Research Organization (NACORI)	Lorna Kwaka Winnie (Farm Manager)	0773714144	lornakwaka@gmail.com
6.	ICIPE -University of Nairobi	Beesigamukama Dennis (PhD Fellow)	+254702954291	dbesiga@gmail.com
7.	Sydney University, Australia	Aryampa Shamim Nalukwago (PhD student)	+61478041292	shamimaryampa@gmail.com
8.	University of Natural Resources and Life sciences, Vienna	Sebuuma Janice Nakamya (PhD student)	0779156815	janienaka@gmail.com
9.	Uganda National Agro Dealers' Association (UNADA)	Kisakye Fiona Sarah	0782519135	kisakyefiona@yahoo.com
10.	Uganda Seed Trade Association (USTA)	Masereka Nelson (Executive secretary)	0782423767	nelsonmasereka@gmail.com
12.	Achira Enterprises Limited	Ben Akabwai ((Agro input dealership in Eastern & Northen region)	0772827081/0700590593	acilaagroservices@gmail.com, akabwaib@gmail.com
13.	Makerere University	Nabirye Deborah (Msc student)	0775520723	deborahlnabirye@gmail.com
14.	Makerere University	Akuru Grace (Msc. Student)	0755655369	graciouslive2@gmail.com
15.	Uganda Seed Trade Association (USTA)	Masereka Nelson (Executive secretary)	0782423767	nelsonmasereka@gmail.com
16.	African Fertilizer & Agribusiness Partnership	Kakaire Joel (Country Manager)	0774632954	joel.kakaire90@gmail.com
17.	Integrated Seed Sector Development (ISSD Uganda)	Kawuma Christine (M&E coordinator)	0782090304	mec@issduganda.org
18.	Integrated Seed Sector Development (ISSD Uganda)	Adongo Christine (agribusiness expert)	0774593215	agribiz.ngetta@issduganda.org
19.	Integrated Seed Sector Development (ISSD Uganda)	Nakanwagi Josephine (Consultant)	0754208901	nakanwagi11@gmail.com
20.	Wageningen University Research (WUR) Development Economics Group	Robert Sparrow (Principal Researcher)		robert.sparrow@wur.nl
21.	Wageningen University Research (WUR)	Astrid Mastenbroek (Principal Investigator)		astrid.mastenbroek@wur.nl

	Development Economics Group			
22.	Wageningen University Research (WUR) Development Economics Group	Lorenzo Marmo (Intern student)	+39 3498552203	lorenzo.marmo@wul.nl
23.	Wageningen University Research (WUR)	Bizimungu Emmanuel		emmanuel.bizimungu@wul.nl
24.	Kiryandongo District Local Government	Issa Byenkya (DPO)	0782446765	atwookiissa@gmail.com
25.	Kamwenge District Local Gorvernment	Asingwire Doreen (Agricultural Engineer)	0779218380	dasingwire@gmail.com
26.	Kamwenge District Local Gorvernment	Ariganyira Kassim (AO Kamwenge)	0777542191	kassimariganyira@gmail.com
27.	Bukwo District Local Government	Sande Dismas	0775546420/0789119872	sanfinalist@gmail.com

Table 2: Programme for the Webinar on Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed in Uganda slated for 4th June, 2021.

No.	Time	Activity	Session presenter
1.	14:45 -15:00hrs	Participants start logging in online	Link/codes will be shared
2.	15:00-15:10hrs	Welcome remarks	By Josephine Nakanwagi
3.	15:10 -15:30hrs	Presentations on research questions, tools, materials and methods of the Study on Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed	By Astrid Mastenbroek
4.	15:30 -15:55hrs	Discussion & feedback from Panelists	By all participants
5.	15:55-16:00hrs	Closing remarks	By Astrid Mastenbroek

Chat questions and responses for Webinar on Affordability and Willingness to pay for hybrid Drought Tolerant Maize seed in Uganda slated for 4th June, 2021.

From Shamim Aryampa to Everyone: 02:28 PM
Are you looking at a particular part of Uganda or the whole Uganda? if you are studying the whole Uganda, have you put the consideration of cultural differences in the different areas?

From Janice Nakamya to Everyone: 02:31 PM
it would be nice to see how this model works out between those farmers in peri -urban and typical urban setting

From Astrid Mastenbroek to Everyone: 02:32 PM
thank you. That soulds like an interesting option. do you expect farmers to respond differently?

From Shamim Aryampa to Everyone: 02:34 PM
I disagree because I think they consider the whole cob

From Janice Nakamya to Everyone: 02:34 PM
yeah, I would imagine so due to some differences

From TECNO SPARK 2soft to Everyone: 02:35 PM
low prices of maize (output) compared to investment

From Astrid Mastenbroek to Everyone: 02:35 PM

Shamin, could you explain with what you mean that they look at the cob?

From Grace Akuru to Everyone: 02:38 PM
I strongly disagree because most farmers lack the sensitization of the benefits of used hybrid maize varieties that is why they use the maize grain as a reference.

From TECNO SPARK 2soft to Everyone: 02:42 PM
I disagree
Farmer's look at the total production cost

From Kagoda Frank to Everyone: 02:42 PM
In ref to Astrid's presentation, whereas she may be partly correct as to why farmers will buy tomato seed but not maize seed, I have this to say: Our farmers are largely smallscale farmers for maize unlike tomatoes and other horticultural crops where farmers are largely commercial. commercial farmers will be happy to pay for quality seed, small scale noncommercial farmers careless abt seed quality

From TECNO CAMON CM to Everyone: 02:51 PM
generally, the production cost for hybrid maize is high. This affects the price of the produce

From TECNO SPARK 2soft to Everyone: 02:56 PM
A complete Cost benefit analysis between DTMV and local seeds. they need to know the difference and why they should take up this seed

From Joshua Opejo -Acila Enterprises Ltd to Everyone: 02:59 PM
Have this input at a reduced cost, timely delivery and use of fertilizers to boost up the yields

From Astrid Mastenbroek to Everyone: 02:59 PM
who should pay for the gap between the reduced cost and the full cost?
The government?

From Wageningen UR Uganda to Everyone: 03:00 PM
Demo plots are usually extremely controlled making the conditions quite different from actual farmers situations. That is one of the reason farmers think our statistics are exaggerated

From Joshua Opejo -Acila Enterprises Ltd to Everyone: 03:00 PM
But also the price of the final grain affect purchases of the seed

From Wageningen UR Uganda to Everyone: 03:00 PM
But I agree that demos remain critical for awareness creation to more people within a community

From Galaxy M01 Core to Everyone: 03:02 PM
It is important to adopt an integrated approach such as application of ICT

From Astrid Mastenbroek to Everyone: 03:03 PM
I agree that we also need to look at this as well and better using real yields from farmers and not only from demo plots: A complete Cost benefit analysis between DTMV and local seeds. they need to know the difference and why they should take up this seed

From TECNO SPARK 2soft to Everyone: 03:06 PM
Affordability and willingness from the farmers perspective is different