

AGRILINKS WEBINAR: SOIL VARIATION AND WHY IT MATTERS

PRESENTATION CHAT TRANSCRIPT

JUNE 29, 2017

PRESENTERS

Hope Michelson, University of Illinois Urbana-Champaign

Carolina Corral, Precision Agriculture for Development (PAD) Kenya

Emilia Tjernström, University of Wisconsin-Madison

Michael Carter, University of California-Davis

MODERATOR

Julie MacCartee, USAID Bureau for Food Safety

Carla Fernandez de Castro, USAID Knowledge-Driven Agricultural Development Program

Michael Carter: I went through setps but you do not seem to hear me

Prince Emmanuel Agyeman: This is Emmanuel, please is it necessary to use headset?

Carla (USAID Agrilinks): Hello Prince, not necessarily

Carla (USAID Agrilinks): You can just use your computer speakers

*Carla (USAID Agrilinks): Good morning, afternoon or evening Everyone! Welcome to today's Agrilinks webinar!
We are going to get started here in just about 15 minutes. Please let us know where you
are joining us from today!*

Sophie Javers (AMA Innovation Lab): yes

Sophie Javers (AMA Innovation Lab): Hi everyone from Sunny California

Sophie Javers (AMA Innovation Lab): Michael, we can hear you!

Isaac Ndereba: Hello everyone, this is Isaac from D.C.

USAID Agrilinks (Ahmed): Hi Isaac

USAID Agrilinks (Ahmed): Welcome to the webinar!

AV Tech (Washington DC): www.speedtest.net

Prince Emmanuel Agyeman: Emmanuel Agyeman Prince, International Potato Center (CIP-GHANA).

USAID Agrilinks (Ahmed): Welcome Emmanuel. Thank you for joining us today!

Carla (USAID Agrilinks): Hello Emmanuel Prince - welcome to you frmo Ghana!

Lysette Lacambra: Hello everyone! Lysette here from Thailand

USAID Agrilinks (Ahmed): Welcome Lysette. Thank you for joining us today!

Tim Njagi: Hi Everyone, Tim Njagi, Tegemeo Institute

USAID Agrilinks (Ahmed): Hi Tim, we are glad you could join us.

Sophie Javers (AMA Innovation Lab): Hi Tim! Good to "chat" with you again!

Mashood Siddiqui: This is Mashood Ahmed from Pakistan,, hello all

USAID Agrilinks (Ahmed): Hi Mashood. Glad to have you with us.

Mercy Ngunjiri: Hello everyone! Mercy here from Purdue university, Indiana :)

Sylvie Desilles: Hello, this is Sylvie, Eastwestseed Knowledge Transfer, Thailand.

Barbra Bearden: Barbra Bearden, Washington, DC

Andrew Lenssen: Andy Lenssen, Department of Agronomy, Iowa State University in Ames IA, USA

USAID Agrilinks (Ahmed): Hello Sylvie. Welcome!

Carla (USAID Agrilinks): Good morning Barbra!

Odipo Osano: University of Eldoret Kenya

USAID Agrilinks (Ahmed): Hi Andrew. Thanks for joining us.

Carla (USAID Agrilinks): Carla (USAID Agrilinks): Good morning, afternoon or evening Everyone! Welcome to today's Agrilinks webinar! We are going to get started here in just about 15 minutes. Please let us know where you are joining us from today!

Tim Njagi: Hi Sophie, looking forward to this exciting discussion

Sarah McClung: Greetings from DC! This is Sarah from JSI, the SPRING project.

USAID Agrilinks (Ahmed): Welcome Odipo

Michael Carter: Hi Tim!

Carolina Corral PAD: Hi everyone!

Tim Njagi: Hi Prof

Donald Greenberg: Don Greenberg from San Francisco, independent consultant

USAID Agrilinks (Ahmed): Hi Sarah, glad to have you with us today!

David Murphy: Hello everyone, David Murphy here from Cornell University

Montague Demment: Montague Demment APLU

Sarah Kehl: Hi everyone, this is Sarah from the FDA's International Affairs Staff in College Park, MD

USAID Agrilinks (Ahmed): Hi David and Donald! Thanks for joining us today!

SORAYA BAMBERG: Hello, I'm Soraya, from Brazil

Roberta Lauretti-Bernhard: Good morning/afternoon all GAIN in Washington DC

USAID Agrilinks (Ahmed): Welcome Soraya.

Mashood Siddiqui: I am director Operations at Jilaniz , we are into Organic Cotton entering into a breeding programme for organic cotton seeds and also into orchards

Tschirhart Kevin: Hi there, Kevin from New York/Columbia University

USAID Agrilinks (Ahmed): Hi Roberta. Glad to have you with us today.

Carolina Corral PAD: Carla, could you add me back as a presenter? Sorry I have to log again

Carla (USAID Agrilinks): Hello Mashood! welcome to you!

USAID Agrilinks (Ahmed): Hi Kevin. Wonderful to have you with us today.

Mashood Siddiqui: Thanks Carla

Michael Carter: Hello Tag!

Casey Harrison: Hello, Casey Harrison from Nuru International. Are our microphones automatically muted?

Diep Phan: Hi everyone, I am Diep, from the Netherlands

USAID Agrilinks (Ahmed): Hi Casey, yes, the microphone are muted.

Casey Harrison: perfect thanks

Montague Demment: On vacation in Greece! Envious!

USAID Agrilinks (Ahmed): Welcome Diep!

*Carla (USAID Agrilinks): Hello Everyone! Thank you so much for introducing yourselves! We have a great,
international crowd today*

Carla (USAID Agrilinks): We are about to get started.

Carla (USAID Agrilinks): Hello Montague! Don't we all wish!

*AV Tech (Washington DC): Julie MacCartee from USAID BFS is introducing the webinar. Please let me know if
you're able to hear her.*

Jennifer Cisse: yes

Sophie Javers (AMA Innovation Lab): Yes!

Carla (USAID Agrilinks): Thanks Jennifer - great to have you with us!

USAID Agrilinks (Ahmed): Great. Thank you Jennifer.

Montague Demment: yes

Prince Emmanuel Agyeman: No please

Carla (USAID Agrilinks): www.agrilinks.org

Rubie Mize: Rubie Mize from the University of Maryland

Dick Tinsley: Dick Tinsley, Colorado State University

Carla (USAID Agrilinks): Hi Rubie, great to have you join us

Carla (USAID Agrilinks): Hello Dick!

USAID Agrilinks (Ahmed): Hi Rubie, Thanks for being with us today.

USAID Agrilinks (Ahmed): Welcome Mr. Tinsley!

Carla (USAID Agrilinks): For all the webinar resources from today, please visit the Agrilinks event page: <https://agrilinks.org/events/soil-variation-and-why-it-matters>

Carla (USAID Agrilinks): All resources will be available within two weeks!

AV Tech (Washington DC): Welcome Dick Tinsley. Great to see you again!!!!

Julie MacCartee (USAID/BFS): If you haven't yet introduced yourself in the chat box, please do! We encourage everyone to use the chat box freely throughout the webinar.

Jennifer Cisse: Jenn Cisse, USAID/BFS/MPI

Julie MacCartee (USAID/BFS): Glad to have you on the webinar, Jenn!

USAID Agrilinks (Ahmed): Hi Jennifer. Thanks for joining us!

Prince Emmanuel Agyeman: Emmanuel, am still finding it difficult to hear the presentations

Carla (USAID Agrilinks): Once the presentations get started, feel free to maximize the presentation window by clicking on the four little outward-pointing arrows in the top bar of the presentation pod

Grace Duggan: Just in time!

USAID Agrilinks (Ahmed): Welcome Grace!

Carla (USAID Agrilinks): Folks, please be sure to post your questions for the presenters right here in the chat box! I will pass them on to our presenters to answer during the Q&A portion of the webinar!

Joyce Fedeczko: Joyce with IFDC in Muscle Shoals, Alabama USA

USAID Agrilinks (Ahmed): Hi Joyce. Thanks for joining us!

Pablo Ruiz: Pablo - Hanns R. Neumann - Central America

USAID Agrilinks (Ahmed): Welcome Pablo. Thanks for being with us today!

SAMBOU COLY: sambou coly: The MasterCard Foundation- Toronto

USAID Agrilinks (Ahmed): Hi Sambou. Glad you could join us.

Dick Tinsley: a soil test cost about as much as a 50kg. bag of fertilizer. to be cost effective it as to make a 1bag difference in application. this would be difficult for smallholders and fields 1ha or less.

Carla (USAID Agrilinks): Folks, the AMA Innovation Lab website can be found in the links box at the bottom left of your screen. All the webinar resources including webinar presentation, transcripts, audio can be found on the Agrilinks website: <https://agrilinks.org/events/soil-variation-and-why-it-matters>

Carla (USAID Agrilinks): And please post your questions here in the chat box and we will be happy to pose them to the presenters during the Q&A portion!

Dick Tinsley: she is coming loud and clear

Jennifer Cisse: it's fine for me...

Montague Demment: Fine here

Julie MacCartee (USAID/BFS): Thanks for confirming the audio is good for you!

Julie MacCartee (USAID/BFS): Very interesting to think about how soil variation could affect spillover effects of education/extension programming

Sophie Javers (AMA Innovation Lab): For more information about Emilia's work in Kenya, check out <https://basis.ucdavis.edu/project/evaluating-socio-economic-impacts-western-seeds-hybrid-maize-program-kenya>

Julie MacCartee (USAID/BFS): Participants, what are your initial thoughts about what level should be tested - field vs village, etc? Taking into account the expense of soil testing

Sophie Javers (AMA Innovation Lab): And for the project that Hope is referencing, please visit: <https://basis.ucdavis.edu/project/evaluating-effect-site-specific-soil-information-farmer-input-choices-and-relationship>

Julie MacCartee (USAID/BFS): Thank you, Sophie!

kandie kimosop: i will go for field factoring in variation in within one village

Odipo Osano: To what extent is the variation attributed to the natural differences and to what extent could it be attributed to managerial difference in either Kenya or Tanzania?

Julie MacCartee (USAID/BFS): Thanks for your question, Odipo

Odipo Osano: And, which crop are most sensitive to the variations?

Carla (USAID Agrilinks): Thanks Odipo!

Donald Greenberg: For Hope -- the financial return to increased fertilizer usage could be negative, even with farm specific recommendations. Isn't this a more fundamental issue than one time effects of voucher subsidy?

Carla (USAID Agrilinks): Great question Donald! Thank you - We will be sure to ask it during the Q&A

AV Tech (Washington DC): Caro is joining us from Nairobi today.

David Murphy: For Hope also -- Is the project scalable in the current form? What would be the cost of the vouchers to the government or implementing institution?

Lysette Lacambra: Yes I agree with Donald, I would be interested to learn as well how it affected their yield.

Carla (USAID Agrilinks): Thank you David and Lysette!

Sophie Javers (AMA Innovation Lab): For more information about the project that Caro is referencing, please check out: <https://basis.ucdavis.edu/project/multiple-interventions-approach-increasing-technology-adoption-view-towards-scaling>

Carla (USAID Agrilinks): Thank you Sophie!

Carla (USAID Agrilinks): Folks, once we finish with the presentation we will head in to Q&A, let us know your questions for the presenters!

Jennifer Cisse: In these different contexts, to what extent can the variation in yields be explained by soil heterogeneity in the absence of interventions?

Dick Tinsley: how is the fertilizer applied to Maize plants once established. what are the labor requires for this application

Shams Rahman Rahmani: Shams Rahmani from Purdue University, Indiana, USA.

Shams Rahman Rahmani: How easy it was for the farmers to adopt the idea of soil variation and recommendation of fertilizers and other inputs based on soil variation.

Dick Tinsley: how readily is fertilizer in TZ and Kenya, do farmers have to get any extension approval to obtain fertilizer

Julie MacCartee (USAID/BFS): Good questions, all. When Carolina is finished, we will ask questions of all 3 presenters

Carla (USAID Agrilinks): Thank you Shams and Dick

Andrew Lenssen: Soil sampling and analysis by field is important. However, variation within small fields often is an important consideration. For an example of in-field variability for nutrient status,

please see Rocha et al. Afr. J. Agric. Res 12(22): 1889-1896 for results from Gurue, Mozambique.

USAID Agrilinks (Ahmed): Thank you Andrew.

Julie MacCartee (USAID/BFS): Thanks, Andrew. I was wondering about variation on a very small scale, within a particular field

Dick Tinsley: as mentioned easy

Dick Tinsley: as mentioned earlier soil testin

kandie kimosop: @Dick Tinsley I am a kenyan agronomist well fertilzer is readily available in the shop near most farmers also the goverment has a program to fertilizer subsidies ...

Dick Tinsley: commercial soil testing is questionable from cost effectiveness perspective for small fields

Jennifer Cisse: Is there a role for the private sector to provide soil testing in a bundle with other inputs and finance/insurance?

Shams Rahman Rahmani: What type of soil sampling was used for collecting data? Before collecting soil samples and after study conclusion, how do you know there is soil varaition. In other words, did you use any computer modeling, aerial photography, remote sensing data and gis softwares to capture soil variation.

USAID Agrilinks (Ahmed): Thank you for your question Shams!

Dick Tinsley: I get concerned when supply is limited and approval may require some informal payments ref. Ethiopia

Carla (USAID Agrilinks): Thank you Shams! We will get to all questions shortly.

Dick Tinsley: sorry for typo using iPad instead of computer

USAID Agrilinks (Ahmed): No worries Dick. Thank you for your contributions to the discussion.

Donald Greenberg: For Carolina -- great study -- it seems though that more attention on refining the improved input packages tested to ensure that that recommendations provided a good return on investment before doing this type of research discussed

Mercy Ngunjiri: I think that soil sampling and analysis can be very expensive! Looking at a poor to middle class small scale farmers in Kenya and other African countries, I think that the affordability for commercial soiltesting is low. Our lab group here at Purdue university is working on how we can map and deliver soil spatial explicit information at a scale where the farmers can make informed decisions. This is using digital soil mapping technologies. For

example, I'm working on Western Kenya and we are working on availing soils information at a pixel size of 30 by 30m which is limited to the DEM resolution.

Sophie Javers (AMA Innovation Lab): @David Murphy - here is some research on "smart subsidies" that was conducted in Mozambique a few years back. Please check out: <https://basis.ucdavis.edu/project/savings-subsidies-and-sustainable-food-security-field-experiment-mozambique>

Donald Greenberg: Any similar research done on savannah type crops (sorghum, millet, peanuts, sesame)

Carla (USAID Agrilinks): Folks! Please feel free to download all the webinar resources on the Agrilinks event page. The presentation is available now along with various policy brief provided by the AMA Innovation Lab - <https://agrilinks.org/events/soil-variation-and-why-it-matters>

Tim Njagi: Mercy, the technology is making the cost to come down. Now both the cost and the time taken to get results has significantly improved from the time Emilia did the study

Mercy Ngunjiri: Thaanks Tim. That's great to hear!

USAID Agrilinks (Ahmed): Thank you Tim.

Mercy Ngunjiri: I think that the aim of targeting the greater population of farmers is key to development.

Donald Greenberg: For Michael Carter -- what was private sector supply chain response in Manica to this work -- it seems like your positive adoption findings would lead to an interesting private/public partnership

Andrew Lenssen: Following is a link to Rocha et al. mentioned above: <http://www.academicjournals.org/journal/AJAR/article-full-text-pdf/C18DF1864548>

USAID Agrilinks (Ahmed): Thank you for sharing that link Andrew.

Dick Tinsley: how does the typical 8 week spread in crop establishment impact fertilizer response etc.

Michael Carter: For Donald Greenberg: the private sector response in Moz was strong, but probably only because of prior investment in the region (by IFDC & USAID) in agro-input supply chain

Jennifer Cisse: yes thanks

Timothy Russell: the soil testing kit looks interesting but how close are to having precision Ag. tech. based perhaps on remote sensing for mapping soil fertility variation in Africa

Michael Carter: For Shams Rahman Rahmani: hope we can talk risk, liquidity & vouchers; If not, send me an email (mrcarter@ucdavis.edu) and I will send a paper on that topic

Lysette Lacambra: Voucher system is good but I think we have to avoid the dependency of farmers from subsidies. Just sharing our PPP project in Myanmar where farmers are can have vouchers for 3 cropping cycles but the percentage of subsidy diminishes per season. First voucher is 100%, 2nd is 75% and 3rd voucher is 50% of the total farm inputs. At the end of the 3rd voucher, we expect farmers to have saved from the 3 cropping cycles and be able to finance on its own.

Carla (USAID Agrilinks): Folks we are going to share the polls shortly - please take a moment to fill out the polls for us! They are very useful for us! And we will continue with the Q&A for the next 10 minutes until 11AM EDT.

Carla (USAID Agrilinks): Thanks Lysette for your input!!

Mercy Ngunjiri: Everyone, Dr. Darrell Schulze et. al., developed an app where we publish maps to explore different soil types in the world. So far, we have about 7 US states on the app. We are hoping that this will be a platform to publish other maps. For example, we are hoping to publish several digital Kenyan soils and agroecological zone maps like the 1980 reconnaissance soil map very soon. This will come with a dialog box where one can query the maps at a specific location. One can download it on an ipad or use the direct link on a computer or normal smart phone. Here is the link: <http://soilexplorer.net/>

Emilia Tjernström (UW-Madison): Thank you Mercy -- that is very interesting!

Michael Carter: Agree strongly with Lysette. I think Sophie has posted a link to our study in Moz that makes the case for temporary subsidy (despite the political appeal of permanent subsidies)

Sophie Javers (AMA Innovation Lab): @Lysette here is the link again: <https://basis.ucdavis.edu/project/savings-subsidies-and-sustainable-food-security-field-experiment-mozambique>

USAID Agrilinks (Ahmed): Thanks Sophie

Michael Carter: For Tim Russell: we are using high res satellite imagery for yield prediction (for insurance). We can definitely see nitrogen deficiency in the form of insufficiently green maize, but I at least am not aware of how to trace that to soil differences

Lysette Lacambra: We had the same problem in the Philippines before Michael of dole out system from the government. Our approach is different than in PPP not a voucher system. So we have groups of farmers where they can get soft loans. After their vegetable production, they will pay it back for other farmers to access funds in the same Farmer's Organization. So the fund is revolving.

Sophie Javers (AMA Innovation Lab): I'm going to second Carla - please do take a moment to answer the poll as we wrap up

Carla (USAID Agrilinks): Thank you Everyone for your participation and for a very rich Q&A session. We are appreciative of your input! Please take a moment to fill out the polls. If you wish to receive the AMA Innovation lab monthly newsletter, please provide your email address in the last poll question and the Lab will add you to their roster.

Sophie Javers (AMA Innovation Lab): Thanks!

Montague Demment: Have to sign off. Thank you very much for an interesting session.

Andrew Lenssen: Thank you for the webinar.

Tim Njagi: Thanks Mercy, there is a 2015 soil map which is open. The survey was undertaken by KARLO in Kenya. It would be useful if you could reach out to them and have the data on the platform as well

USAID Agrilinks (Ahmed): Thank you Montague.

Sophie Javers (AMA Innovation Lab): Thank you Tag for taking the time to listen in!

Mercy Ngunjiri: Oh thanks for the information Tim! Can you share a link?

Emilia Tjernström (UW-Madison): Mercy, there is also AfSIS data -- do you know about it?

Emilia Tjernström (UW-Madison): But it is at 250x250m resolution

Shams Rahman Rahmani: Soil Info is another interesting app. You will be able to get the free data for you location.

Rubie Mize: Are other recommendations to improve organic matter and overall soil health being considered such as use of cover crops, no till etc.?

Mercy Ngunjiri: Yes Emilia, the AfSIS, I'm aware but yeah, the resolution is a little low but of course better

Carla (USAID Agrilinks): Thank you everyone for joining today's Agrilinks Webinar! We greatly appreciate your time and are happy we can bring you the latest research in the field of soils. Check out the Agrilinks event page for more resources - <https://agrilinks.org/events/soil-variation-and-why-it-matters> and please sign up for the AMA Innovation lab monthly newsletter by providing your email address in the last poll question. or visit their website: <https://basis.ucdavis.edu/>

Mercy Ngunjiri: We hope to make use of the legacy soils data available because it forms a great base to digital soil mapping

Mercy Ngunjiri: Tim and Emilia, please let's connect. My email: mngunjir@purdue.edu

AV Tech (Washington DC): Thanks to all for checking out the webinar. Look forward to seeing you next time!

Tschirhart Kevin: thank you all very much, very interesting presentations!

Carla (USAID Agrilinks): Thank you!

*Sophie Javers (AMA Innovation Lab): Everyone, please feel free to reach out to us at the AMA Innovation Lab
and we can direct you to research or people who can answer your questions*

Carla (USAID Agrilinks): Have a great morning, afternoon, or night!

Sophie Javers (AMA Innovation Lab): basis.ucdavis.edu

*David Murphy: Thank you to the presenters. It was a really informative webinar. Looking forward to seeing more
results on these projects.*

Julie MacCartee (USAID/BFS): Thank you for joining!

Hope Michelson (UIUC): thank you everyone for your questions and thoughts.

Carolina Corral PAD: Thank you!

Emilia Tjernström (UW-Madison): Thanks!

Odipo Osano: thank you

Carla (USAID Agrilinks): Thank you!

Mercy Ngunjiri: Thank you!

Lysette Lacambra: Thank you!

Tim Njagi: Mercy, the data is not online but one does a n email to request access]

Tim Njagi: Thank you