



SMALLHOLDER ADOPTION OF INTEGRATED SOIL FERTILITY MANAGEMENT

WEBINAR CHAT TRANSCRIPT

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PRESENTERS

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USAID Agrilinks: Good Morning Everyone! We will begin the seminar at 9:30h EST

USAID Agrilinks: Exciting to see participants online already!

USAID Agrilinks: So, what brings people to today's webinar?

Marinho Nhambeto: Greetings from Mozambique

James Njeru: soil fertility degradation

James Njeru: and the need to improve the situation

USAID Agrilinks: Morning Marinho! Great to hear James. Are you working on any soil fertility degradation projects?

Marinho Nhambeto: No. I'm in smallholder dairy project

USAID Agrilinks: Who else is out there? Lets get some networking started-- share organizations, countries, projects! You never know when someone else out there might be working on a similar project

James Njeru: yes, use of compost,mulching,residues for sustainable food production

Lynn Brandenberger: Always interested in learning more about soil fertility since it is the basis of agriculture.

USAID Agrilinks: Indeed, hopefully more conversation is generated this year around soils, its the International Year of Soil!

Leonard Rusinamhodzi: Hello, I am a systems agronomist working on intensification in southern Africa

USAID Agrilinks: Any interesting projects, Leonard?

Laura Husak: I'm working in research and project management with a portfolio of agriculture innovations for smallholders. Most of my colleagues are agricultural scientists, and come from an interdisciplinary social sciences background myself. So looking to learn more about bridging those perspectives.

Mila Sell: Hi from Finland (where it's already getting dark..). I'm about to set up an innovation platform with small farmers in Sidama, Ethiopia and look forward to getting good ideas.

Leonard Rusinamhodzi: We are assessing potential of current cropping systems vs. innovative e.g CA to withstand impacts of climate variability and change

Laura Husak: I'm in Ottawa, Canada

USAID Agrilinks: Fantastic!!

Leonard Rusinamhodzi: with the aid of modelling tools

pietro carpena: i work in an INGO that is very much focusing its work on soil fertility management in SSAfrica . so looking forward to hearing some interesting lessons learned from other development actors out there. its the international year of the soil....

Richard Tinsley: Dick Tinsley from Colorado State University

USAID Agrilinks: Feel free to share links websites!

Richard Tinsley: main website is www.smallholderagriculture.com

Sandi Roberts: Hi there. I am working on a USAID funded program will smallholder farmers on irrigation schemes in Zimbabwe

Richard Tinsley: hi Jerod

Margaret Masbayi: Greetings from Dodoma Tanzania where challenges in solutions for soil fertility management are part of the small holder farmers' daily reality..

Rachid Serraj: Hi I am systems agronomist at CGIAR Science Council secretariat (based at FAO, Rome)

Marinho Nhambeto: But I'm passionate with sustainable agriculture

Richard Tinsley: I am confident farmers recogniz the problem but not certain they have the means to address the problem, particularly if operating mostly manually

Sandi Roberts: www.zim-aied.org

Karelyn Cruz: Karelyn Cruz from USAID/Mozambique

John Nicholson: Greetings everyone. John Nicholson from USAID's global nutrition project, SPRING (www.spring-nutrition.org) joining today from Chapel Hill, NC.

Richard Tinsley: as i think i have commented in the past, the concern would be limited labor and limited dietary energy to fuel the labor

Elizabeth Dunn: hi from Gainesville, Florida. I am an economist conducting research and evaluation of smallholder agriculture in inclusive ag market systems.

John Nicholson: Bright and sunny but chilly!

Richard Tinsley: colorado a balmy 70 degrees

Elizabeth Dunn: sunnier still

John Nicholson: at least for us Southerners!

Silantoi Kisoso: Hallo everyone

USAID Agrilinks: Morning Slantoi!

Terence Albrecht: Good morning! Terry Albrecht from USDA/Foreign Agricultural Service in Washington DC

John Nicholson: Looking forward to hearing more about soil health and the potential links to improving health through nutrition-rich crops that are sold in markets and eaten at home

George Kegode: Consultant - Food Security calling in from Maryville, Missouri

Silantoi Kisoso: I am Sila and I am interested in learning more about small scale farming improvements through scientific research

Silantoi Kisoso: I am new to the sector and eager to learn more.

Elizabeth Dunn: Smallholder behavior change is a major topic for the Leveraging Economic Opportunities (LEO) project.

Silantoi Kisoso: I am in Kitcener, Canada

USAID Agrilinks: Fantastic!

Steven Londner: Good day, all, from Oneonta, NY. I'm an independent consultant.

Hans Muzoora: Good morning! Hans Muzoora originally from Uganda, now with Agridev Solutions Inc based in Massachusetts USA.

George Kegode: My interests are in how can soil fertility be guaranteed for the small-holder.

Hans Muzoora: Oh yes! We are involved in Sustainable Agriculture initiatives

Dawn Conklin: Greetings from USAID/Ghana. I am working with a G2G program called Resiliency in Northern Ghana - working to improve livelihoods and nutritional status to vulnerable households.

Alison MacDonald: Hi this is Alison from CPAR - a Canadian NGO up in Toronto, Canada - we have a number of food security programs that integrate Conservation Agriculture but at times face challenges of adoption of the approach because of government policies that promote chemical fertilizer use so I am curious about any ideas on how to best work within this context

Silantoi Kisoso: Hi Alison :)

Kate Tully: Hi. I am from the University of Maryland where I teach Agroecology. My research focuses on optimizing food and environmental outcomes, primarily in sub-Saharan Africa.

Steve Good: Steve Good, World Relief Mozambique

Silantoi Kisoso: I would be interest in connecting with anyone working in Senegal and Mali

Josh Folkema: Josh Folkema, World Vision, based in Toronto

Sandrine Chetail: Sandrine Chetail, Mercy Corps

John Russell: Hi, all. John Russell, EcoFoodSystems, in Bend, Oregon, USA

Liz Kirchner: Liz Kirchner, Virginia Tech, interested in farmer-to-farmer/early adopters in agricultural outreach

USAID Agrilinks: Great!! Feel free to share project links!!

Rebecca Haagens: Good morning. I am with Trees for the Future based in the DC area. We aim to improve livelihoods of small holder farmers in Africa by revitalizing degraded lands.

Alexis Adams: Hello, I am a graduate student from the University of Saskatchewan in Canada, studying the sustainability of microdosing of fertilizer and how sustainability is impacted by organic amendments

Thomas Reinsch: Hi from Thomas Reinsch, NRCS soil scientist working with Pakistan on soil fertility issues

Alexis Adams: And my work is in the West African Sahel. Excited to take part in the webinar today!

Armando Tasistro: I work in Mexico and Central America

Laura Husak: IDRC is funding projects in Asia, Africa and Latin America.

http://www.idrc.ca/EN/Programs/Agriculture_and_the_Environment/Canadian_International_Food_Security_Research_Fund/Pages/default.aspx

Caitlin Peterson: Hello, Caitlin Peterson from the University of California, Davis, graduate student in International Agricultural Development

Laura Husak: Im working in terrace farming in Nepal

Lynn Brandenberger: We're doing some work in Guatemala and Mexico. Lynn

Elizabeth Teague: Hi all, Lizzie Teague from Root Capital. We provide financing and financial management training to agricultural businesses in Africa and Latin America.

Armando Tasistro: Soil and crop nutrition management

Armando Tasistro:With small farmers

Lynn Brandenberger: We are working with women in small villages through an NGO that is doing development work there. In Mexico I've worked through a missionary friend on soil fertility issues with peach and grain farmers.

pietro carpena: in Burkina Faso, we have been promoting the digging of planting basins known as zai pits since 2007. We have reclaimed more than 850ha of degraded farmland in the Bam Province. This traditional technique was improved by increasing depth and diameter of the pits and adding organic matter. and judicious micro doses of fertilisers. The zai concentrate both nutrients and water and facilitate water infiltration and retention. Thus lands which used to be barely productive can now achieve yields

Kendra Levine: Hello all, I'm a graduate student at Michigan State University looking at how input subsidy programs impact the use of soil fertility management practices.

Armando Tasistro: Dealing with soil health, nutrient balance, yield gaps, through education and research

Mike McGahuey: I am working on the effects of organic matter on fertilizer-use efficiency in West Africa. I saw someone post a similar interest and would appreciate exchanging notes.

Laura Husak: Main challenges are related to labour (especially for women, due to high levels of male outmigration), input access and soil degradation

Madeleine Smith: Hello everyone, Madeleine Smith from the USAID SPRING project. <https://www.spring-nutrition.org/> . Joining from Seattle.

Silantoi Kisoso: Hi Mike... Where in West Africa... Mali or Senegal by any chance?

Doudou NDIAYE: Agriculture Specialist, USAID/Senegal, Sahel regional Office

Mike McGahuey: Zai pits were mentioned. There are several good publications in French and English on the impacts of zai pits on yields. There is also good peer-reviewed studies from Mali that quantify the impacts of water harvesting on soil moisture levels.

Lorna Grace: Hi all. Lorna Grace from Small Finance Big Change. I am interested in hearing about financing needs for this type of farm investment

Robert Mazur: Rob Mazur - our multidisciplinary research team is working on farmer decision making for integrated soil fertility management in maize-bean systems in Uganda and Mozambique

Sivan van Leerzem: Hey everyone, I'm a master student development economics at Wageningen University in the Netherlands. I'm writing my thesis on ISFM adoption and specifically the influence of market linkage.

USAID Agrilinks: Morning and thanks for joining everyone! Feel Free to fill out our intro polls!

USAID Agrilinks: Great to have students, academics, private-sector, NGO and joining this morning!

USAID Agrilinks: Should be a great conversation and input from all sectors and backgrounds provides great conversation.

Monika Firl: Good morning all... Monika Firl, CoopCoffees in Montreal , QC -- working closely with small-scale coffee farmers battling leaf rust and looking for new ways to improve soil fertility

USAID Agrilinks: You can follow the conversation on twitter as well by the hashtag #AgEvents

Marc Douglas: (Chemical) fertilizer availability is limited and expensive for many places where we work in Liberia... for this, and other reasons, non-chemical methods seem more attractive. Curious about Agency experience re organic methods...

Suzanne Lundin-Ross: Good Morning! Suzanne Ross from CIMMYT Mexico

Marc Douglas: ...such as green manure, direct seeding, etc.

USAID Agrilinks: Morning Monika! Does leaf rust correlate to soil health?

USAID Agrilinks: Jerry Glover from USAID is now speaking

John Nicholson: Thanks for highlighted the role of good soil health in good human nutrition..this is an important nutrition-sensive agriculture practice. Learn more about USAID's nutrition-sensitive agriculture here: <http://agrilinks.org/events/draft-guidance-usaid-funded-nutrition-sensitive-programming>

Zachary Baquet: Good Morning All! Joining from DC.

Rose Kadende-Kaiser: Rose Kadende-Kaiser-work in community health and development, providing nutrition and lifestyle coaching. Offer training that helps to improve knowledge in link between nutrition (including quality of food) and lifestyle on overall health.

Laura Ostenso: I am in Washington, DC, working on agricultural development in bridging gaps between research, policy, and implementation.

John Russell: Please have speakers speak directly into the mic.

Monika Firl: to Mila Sell - i'd love to chat with you about your platform. Our org website: www.coopcoffees.coop

Monika Firl: an my email - monika@coopcoffees.com

USAID Agrilinks: Monika- if you find Mila Sells name in the participant list, you can hover over and start a private chat as well

Monika Firl: perfect. thank-you!

Monika Firl: And yes... i have seen amazing examples of how increased soil fertility has prevented leaf rust from affecting the plant.

USAID Agrilinks: any links on hand that can be shared out with participants?

Laura Ostenso: Great to be learning about IFSM and farmer decision making. More great interviews for the year of soils can be found online: <http://agrilinks.org/blog/digging-soils-interview-series>

Monika Firl: or rather, balanced beneficial micro-organisms in the soil preventing the spread of leaf rust

USAID Agrilinks: Also, a reminder, if you have questions during the presentation, please type your name/organization or country and we will ask them at the end during QA

Mary ALLEN: I am in Dakar working for Practical Action West Africa www.practicalaction.org Prior to this I was in Mali for many years. I have worked to promote farmer management of natural regeneration to restore or establish tree cover in their fields

USAID Agrilinks: sounds like some Agroforestry!

Richard Tinsley: Isn't one of the concern that scientists are interested in returns to land while farmers are more interested in returns to labor?

Corinna Clements: Monika, Coop Coffees sounds like a great platform. How do you think promotion of soil fertility management by a cooperative differs from conventional development technology transfer structures?

John Russell: Can the speakers (or any participants) point to references on multi-location, multi-year studies of the profitability of ISFM in smallholder systems? (question from John Russell, Principal at EcoFoodSystems)

John Nicholson: For a perspective on how some of the economic factors Keith highlighted interact with all important nutrition outcomes that impact overall human health, check out SPRING's technical briefs series describing several conceptual pathways from agriculture to nutrition: <https://www.spring-nutrition.org/publications/series/improving-nutrition-through-agriculture-technical-brief-series>

George Kegode: Audio is terrible

James Njeru: sevral noises

USAID Agrilinks: hold on everyone we're aware of the AV issues

Joanne Harnmeijer: ah, OK

aliyu samaila:Aliyu Samaila: Hello everyone. The usefullness of organic matter to soil cannot be over-emphasised. However, sources for organic matter are dwindling and farmers particularly in Africa need more ways for soil conservation(MARKETS II project, Nigeria)

Richard Tinsley: Perhaps here is a webpage of intereste from the smallholderagriculture.com website <http://lamar.colostate.edu/~rtinsley/OrganicNutrients.htm>

Richard Tinsley: The concern is the amount of organic material available and labor required to make use of it.

James Njeru: now clear

USAID Agrilinks: So Dr. Tinsley, how do we increase organic matter-- with a reasonable level of effort from the farmers

g alex: Do the studies take intoaccount cost of labor for use of organic matter?

Kate Tully:We know that leaving residues on farms is good for SOC, but farmers often need these materials to feed cattle or for fuel.

Liz Kirchner: Aliyu Samaila - Hi. Why are sources of OM dwindling? Liz

Richard Tinsley: you emphasis the moble composter when ever possible. ie the grazing animals

Steve Good: how long was this study run? just one year or multiple?

USAID Agrilinks: Are you referring to livestock rotation?

Richard Tinsley: more grazing stubble

Steve Good: last visible slide.

Kate Tully: In some cases manure quality is so low that it immobilizes N.

Hector Santos: How is the cost of the manure established to estimate the profit/ returns to fertilizer and ISFM?

Steve Good: slides are not keeping up with voice

Richard Tinsley: yes it will take a couple weeks for it to become available

Don Humpal: Profitability must be set against opportunity costs and risks

Silantoi Kisoso: This a great presentation. Very useful.

Liz Kirchner: Kate Tully: In some cases manure quality is so low that it immobilizes N." Kate Tully - that's interesting.

Richard Tinsley: don't forget any organic additions are only partly decomposed so the amount of material to measure an increase in OM is quite large

G Alex: How are the organic materials incorporated into the soil? by hand? with mechanization? not incorporated?

USAID Agrilinks: Reminder to type your questions for presenters here! Please state name and organization. I will ask the presenter on your behalf during QA

Abubacker Siddick: mixture of organic and chemical fertilizers application found to be good for oilseed crops. for example Enriched farm yard manure. FYM with super phosphate and kept for a while (20-22 days in shade) and application with Nitrogen

Joanne Harnmeijer: sorry: AEA is what: Agro-Ecological ...

Richard Tinsley: please make an inventory of the amount of organic material available and what percent of the area it can provide sufficient fertility for a commercial crop

Richard Tinsley: what is the ratio of accumulating area to distribution area

USAID Agrilinks: What's the best way to take inventory? Are you referring to a scientific analysis of soil composition? How can a smallholder assess what his soil is lacking?

Steven Lodner: What about the issue of crop residue as important animal feed?

Richard Tinsley: as I have commented before labor is in short supply in most smallholder communities, and the diet will only allow some 4 hours of questionable work, with much of that needed for caring for animals

Kate Tully: S. Lodner - I agree. This is an issue for small holder farmers living on the economic margin.

Richard Tinsley: here is the webpage on diet for Ethiopia
<http://lamar.colostate.edu/~rtinsley/EthiopiaDiet.html>

Abubacker Siddick: A study conducted by MSSRF, India showed women small holder are more involved in organic fertilizer application and vermicompost.

James Njeru: james from international potato center. just concern on the profit change in the 4 countries with time. does the change increase or decline

Abubacker Siddick: rather than inorganic and their self confidence, knowledge, decision making increased

USAID Agrilinks: James, would you like for me to ask that during QA?

Laura Ostenso: Interesting discussion about using technology to access information for soil fertility, as well as about current soils research: <http://agrilinks.org/blog/highlights-askag-twitter-chat-digging-soils>

Abubacker Siddick: small holders affinity to agro forestry is less (even among hill tribes)

USAID Agrilinks: Do you feel agroforestry is too labor intensive? Low- profit return?

Mary ALLEN:Mary Allen: Practical Action - how many trees must be planted and how many years does the planted tree need to survive to get fertiliser vouchers? How will this be monitored at scale?

Kate Tully: Agroforests take a long time to grow. It can take 15 years before the SOC returns to pre-agriculture yields. If they ever return to those levels.

Hector Santos: How many tons/ha of organic matter are produced under the suggested agroforestry systems?

Joanne Harnmeijer: VERY nice!

Abubacker Siddick: fertilizer tree any recommendation for India? Tamilnadu esp.?

Zachary Baquet: Check out the International Year of Soils page on Agrilinks <http://agrilinks.org/IYS2015>

Rachid Serraj: A question: 4th and last conclusion seems to focus ISFM on agroforestry to overcome the labor constraints - any evidence on that?

Hector Santos: the extension agents might be promoting the practices that the growers are more likely to adopt. and the use of organic matter is harder to transfer

Richard Tinsley:I think Rogers' text includes a good discussion on "integration" that need to be looked out more closely in adjusting both the technology and the system to take advantage of innovations

Kendra Levine: Can they provide references to the studies that they use in the presentation?

Richard Tinsley:Doesn't this imply it is a discretionary decision and not limited ability for lack of labor etc

abdourahmane ndiaye: One of the strategies that seem important to promote the use of organic fertilizers in the Sahel is to combine it with the production of bio-energy. Indeed, with bio-fermenters installation, agriculture will have the advantage of energy for domestic purposes, and fermentation residues can be used as organic fertilizer quality in its fields.

Richard Tinsley: The webpage for this is <http://lamar.colostate.edu/~rtinsley/Adoptors.htm>

Richard Tinsley: it tries to separate lack of knowledge from lack of means

Abubacker Siddick: Feiderhabia albida comes up well in Northern drylands of India and failed in southern India.

Monika Firl: i'm just back from an intensive soils course that focused primarily on balancing and supporting the micro-organisms in the soil to mobilize the inherent nutrients in the soil. it was truly fascinating!

USAID Agrilinks: Any course materials or resources that can be shared online Monika?

Abubacker Siddick: green manure crop like daincha, sunhemp proved improved soil quality in lowland paddy

USAID Agrilinks: Dont forget to type questions for the presenters here! State name and org and I will try and ask them at the end--

Richard Tinsley: What is the power requirement to incorporate the green manure crop, doesn't it require at least a 65 hp tractor with some good disc plows

g alex: Adoption or adaptation of an innovation will follow a lot of different curves. Many are adopted or tried and then discarded. Early adopters probably (rightly) try a lot of innovations that are dead ends. Also some innovations will be relevant to some in a population, but not to others. For example, a family with more members (labor) or nearer a source of organic matter may be able to adopt greater use of organic fertilizer than a family with less labor and further away.

Armando Tasistro: Please provide the complete citations to the references being given so that we can consult them

Abubacker Siddick: application of spray dried molasses (sugarcane Industry waste) application increased soil microorganisms in dryland crops

Leonard Rusinamhodzi: Leonard Rusinamhodzi, CIRAD: Why do we spend a lot of time talking about the technical efficiency and prowess of technologies yet we pay scant attention to the end users, do we know enough about the technology end users to start encouraging adoption, do we include their production objectives?

USAID Agrilinks: Hi Armando, we will try to compile a list of references and make them available when we release the post-event resources in about a weeks time

USAID Agrilinks: 1 week time

Elizabeth Dunn: yes, please provide complete references that are being cited by the speaker. thanks

Armando Tasistro: will you email us?

USAID Agrilinks: Yes, there will be a post event email sent to all participants alerting that post event resources are available

USAID Agrilinks: post event resources will be available on our website

Armando Tasistro: Great

Armando Tasistro: Thanks

Abubacker Siddick: Great

don humpal: Don Humpal from DAI. Question for Ephraim. What difference does soil type (e.g. sandy low native Soil Organic Matter vs higher clay soils) have on the benefits and costs of an added organic matter ISFM strategy? Especially in terms of time to net benefit as measured by profitability, opportunity cost that are risk adjusted?

Richard Tinsley: Don't forget both research and extension are mostly evaluating the physical potential but without factoring in the limited operational capacity of the farmer to timely implement the project and the drag on the potential imposed by limited labor etc.

Robert Navin: Woody Navin- USAID advisor. Question for Ephraim: How good is the data in the studies that you present is an over-simplified fashion? I'm particularly concerned about factoring in labor costs for planting trees, spreading organic matter, and the opportunity cost of the organic matter that could be used for other productive purposes.

Richard Tinsley: What happens when crop establishment is spread out over 8 weeks

Steven Londner: Has a speaker addressed issues of land tenure?

Abubacker Siddick: mobile phones- women facilitators- help extension work disseminating knowledge to both men and women farmers. Gender role is important in small holder adoption of integrated soil management

Monika Firl: Dr Elaine Ingham seems to be the most dedicated promotor of focus on the microbiology health in the soil. Her website with currently available learning materials is:
<http://www.soilfoodweb.com/Books.html>

Silantoi Kisoso: Great point Siddick

Silantoi Kisoso: I am interested in use of mobile tech in messaging

Monika Firl: however, i think there is a HUGE need for improving the materials in both focus, language and illustration for these to be really useful.

Silantoi Kisoso: "nudges"

aliyu samaila: Aliyu Samaila: I have lost most of this due to poor connection, but to answer Liz's question, organic matter is in short supply mostly because of the sheer volume required and also due to poor composting culture

KDAD AV Tech (DC): Please send along any questions you might have about the presentation!

Abubacker Siddick: voice message found to be useful if not SMS is useful

Silantoi Kisoso: Voice messages - wouldn't that be cost effective in a rural setting?

Monika Firl: actually there are a lot of \$\$ incentives for smallholders NOT to explore organic practices. Many agric support programs actually link access to credit ONLY if the producer adopts chemical packages to "guarantee" productivity

Liz Kirchner: Thanks, Aliyu. Glad you're back

Silantoi Kisoso: esp with issues of connectivity

Phil Steffen: Audio is breaking up

Charles Kome: To what extent are cover cropping and no-till being promoted in Africa as viable alternatives to improve soil carbon and soil health and hence stabilize yields and build resilience to climate change?

Phil Steffen: OK again

Mike McGahuey: Excellent presentations and information. I think that many would agree with using agroforestry as a source of organic matter. Do you know if we have data on the quantity of organic matter produced by various agroforestry systems?

Robert Mazur: Question for Presenters: Rob Mazur, Iowa State University - recognizing that local context and processes are essential, how can ISFM be effective and promoted at scale?

Abubacker Siddick: Educating extension agents- WHO are the trainers? do you think academicians help? is the university system in developing nations linked with community development or help improving productivity of crops by improving their soils?

Elizabeth Dunn: this question is for Keith. Would you please say more about "innovation brokers"? Also, did you say that they should be "external" rather than an economic actor within the market system?

Hans Muzoora: How do we attract the youth into Agriculture as these seem to be the most effective catalysts of change, innovation and adoption of improved farming practices??

Robert Navin: USAID is encouraging agr extension agents to also learn and share nutrition messages. HOW realistic is this given that you are saying that there is so much to be done to educate and equip agr extension agents to accomplish their agr production tasks (to say nothing about storage and marketing)?

John Russell: Please have those asking questions speak directly into the mic.

Ashley Aakesson: Folks in behavioral economics and social and behavior change communications have been emphasizing the importance of context, of social networks, of role models, of belief systems for decades, and have good learning about applying those to specific program designs--including training "innovation brokers" to effectively facilitate, negotiate, help to adapt practices. How can we work together to apply the best learning from "innovation systems perspective" and social and behavior change to improved soil management and other practices?

Armando Tasistro: On the other hand, in Mexico and Central America we often find the opposite situation where agronomists ask farmers what their problems are because they were taught that farmers' knowledge is better than agronomists'

Mary ALLEN: For agroforestry - in semi-arid areas consider use of farmer managed natural regeneration techniques in addition to planting trees. Much more cost effective.

Richard Tinsley: how much of the ISFM implies additional labor inputs in what is a major labor shortage environment.

don humpal: Cover cropping and low- and no-till are promoted in SSA in many CA programs. However, neither power issues (cost of mechanization) nor weed control issues (herbicides) are adequately addressed in most situations.

Richard Tinsley: before we promote this do we need to get much of the drudgery out of the system so the farmer as the means to use the technology

Hans Muzoora: Another question is how do we make extension more relevant in many of the Africa countries as it seems most of the extension agents are not at par with some of the current trends such as climate smart agriculture practices??

Abubacker Siddick: unless small holder women farmers involved in managing soils (soil nutrition) nothing will work (though fertilizer application is male job, role change alone can help improving small holder soil.s

g alex: The call for better educated extension agents is a critical starting point. This is well presented in the GFRAS "New Extensionist" paper. BUT, for ISM introduction, there is probably also a need for a better approach as to how to do this through extension. It is a more complicated system intervention (i.e., much more labor and new cultural practices) so is more difficult to introduce.

Liz Kirchner: Mary ALLEN: will you talk more about regeneration?

Liz Kirchner: Wildlife, soil and water benefits occur nearly immediately

Abubacker Siddick: raising trees, nurseries (timely availability like during rainy days) is important

g alex: Planting a tree is the easy part. Then - even if watering isn't required - there is the problem of protecting it.

Gitau Mbure: Gitau Mbure, World Vision, DC. Did the study find that farmers who apply ISFM understand the importance of getting the mix right i.e. balancing the ratio of organic vs. inorganic inputs? For example, fertilizer should be used for crop nutrient needs while organic inputs help improve soil organic matter but how well are farmers able to evaluate and address these needs?

Zachary Baquet: Link to the GFRAS "New Extensionist" paper and other resources: <http://www.gfras.org/en/gfras/157-the-new-extensionist.html>

Liz Kirchner: Mexico has an extensive nursery system. Can someone talk about seedling availability there?

Stephen Martin: What I find interesting in this debate is that there has been no mention of the need to test soils - without knowing the characteristics of your soils how do we know if our interventions are doing no harm at worst and hopefully improving the small-scale farmers soils?

don humpal: Don Humpal from DAI. For Keith Moore. Training is curriculum based and often fixed by policy. What steps are being taken to modernize the curricula in ag using evidence based approaches for curriculum committees? What is the estimated time to get national acceptance to change curriculum?

Madeleine Smith: Question for presenters and the group: At USAID's SPRING project <https://www.spring-nutrition.org/> we are focused and very concerned with building evidence for integration of nutrition into agriculture at all stages. While this adds to an already challenging equation of adoption of improved behaviors, these are crucial to improved food security and nutrition. We are interested in hearing experiences and challenges in relation to promoting behaviors that may contribute to this, such as safe handling and management of manure, and role of women in promoting these behaviors, women's time management, etc. Other examples are technologies that promote improved production and productivity of nutrient rich crops.

Mary ALLEN: My question was not about tree survival rates, but about linking tree planting to fertiliser vouchers. Did farmers get vouchers in the first year they planted or several years later?

Richard Tinsley: The SCS goes all the way back to the 1930s

Abubacker Siddick: soil testing is there, but not done properly by Govt. soil testing labs. They have printed old results of that area and just copy paste. Small farmer clubs should have soil testing labs.. agri. college students should test and give results

Monika Firl: Monika Firl, CoopCoffees. In response to the leaf rust crisis in coffee - i have seen extraordinary success by farmer innovators cultivating and better nurturing beneficial soil bacterial and fungi... yet there is very little financial support by the large development foundations to support this local experimentation. Why do you believe this is so?

Zachary Baquet: Modernizing Extension and Advisory Services (MEAS) Participatory Methods: <http://www.meas-extension.org/tip-sheets/participatory-methods>

Richard Tinsley: Soil test cost about the same as a bag of fertilizer and if your field is too small to make a one bag difference soil test are not cost effective.

Stephen Martin: I work in the Kulima Programme, a Scottish Government funded programme working with 1350 farmers - soil samples from these farmers have highlighted how poor their soils are - this compares with the farmers stating that their soils are adequate. We need to focus on improving soils without being tempted to use inorganic material

Abubacker Siddick: Dr. Elaine's Soil Food web SFI is excellent resource

Mike McGahuey: While agroforestry appears to be an effective source of soil organic matter. Have you considered natural regeneration of field trees as an alternative to planting trees. This system is widely-spread in Niger and other parts of the Sahel and has been seen to be spreading in Malawi.

Hector Santos: It is important to understand how growers think - the advantages of ISFM are more medium to long term, which goes beyond the horizon of their planning. They have scarce resources and therefore behave accordingly. The challenge is how to include ISFM over many years to gradually move into this direction as farmers also grow in wealth and capacity.

Richard Tinsley: The smallholder objective is to "MAXIMIZE TOTAL RETURNS TO ALL FARM ENTERPRISES" and will wisely compromise the returns to one enterprise to enhance the return to another, which drives single enterprise research/extension nuts!

Richard Tinsley: farm enterprises include both crops and animals

Abubacker Siddick: small holders have 2-3 acres. how can they grow agro forestry trees in open area? problems with rain, grazing animals is

James Njeru: thanks for the presentation, coming from environmental organisation. agroforestry is a strong element in ISFM and also on the sustainability in food production especially for the smallholder farmers who are the majority in SSA

Liz Kirchner: Animals graze among trees in silvopasture systems.

Liz Kirchner: Benefitting animals with shade and mast/fodder, benefitting trees with manure, benefitting soil and wildlife with the combination.

@OverseasImpact (Twitter): If anyone knows of a sustainable agriculture project that could benefit from financing (\$500,000 to \$400 million), please contact us: www.overseasimpact.com or @OverseasImpact on Twitter.

Laura Ostenson: For great resources on innovation and extension, check out: <http://agrilinks.org/agexchange/agexchange-resource/innovation-agricultural-training-and-extension-innovate-resources>

Liz Kirchner: Who is speaking?

Joanne Harnmeijer: same question: who was that (Northern Ghana)

Abubacker Siddick: innovation brokers- good title. How to make them more sustain? salary part is more important

Maria Hettel: 52 years continuous cropping at IRRI: <http://irri.org/news/media-releases/150th-harvest-from-worlds-longest-running-rice-experiment>

USAID Agrilinks: please include name, org, country when asking a question

Abubacker Siddick: Abubacker siddick from M.S.Swaminathan Research Foundation, Chennai, India

Leonard Rusinamhodzi: Leonard Rusinamhodzi, CIRAD, Zimbabwe: Why do we spend a lot of time talking about the technical efficiency and prowess of technologies yet we pay scant attention to the end users, do we know enough about the technology end users to start encouraging adoption, do we include their production objectives?

Corinna Clements: Here is the link for the SANREM knowledgebase <https://apps.cals.vt.edu/cgi-bin/WebObjects/SANREM.woa/wa/simpleSearch>

Maria Hettel: Thank you!

Tom Hammett: here is a link for the innovATE web site <http://www.oired.vt.edu/innovate/>

Abubacker Siddick: THANKS A LOT... Excellent webinar

Elizabeth Dunn: I agree with the speaker!

Ashley Aakesson: Thank you, lots of good information and important thinking.

Silantoi Kisoso: THIS WAS AMAZING... THANK YOU! THANK YOU!

Hans Muzoora: Excellent webinar with wonderful resources!!

Tom Hammett: Additional discussion on agriculture training and education can be found by joining the AET Community of Practice at www.innovate-community.oired.vt.edu/welcome

Steve Good: from my perspective, the end user and their "world view" are keys to adoption and ultimate success. however, it is a softer social type of science and more difficult to get our thinking around.

Laura Ostenso: Thank you to Agrilinks and the excellent speakers!

KDAD AV Tech (DC): Thanks to everyone who joined us for today's event. That was the last question but we'll leave the room open for about another ten to fifteen minutes so you can download files, catch up with colleagues, and check out other resources we shared.

KDAD AV Tech (DC): Please take a moment to answer our polling questions!

Gitau Mbure: Thanks!

Haben Asgedom: for the impact indicator please contact me at haben.asgedom@farmersedge.ca

Joanne Harnmeijer: Thanks, this was a useful session and good to have shared the PPs right away.

Anna Antwi: Broghen, good to see you

Margaret Masbayi: Good presentations and Speakers plus interesting chat

Tom Hammett: how can I get the systems to accept my answers to the survey?

KDAD AV Tech (DC): Hi Tom. I'm not sure what the exact issue is, your responses should be accepted automatically and results updated in real time.

Rose Kadende-Kaiser: "do we include their production objectives?" good point Leonard Rusinamhodzi

Rose Kadende-Kaiser: I would like to hear more about farmers' understanding of the link between the quality of soil, food produced and their overall health