





# Feed the Future Innovation Lab for Small-Scale Irrigation (ILSSI)

# **TRAINING REPORT**

# **Integrated Decision Support System (IDSS)**

# Local Capacity Development Training

13 - 17 February 2023, Arba Minch University, Ethiopia

20 - 24 February 2023, University of Rwanda, Musanze, Rwanda

6 – 8 March 2023, Prairie View A&M University, USA

15 - 19 May 2023, University of Ghana, Ghana



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## 1 Introduction

In February and March 2023, the USAID Feed the Future Innovation Lab for Small-Scale Irrigation (ILSSI) at Texas A&M University (TAMU) organized capacity building workshops in Ethiopia, Rwanda, and the USA. These workshops focused on the Integrated Decision Support System (IDSS) and its three component models: the Soil and Water Assessment Tool (SWAT), the Agricultural Policy Environment eXtender (APEX), and the Farm Income Simulator (FarmSIM).

The training in Ethiopia was hosted by the Arba Minch University Water Technology Institute (AWTI) from February 13 to 17, 2023. Following that, another training took place in Rwanda from February 20 to 24, 2023, at the University of Rwanda (UR)-Busogo campus in Musanze district. This training was hosted by the University of Rwanda (UR), College of Agriculture, Animal Sciences, and Veterinary Medicine (CAVM), and the Rwanda Agriculture and Animal Resources Development Board (RAB), in collaboration with Texas A&M University.

The third training program was hosted by the College of Agriculture and Human Sciences (CAHS) at Prairie View A&M University (PVAMU) in Texas, USA, from March 6 to 8, 2023. All three programs followed a similar structure, including opening and closing ceremonies, plenary sessions, detailed training on the individual models, and the integration of the models. Please find the program outline in the annex.

The IDSS training at PVAMU was followed by a two-day conference on "Water, Climate and Food Security for students, early career scientists and graduate students from Historically Black Colleges and Universities and Minority Serving Institutions. The details of the conference can be obtained via this link: <u>Conference on Water, Climate, and Food Security for</u> <u>Students and Early Career Scientists - College of Agriculture and Human Sciences (pvamu.edu)</u>.

The trainings in Ethiopia and USA were fully funded by the Feed the Future Innovation Lab for Small-Scale Irrigation (ILSSI) at Texas A&M University while that in Rwanda received part funding from the Feed the Future Innovation Lab for Livestock Systems (LSIL) at the University of Florida and ILSSI. Financial support for the conference was provided by USAID.

# 2 The IDSS training at Arba Minch University, Ethiopia

Deep in the heart of Ethiopia's southern highlands, the vibrant city of Arba Minch played host to the five-day training on the IDSS. The training, held at Arba Minch University (AMU), attracted seventy-four participants from research institutes, academia, and NGOs. Thirtyseven participants received training in SWAT, twenty-seven in APEX, and ten in FARMSIM. The program was facilitated by trainers from Texas A&M University and Bahir Dar University (BDU) in Ethiopia, with the BDU trainers having received prior training on the models from Texas A&M University. The training program commenced on February 13, 2023, with an opening speech by Dr. Demelash Wondimagegnehu, the Director for Academic Affairs at AWTI. Dr. Wondimagegnehu acknowledged Dr. Alemayehu Chufamo, the Academic Vice President of Arba Minch University, the facilitators from Texas A&M and BDU, as well as Mr. Ermias Alemu, the AMU Alumni President. He expressed gratitude to the participants for their motivation and hoped for a successful training program.

Dr. Chufamo, in his opening speech, emphasized the importance of working with the latest tools and technologies in agriculture and food production. He highlighted the capacitybuilding aspect of the training and its potential to enhance decision-making in the field. Dr. Chufamo appreciated the facilitators, organizers, and the AMU Alumni president for their contributions and officially declared the program open.

Mr. Ermias Alemu shared his remarks, expressing his satisfaction that the discussions held in 2015 to bring the IDSS training to Arba Minch University had come to fruition. He stressed the significance of IDSS tools in agricultural research and food security. Mr. Alemu was pleased with the diverse participation of researchers and industry professionals and expressed optimism about the program's outcomes.

The IDSS team presented the research and local capacity development programs of ILSSI and the Innovation Lab for Livestock Systems (LSIL) and provided a summary on the theory and application of the three models to the participants. They also showcased a case study from the Robit Watershed in Ethiopia, illustrating the integration of the three models.



Dr. Demelash Wondimagegnehu giving the welcome address of the IDSS training (Photo credit: AMU, Ethiopia).

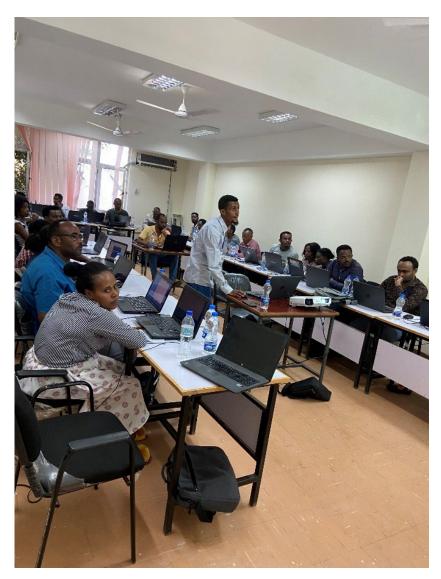


Dr. Dr Alemayehu Chufamo giving his opening speech at the IDSS training (Photo credit: AMU, Ethiopia).



Group photo taken after the opening ceremony of the IDSS training in Arba Minch. (Photo credit: AMU, Ethiopia).

During the five-day training event, from the afternoon of Day 1 to the end of Day 4, the participants received practical training on their chosen individual models.



*Photo taken during the APEX individual session in Arba Minch. (Photo credit: AMU, Ethiopia).* 

On the final day, all participants from different model classes collaborated in groups to practice the integration of the three models. This group exercise facilitated the exchange of knowledge and skills acquired throughout the week. The trainers conducted a comprehensive review of the models and addressed participants' questions and comments. Each participant was awarded a certificate of completion. In his closing remarks, Dr. Chufamo, thanked the organizing committee, trainers, and trainees for their hard work. He also encouraged the participants to apply their newly acquired knowledge in their respective fields.

Through a combination of engaging lectures and hands-on training, participants gained valuable insights into the three models, while forging new connections and exchanging ideas

with fellow professionals. Based on feedback received from the trainers, the workshop was deemed a success.

The IDSS trainers had the opportunity to engage in several other activities during their visit to Ethiopia. One of these was a meeting with Dr. Chufamo and other leaders in the research and grant management programs at AMU to discuss potential collaborations, further strengthening the partnership between Texas A&M University and their Ethiopian counterparts. On another day, the trainers were taken on a tour to the Arba Minch crocodile ranch, a unique opportunity to experience Ethiopia's diverse flora and fauna firsthand. These additional experiences added depth and richness to the overall program and provided a chance for the trainers to learn more about the country's culture and environment.

## **3** The IDSS training at the university of Rwanda, Musanze

Fresh from the success of their training in Ethiopia, the IDSS trainers travelled to the north of Rwanda to deliver a similar training in the town of Musanze. Against the stunning backdrop of the towering mountains and lush greenery of the University of Rwanda-Busogo campus in Musanze, the team of experienced scientists led a group of enthusiastic learners through an immersive five-day (February 20-24) training course on the three computer models. The trainees were fifty-two in number and comprised of thirteen women and thirty-nine men. They were made up of graduate students, researchers, faculty and staff from the UR, the Rwanda Agriculture and Animal Resources Development Board (RAB), Ministry of Agriculture, non-government organization projects, private sector companies and other institutions of higher of education.

The workshop program began on February 24th with a welcome address given by Dr. Marguerite Mukangango (Lecturer at UR- and coordinator of the IDSS workshop in Rwanda) who started her speech by warmly welcoming all present and expressed her excitement for the training program. Dr. Mukangango set the tone for a positive and productive learning environment, encouraging participants to engage actively in the training. She thanked the sponsors/partners, trainers, organizers and all who made the training possible and highlighted their support and commitment to the development of the field.



Dr. Marguerite Mukangango giving the welcome address of the IDSS training in Rwanda

Following Dr. Mukangango's welcome address, the floor was handed over to Dr. Guillaume Nyagatare the Principal of CAVM to formally open the workshop. He began by welcoming all the trainers and trainees to the workshop. He expressed his hope that the training would be both fruitful and enjoyable for all participants, and that the knowledge and skills gained during the workshop would be useful for their research. He stressed the importance of the workshop, and hoped the moment would be remembered for its usefulness in advancing scientific knowledge and improving the quality of research conducted at the university and beyond.

Dr. Nyagatare was happy to note that one of the facilitators of the workshop was a past student of UR, and he used this as an example of the important connections that can be made through education and training. He then officially declared the workshop open and wished all the participants a productive and enjoyable week of learning.

The IDSS team presented the research and local capacity development programs of ILSSI and LSIL and provided a summary on the theory and application of the models in addition to a case study from the Robit Watershed in Ethiopia.



Dr. Guillaume Nyagatare giving his opening speech at the IDSS training in Rwanda



Group photo taken after the closing ceremony of the IDSS local capacity development at the University of Rwanda. (Photo credit: UR, Busogo).

From the afternoon of the first day to the end of the fourth day, the training on each of the models was conducted in parallel and the trainees received hands-on training on the models. On the fifth day, all participants gathered to learn about the specifics of each model and their integration through case studies. They also formed groups and exchanged knowledge on what they had learned during the past days.



*Photo taken during the SWAT individual session at the University of Rwanda (Photo credit: University of Rwanda)* 



*Photo taken during the APEX individual session at the University of Rwanda (Photo credit: University of Rwanda)* 



*Photo taken during the FARMSIM individual session at the University of Rwanda (Photo credit: University of Rwanda)* 



Group session on February 24 showing the participants practicing on the integration of the models.

The closing remarks were given by Dr. Nyagatare during the afternoon of February 24. He expressed his appreciation to the funders of the training, Texas A&M University and the host University, UR. He congratulated the participants for their achievement and encouraged them to use the models in their research activities. He also thanked them for showing interest in the models. Each of the participants was then presented with a training certificate and the training ended.

# 4 The IDSS training in Prairie View A&M University

Following their successful training programs in Ethiopia and Rwanda, the IDSS trainers continued their journey of transformative training at Prairie View A&M University (PVAMU), a Historically Black Land Grant University (HBCLGU) located in Texas, USA. The training was hosted by the College of Agriculture and Human Sciences (CAHS) of the University.

Over the course of three immersive days (from 6<sup>th</sup> to 8<sup>th</sup> March 2023), the team led a group of eager learners from the University and other historically black universities through an intensive training on the three IDSS models (please see Annex 2 Table 3 for the participant list). The program offered participants a unique opportunity to enhance their skills and knowledge while building connections and exchanging ideas with fellow professionals from a shared background.

The training targeted graduate students and early career scientists from 1890 HBCLGUs with backgrounds in economics, agronomy, water resources, hydrology, and engineering. Thirty-one participants joined the training, distributed in the 3 classes as follows: 14 joined the SWAT class, 12 in the APEX class, and five in the FARMSIM class.

The workshop began on March 6 with a welcome address by Dr. Ali Fares, Professor of Water Security at the CAHS, Dr. Kwaku Addo, Associate Dean of Academic Programs and Department Head of CAHS and Erdogan Memili, Professor and Executive Associate Director of Research for the College and its Cooperative Agricultural Research Center (CARC). Dr. Fares played a critical role in coordinating and collaborating with other individuals and to ensure the success of the program. It was through discussions with that the workshop was hosted at the university.

In their address, the three professors provided a brief history of PVAMU and introduced the various research programs offered, particularly in the College of Agriculture and Human Sciences (CAHS). They expressed their delight in having the participants at the university and encouraged them to explore the college and its resources. They concluded by encouraging them to take advantage of every opportunity the three days at PVAMU would offer.

Following this, Dr. Gerard D'Souza, Dean and Director of land-grant programs at the CAHS delivered the opening remarks, providing words of encouragement for the participants. He extended a warm welcome to all attendees and trainers to the university, highlighting the importance of the workshop. Additionally, he expressed gratitude towards the organizing committee, led by Dr. Fares, for their hard work and dedication in making the event possible.

Next to speak was Dr. Nicole Lefore, the Director of the Feed the Future Innovation Lab for Small Scale Irrigation (ILSSI). In her speech, she provided an overview of the different innovation labs available with an emphasis on ILSSI. She explained the concept of Small-Scale Irrigation and highlighted the direct relationship between small scale irrigation and nutrition, as well as resilience to climate change. Dr. Lefore also showcased some of the results of modeling studies in Ghana and discussed the role of models in addressing global discussions on climate change and water risks. Finally, she encouraged the participants to take the training seriously and urged them to think about how they could apply the models in their research.



Dr. Gerard D'Souza (left), delivering his speech while Dr. Ali Fares (right) looks on.



Dr. Nicole Lefore, Director of ILSSI delivering her speech.

From the afternoon of Day 1 to the morning of day 3, the participants received hands-on training and theoretical knowledge on their selected models. On the afternoon of the third day, there was a plenary session where the workshop facilitators demonstrated the integration of the three models using case studies from Ghana and Ethiopia. Additionally, a question-and-answer session was held, allowing participants to seek clarification on any aspects of the models.

Following the workshop activities, the participants and trainers enjoyed a tour of the PVAMU farm and facilities. Subsequently, a joint reception for both training and conference participants took place. During the reception, participants were presented with their training certificates, acknowledging their completion of the workshop.



Photo taken during the SWAT individual session at the Prairie View A&M University (Photo credit: Seifu Tilahun, IWMI, Ghana)



Group photograph of the participants and facilitators of the IDSS training in Prairie View A&M University

# 5 The IDSS training at the University of Ghana, Accra

The University of Ghana (UoG) hosted the international training workshop on the Integrated Decision Support System (IDSS) from May 15th to May 19th, 2023, in Accra, Ghana. The training was conducted under the Feed the Future Innovation Laboratory for Small Scale Irrigation (FtF-ILSSI) with Texas A&M being the lead institution for the project. Since 2014 as part of its mission, the FtF-ILSSI has organized 19 similar workshops in East Africa, West Africa, and the USA. The just ended workshop in Ghana marked a significant milestone as the 20th edition.

The training was conducted by practicing scientists from Texas A&M University, alongside scientists from Bahir Dar Institute of Technology - Bahir Dar University, Ethiopia. Together, they facilitated the comprehensive training centered around three core models.

The models are:

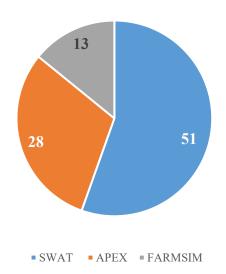
Soil Water Assessment Tool (SWAT) – targets hydrologists, agricultural engineers, and water resource professionals. The SWAT model (<u>SWAT | Soil & Water</u> <u>Assessment Tool (tamu.edu</u>)) is a small watershed to river basin-scale model that simulates the quality and quantity of surface and ground water and predicts the environmental impact of land use, land management practices, and climate change.

- Agricultural Policy/Environmental eXtender Model (APEX) this model, accessible at <u>EPIC/APEX | EPIC & APEX Models (tamu.edu)</u>, caters to agronomists, animal scientists, soil scientists, crop production specialists, and those concerned with evaluating environmental impacts at the farm or field scale.
- Farm Income Simulator (FARMSIM) geared towards agricultural economists or individuals with a firm grasp of economic principles, this model provides insights into the economic aspects of farming practices and interventions. Details of the model are available at <u>FARMSIM: A Farm Income Simulator | Texas A&M AgriLife Blackland</u> <u>Research & Extension Center (tamu.edu)</u>.

The three models served distinct purposes but were synergistically integrated to provide a holistic assessment of the impacts resulting from diverse interventions in the realms of food and agriculture.

Despite being the 6th time, the workshop was being organized in Ghana, this edition set a remarkable record with an unprecedented number of participants. A total of 92 individuals (Annex 1, Table 1) successfully completed the training, surpassing all previous records since the workshop's launch ten years ago. This attendance signifies the largest cohort of participants to date, underscoring the workshop's enduring success throughout the 10 years it has been conducted across 6 countries: Ethiopia, Côte d'Ivoire, Ghana, Rwanda, Tanzania, and the USA.

Out of the 92 participants, 21 were females, and 71 were males. The distribution among the three training courses was as follows: SWAT (51 participants), APEX (28 participants), and FARMSIM (13 participants) (Figure 1). Annex 2 shows the outline of the 5-day training workshop.



Participant distribution among models at the IDSS training in Ghana

The opening ceremony was held on the 15<sup>th</sup> of May, graced by esteemed members of University of Ghana, including the Provost of the College of Basic and Applied Sciences (CBAS), Prof. Boateng Onwona-Agyeman, the Dean of the School of Physical and Mathematical Sciences, Prof. Sandow Mark Yidana, and the Head of the Earth Science Department, Prof. Larry Pax Chegbeleh. The coordinator for the workshop, Dr. Yvonne Sena Akosua Loh, Senior Lecturer at the Department of Earth Science was also present and ensured that the event was conducted successfully. Dr. Loh gave introductory remarks and introduced and invited the esteemed members to share their remarks, setting the tone for the event.

Prof. Onwona-Agyeman, delivered the welcome address, expressing gratitude to the sponsors, organizers, and facilitators of the workshop. He also thanked the participants for making it to the event. In his speech, the provost emphasized the critical role of water in the face of climate change and stressed the need to utilize water resources to achieve nutritional security in the region. He also highlighted the necessity of developing irrigation techniques based on scientific data and analysis. The provost underscored the pivotal role of universities in preparing countries and regions for the challenges posed by climate change and emphasized the increasing demand for well-trained scientists equipped with appropriate methods to plan and monitor water and natural resource use. He highlighted the importance of analytical models such as the Integrated Decision Support System in making evidence-based decisions on resource allocation in the agricultural sector and conservation. In conclusion, the provost expressed the University's pleasure in partnering with FtF- ILSSI to host the training on the models, highlighting the institution's commitment to fostering scientific expertise and promoting sustainable water management and irrigation practices in Ghana.

Professors Yidana and Chegbeleh took turns and gave inspiring speeches that not only introduced the significance of the training but also encouraged participants to pay close attention to the valuable knowledge and insights shared throughout the program.



Group photo of trainers and training organizers taken after the launch of the IDSS local capacity development training at the University of Ghana. Individuals from left to right are Prof. Larry Pax Chegbeleh (Head of the Earth Science Department, UoG), Prof. Sandow Mark Yidana (Dean of the School of Physical and Mathematical Sciences, UoG), Dr. Tewodros Assefa (SWAT trainer, Bahir Dar University), Dr. Fati Aziz (APEX trainer, Texas A&M University), Prof. Boateng Onwona-Agyeman (Provost of the College of Basic and Applied Sciences, UoG), Dr. Yvonne Loh (Lecturer, Earth Science Department, UoG), Dr. Fasikaw Atanew (SWAT trainer, Bahir Dar University), Dr. Jean-Claude Bizimana (FARMSIM trainer, Texas A&M University) (Photo credit: Daniel Faraday)



Group photo taking after the launch of the IDSS training in Accra, Ghana (Photo credit: Daniel Faraday)

Following the opening ceremony, the participants embarked on their individual training courses, which spanned from the afternoon of the first day until the evening of the fourth day. During this period, the participants received comprehensive theoretical knowledge and practical hands-on training on the three models.

On the fifth day of the workshop, all the participants reconvened for model demonstrations and integration sessions. The facilitators showcased each of the three models individually, providing practical demonstrations to highlight their capabilities and real-world applications. Following the individual model demonstrations, a presentation on model integration was delivered, showcasing case studies from Ethiopia and Ghana. The integration session provided participants with valuable insights into how these models can work together synergistically to address complex challenges in the field of water resource management and agricultural planning.

After the model demonstrations and integration session, the participants were put into groups comprising members from each of the three training courses. These groups engaged in productive discussions to share their learnings from the workshop, focusing on both the individual models and their potential integration. This collaborative activity fostered knowledge sharing, encouraged the exchange of ideas among participants, and promoted a multidisciplinary approach to problem-solving.



Photo taken during the group session on May 19, 2023.

A question-and-answer session was conducted, allowing the trainees to seek clarifications and further insights from the facilitators. In recognition of their successful completion of the training, certificates of participation were awarded to all the trainees. The facilitators, in turn, received certificates of recognition and souvenirs from the University of Ghana as a token of appreciation for their contributions to the workshop. The training workshop at the University of Ghana was highly successful, providing participants with valuable theoretical insights, practical training, and collaborative activities. The record-breaking attendance and positive feedback received from participants highlighted the workshop's effectiveness in enhancing participants' skills and knowledge.

Over the course of the ten-year training initiative, over 1,300 participants comprising graduate students, Professors, Research Scientists, NGOs, and policy makers benefited from the workshops. The impact of these workshops is evident in the success stories of numerous participants who have successfully applied the acquired knowledge to achieve their goals. Among these participants, several have transitioned into the role of trainers, sharing their expertise with others. An example can be found in the facilitators of the training at the UoG, where three out of the four trainers, namely Drs. Fasikaw Atanaw, Tewodros Assefa, and Fati Aziz, underwent training on the models in 2015, 2016 and 2016, respectively during the FtF-ILSSI project. This progression showcases the transformative power of the workshops, as participants evolve into knowledgeable trainers themselves, perpetuating the cycle of knowledge dissemination. The IDSS training workshops have proven to be a remarkable initiative, and we anticipate their continued success in the future.

### 6 Conclusions

Overall, the training courses conducted in Ethiopia, Rwanda, USA, and Ghana were highly successful, highlighting the significance of collaboration and innovation in the field of computer modeling. The workshops offered participants a range of valuable experiences, including hands-on training and engaging discussions. Through these activities, the trainees had the chance to learn, improve their skills and expand their knowledge in the suite of models presented.

# Annex 1: Workshop Agenda for Arba Minch University (Ethiopia), University of Rwanda, and the University of Ghana

#### <u>DAY 1</u>

- 8:30 9:30 Registration
- 9:30 9:35 Opening remarks
- 9:35 9:50 Welcome address from host
- 9:50 10:20 Icebreaker participants introduction
- 10:20 10:35 IDSS team Introduction to ILSSI IDSS (Model Integration)

#### 10:35 – 11:00 Health Break + Group photo

- 11:00 11:30 SWAT overview
- 11:30 12:00 APEX overview
- 12:00 12:30 FARMSIM overview

#### 12:30 - 13:30 Lunch time

13:30 - 14:30 IDSS Team - Case study ILSSI-IDSS (Robit watershed) and discussion

#### 14:30 - 15:00

15:00 – 17:00 Individual Workshops SWAT/APEX/FARMSIM

#### DAY 2 - 4

8:30 – 17:00 Individual Workshops SWAT/APEX/FARMSIM

#### 10:30-11:00 Health Break

12:30-13:30 Lunch

#### 15:00-15:30 Health Break

#### <u>DAY 5</u>

8:30 - 10:00 IDSS model integration (Theory)

10:00 - 11:00 IDSS model integration (Hands on - Demo)

#### 11:00 – 11:20 Health Break

- 11:20 11:30 Form groups
- 11:30 12:30 Group work IDSS (Hands on)
- 12:30 13:30 Lunch time
- 14:00 17:00 Workshop closing

## Annex 2: Workshop Agenda for Prairie View A&M University

#### <u>DAY 1</u>

- 8:00 AM Information session to check on software etc.
- 9:00 AM Opening remarks (PVAMU leadership; ILSSI project director)
- 9:30 AM Group Photo
- 9:45 AM Panel discussion: Introduce each model, application, capabilities (TAMU trainers)

#### 10:30 - 10:45 Health Break

- 11:00 12:00 Plenary: Panel Introduce each model, application, capabilities (TAMU trainers)
- 12:30 13:30 Lunch
- 13:00 15:15 Parallel training hands-on for each model: Theory, datasets, running models

#### 15:15 – 15:30 Health Break

15:30 – 17:00 Parallel training on each model

#### **DAY 2**

8:00 – 11:00 Parallel training on each model

#### 11:00 – 12:15 lunch

- 12:15 15:15 Parallel training
- 15:15 15:30 Health Break
- 15:30 17:00 Parallel training on each model
- 17:00 19:00 Dinner

#### <u>DAY 3</u>

- 8:00 10:30 Parallel training on each model
- 10:30 10:45 Health Break
- 10:45 12:00 Parallel training
- 12:00 13:00 lunch
- 13:00 14:40 Parallel training
- 14:45 15:00 Health Break
- 15:00 16:00 Demonstrate how models are integrated and data/results fed into each other for answering research and development questions.

Q&A session

Closing

16:00 – 18:00 Tour PVAMU Farm and Facilities

#### 18:00 – 20:00 Joint reception for training and conference participants.

Participants receive training certificates.

# Annex 3: List of Participants

Table 1: Participant list for the IDSS training in Arba Minch, Ethiopia

	Soil and Water Assessment Tool (SWAT)						
N°	Full Name	Gender	Institution	Email contact			
1	Mr. Abeanezer Lukas Bassa	М	AMU AWTI	abeanezer.lukas@amu.edu.et			
2	Mr. Abebe Hegano Hemacho	М	Jinka Agricultural Research Center	abehegeno@gmail.com			
3	Mr. Amare Gojjam Geremew	м	Arba Minch Agricultural Research Center	N/A			
4	Ms. Asamen Birara Asnake	F					
5	Mr. Banteamlak Kase Abebe	М	Dilla University	N/A			
6	Mr. Belete Meketaw Ali	М	AMU AWTI				
7	Mr. Berhanu Wegayehu Abebe	М					
8	Mr. Beyene Senedu Yebrie	М	AMU AWTI	beyenesenedu@gmail.com			
9	Mr. Birhanu Wolde Gindi	м	Arba Minch Agricultural Research Center				
10	Mr. Demisachew Yilma Gashaw	М					
11	Mr. Destaw Akili Areru	М					
12	Ms. Eaden Ollo Olandiya	F					
13	Ms. Emebet Assefaw Negash	F	Wollo University	eassefaw84@gmail.com			
14	Mr. Gebeyehu Tegenu Mola	м	EIAR: Debre Zeit Agricultural Research Center				
15	Mr. Getachew Enssa Sedeta	М	AMU AWTI				
16	Mr. Mandefro Chala Debela	М	Wolaita Sodo University	mande2000@gmail.com			
17	Mr. Markos Habtewold Adebo	М					
18	Ms. Marta Mekite Begashaw	М	AMU AWTI				
19	Mr. Medhin Madebo Mada	М					
20	Mr. Mesfin Amaru Ayele	М	AMU AWTI				

21	Mr. Muluken Abera Robi	М		
22	Mr. Selman Hassen Adem	М		
23	Mr. Solomon Gezie Kebede	м	EIAR: Debre Zeit Agricultural Research Center	solomongk28@gmail.com
24	Mr. Solomon Mathewos Boltana	М		
25	Mr. Yilak Taye Bihon	М		
26	Mr. Yilma Kidanie Beyene	М		
27	Mr. Zemede Landu Yilma	М		
28	Ms. Fekerte Seyoum Demissie	F		
29	Ms. Rediet Sisay Nigatu	F		
30	Mr. Mengistu Tumayro Yankassa	М		
31	Mr. Zemenu Addis Teklemedhin	М		
32	Mr. Aklilu Alemayehu Kassaye	М		
33	Mr. Kbrom Berhe Hagos	М		
34	Mr. Ebrahim Seid Endris	М		
35	Dr. Getachew Bereta Geremew	М		
36	Mr. Sufiyan Abdulmenan Ousman	М		
37	Dr. Demelash Wondimagegnehu Goshime	м	AMU AWTI	demelashwon@gmail.com
	Agric	ulture Poli	cy Environment EXtender (APEX)	
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4	Dr. Demelash Wendemeneh Bekele	M		
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14	Mrs. Tsedalu Alemu Gemechu	F	AMU CAS				
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