



# Masters of Advanced Studies in Integrated Crop Management

Annual Review – 2020

# contents

**3**

Why is a course on ICM so important?

**4**

Meet the students

**5**

What does the course cover?

**6**

COVID-19 and its challenges

**8**

The MAS theses

**9**

What did students think of the course?

**10**

Graduation 2020

**12**

Feedback from 2015–2020 MAS participants

**15**

Working with us on the course

**16**

Student biographies



# Why is a course on Integrated Crop Management (ICM) so important?

Improving food and nutrition security is essential to ending hunger, but major challenges must be overcome to do so. Around 800 million people go hungry within a global food system that is expected to feed nearly 10 billion people by 2050.

Urgent action is required to feed this growing population in a sustainable way, while maintaining standards of good practice for crop management that contribute to improved food safety. The Masters of Advanced Studies in Integrated Crop Management (MAS ICM) has been designed to help students address these critical agricultural and environmental challenges.

The nine-month course gives agricultural professionals an opportunity to adopt a modern and holistic approach to agriculture that combines ecology, soil health, crop and land management, and socioeconomic considerations. Upon graduating, the students will be in a position to make an immediate impact in their countries by disseminating their newly gained knowledge and skills in sustainable agriculture

to various stakeholders, including farmers and policymakers.

Since 2015, the MAS ICM course, which is jointly coordinated by CABI and the University of Neuchâtel, has trained 71 agricultural professionals from 22 countries across Africa, Asia and Latin America. The year 2020 was very different for the course. In response to government safety restrictions implemented in Switzerland during the COVID-19 pandemic, the 11 students who began the MAS ICM programme in 2020 had to transition from face-to-face teaching to online learning in their first month.

Despite the challenges, the new approach was successful. Based on the positive experiences, the course tutors are developing an e-learning version, due to be launched in 2022. The online course will maintain high standards of knowledge transfer while allowing more students, from all over the world, to access and benefit from the valued course materials.

The course is supported by:



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Agency for Development  
and Cooperation SDC

**JURA**  **CH**  
RÉPUBLIQUE ET CANTON DU JURA



# Meet the students

Click on each student for their full biography.



**Matiullah Ahadi**  
Afghanistan



**Konjit Feleke Belete**  
Ethiopia



**Jayaka Lawrence  
Kipandula**  
Malawi



**Josphine Carlisle  
Wanjiru**  
Kenya



**Nicolas Uwitonze**  
Rwanda



**Esther Ssettaala  
Nakibuuka**  
Uganda



**Muhammad Aslam**  
Pakistan



**Shoba Marimuthu**  
Trinidad and Tobago



**Jordan Sichona**  
Zambia



**Barbra Clesentia  
Nagaba**  
Uganda



**Stephen Aidoo**  
Ghana

# What does the course cover?

The MAS ICM programme gives students the opportunity to learn about sound crop management principles and to explore solutions to help address issues in home countries.

Between March and July 2020, the MAS ICM students were guided through 11 thematic modules; an international, online workshop, "Visions for a sustainable agriculture", which invited former MAS graduates to join discussions and present challenges in their countries; and a final case study session on building an ICM strategy. The thematic modules were chosen to support professionals in agriculture,

helping them understand the concept and principles of ICM and how to successfully adapt and apply the approach within local contexts.

Topics covered include soil management, seed selection, crop nutrition, cropping strategies, Integrated Pest Management, landscape management, water management, statistics, agricultural policies and rural economics. These topics relate to both improving crop production and the agro-ecosystem. During the final three months, students prepared a written thesis.

The unexpected COVID-19 pandemic in 2020 led to considerable changes in response to the challenges faced by the programme. The traditional face-to-face teaching approach had to be adapted to accommodate a rapidly-changing situation and government guidelines.

Course tutors responded by delivering a hybrid course, which mainly involved online classes with some face-to-face teaching at the beginning of the course and field experience towards the end. The sessions involved experts from CABI and the University of Neuchâtel and interdisciplinary guest lecturers from around the world.

*"It is a very intensive course and a rich programme, which will not only teach advanced agronomy and Integrated Crop Management, but also the skill of learning. We found the richness of information at CABI and the University Neuchâtel very interesting."*

**Nicolas Uwitonze**, Rwanda



# COVID-19 and its challenges

When COVID-19 emerged in 2020, no one could have predicted how the newly detected virus would affect the 2020 MAS ICM course, its students and tutors.

After two initial face-to-face modules, the safety concerns and subsequent restrictions imposed by the government (from 16 March 2020) made it clear that extensive changes were needed regarding how the MAS ICM course was organized and implemented.

In response to the new and unpredictable circumstances, the course changed to an online format and the course tutors spent many hours reorganizing and adjusting learning content for online learning. From March to July, students attended their lectures online.

Practical activities were replaced with new, innovative skill-building exercises, such as group assignments based on images and videos, instead of plenary discussion and exchanges in the field. As restrictions eased, however, students were able to take part in a few field visits, including an “organic agriculture day” and a visit to a Swiss company marketing biocontrol products, as well as practical field exercises at the School of Agricultural, Forest and Food Sciences (HAFL), Zollikofen, Switzerland.

The whole situation was difficult for the students. They had to adapt to a new way of learning while experiencing a complete lockdown in Switzerland, only leaving their apartments for daily exercise or essential shopping. The rising number of cases in their home countries and the overall safety of their families caused them additional concern.

Despite these challenging conditions, however, and the overall impact of the pandemic, the students remained focused and motivated throughout – a testament to their commitment.

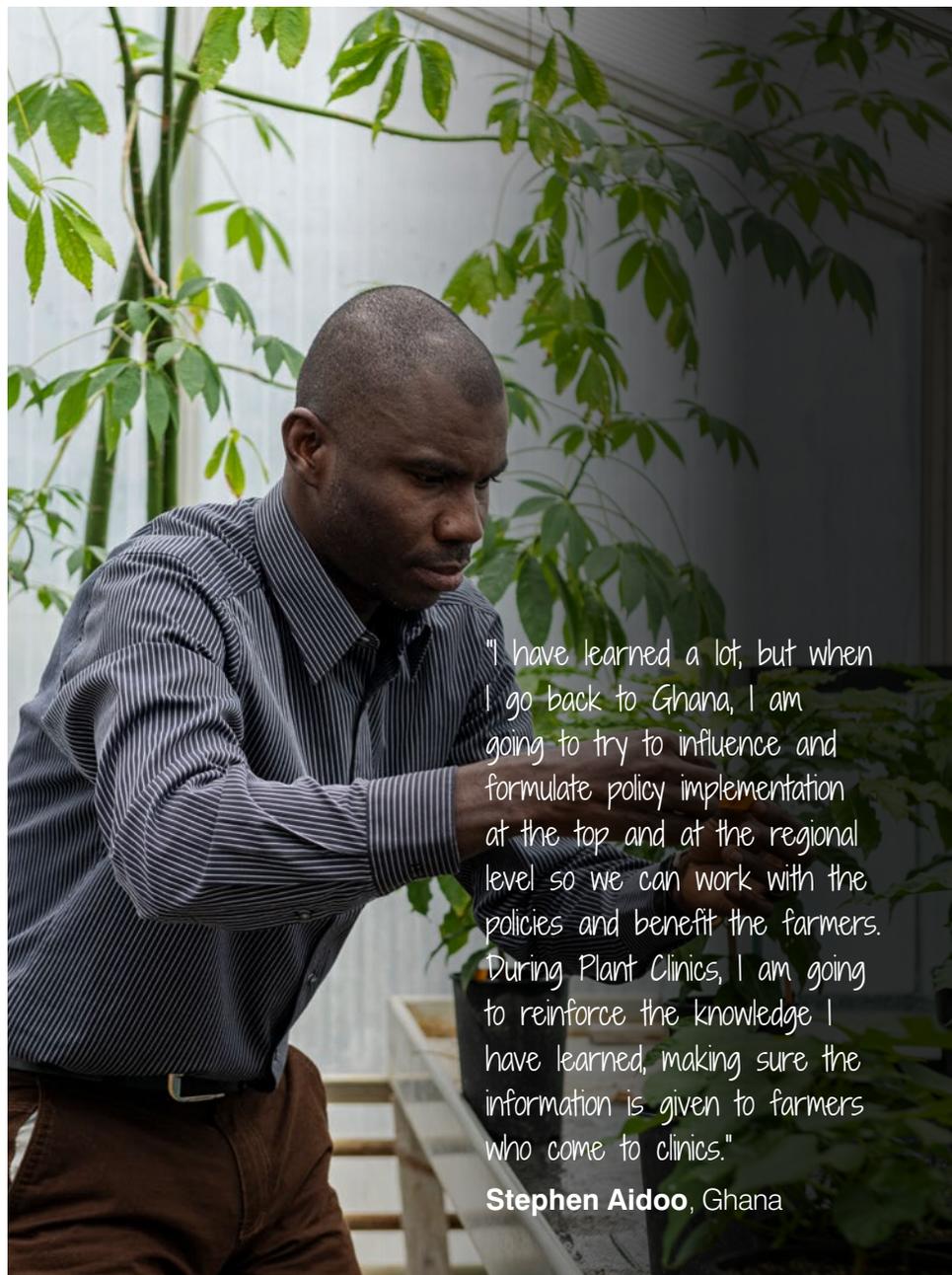
*"It was just another challenge we had to learn to adapt to. Just like in agriculture, we can't predict the weather; we just have to change to suit the circumstances. That was the mindset I had to use."*

**Shoba Marimuthu**, Trinidad and Tobago

*"The benefits of distance learning are that many people share a common link. You share knowledge and you do not need to be in a classroom to acquire knowledge."*

**Esther Ssettaala Nakibuuka**, Uganda





"I have learned a lot, but when I go back to Ghana, I am going to try to influence and formulate policy implementation at the top and at the regional level so we can work with the policies and benefit the farmers. During Plant Clinics, I am going to reinforce the knowledge I have learned, making sure the information is given to farmers who come to clinics."

**Stephen Aidoo**, Ghana



"When carrying out Plant Clinic duties, I will now be able to diagnose better and make better recommendations to the farmers based on the knowledge I have acquired. I will definitely teach farmers the best methods; I will also discourage them to use pesticides as a first priority. Pesticides should be the last resort for every challenge in the field."

**Josphine Carlisle Wanjiru**, Kenya

# The MAS theses

The final three months of the course are dedicated to the students' theses. In 2020, as in other years, students were supervised by lecturers and shared their knowledge with their peers. When preparing their thesis, students explored topics of interest that could be applied to their own work settings. Using knowledge gained from the course, students produced a final piece of work while simultaneously developing new analytical and writing skills.

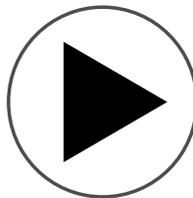
In 2020, several students prepared Integrated Production (IP) guidelines for use by extension services in their respective countries. These documents provided the necessary knowledge for improving crop production by minimizing negative effects on the ecosystem and maximizing crop quality and quantity. IP technical guidelines were produced by the students for Ethiopia (Sorghum), Pakistan (Citrus) and Uganda (Papaya and Vanilla).

Other students analysed the extension systems in their countries using the Plantwise database which compiles the diagnoses and recommendations given to farmers that are asking for advice. This included, for instance, analyses of tomato leaf miner recommendations in Kenya, and recommendations made for fungal diseases in Ghana

"My thesis was on ICM practices for citrus. Citrus is a big and profitable industry for my country. I will give my plan to my government to start a specific project on citrus or on some other crops that are beneficial to the earnings of the country, or to humans and farmers."

**Muhammad Aslam**, Pakistan

A full list of thesis titles and abstracts from the 2020 MAS ICM Course are accessible through: [www.cabi.org/mas-icm-2020-thesis-doc](http://www.cabi.org/mas-icm-2020-thesis-doc)



One thesis examined the policy framework in Trinidad and Tobago, in particular the National Standard on Good Agricultural Practices. The updated document will be used in-country to improve standards relating to environmental management criteria, introducing eight key requirements for good practices and proposing a certification system for farmers.

On implementation, it is expected that the demand for this endorsed Good Agricultural Practice certification will initiate a positive national impact by improving food security, farming practices, rural livelihoods, food quality and the environment, as well as increasing exports, foreign exchange and the sectoral Gross Domestic Product.

"I am taking back recommendations I made in my thesis, which focused on improving the national Good Agricultural Practices standard through biodiversity, conservation, ecosystem services and landscape management, all of which I learned through the ICM course. With these recommendations, I am hoping to improve the upcoming national certification programme for Good Agricultural Practices for farmers, improving the level of agriculture in Trinidad and Tobago."

**Shoba Marimuthu**, Trinidad and Tobago



# What did students think of the course?

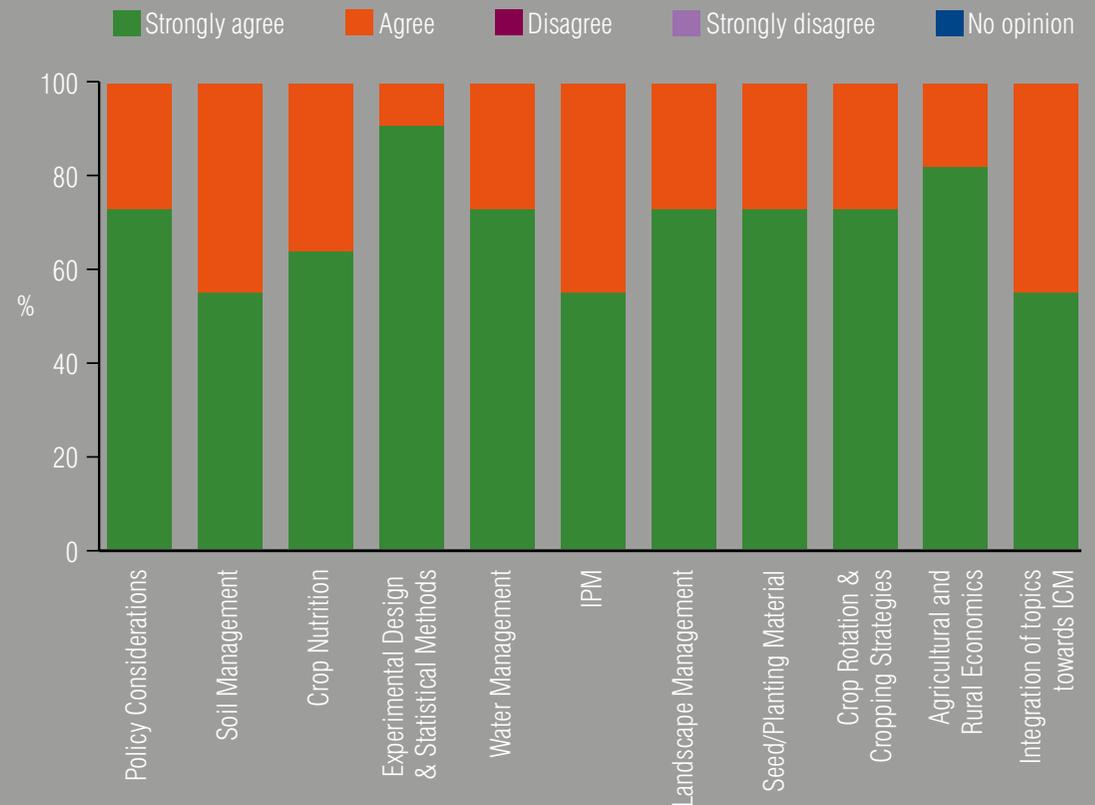
During the course, students were asked to review each module and to reflect on their own learning experience. This was used by CABI and the University of Neuchâtel to evaluate the course and its processes and to make constant improvements.

The overall student rating of the modules in 2020 was “excellent” or “good”. All students “strongly agreed” or “agreed” the modules were relevant, of good quality and provided new information (Figure 1). An average of 72% “strongly” agreed the module content was relevant to future work.

With the course moving online in 2020 due to COVID-19 restrictions, the course coordinators were also interested in comparing feedback with previous years. The data comparisons show that, over the past three years, all students—with one exception—rated the modules overall to be “excellent” or “good”. The percentage of “excellent” in the ratings for 2020 was 71%, similar to 2019 (66%) and 2018 (77%). Feedback on individual modules over the three years showed a similar picture, indicating comparable levels of satisfaction with the course. Despite the difficult situation and the move to online learning in 2020, this feedback demonstrates students still rated the MAS ICM course very highly.

Together with the exam and thesis results, the feedback highlights the extensive knowledge and skills the students gained during the course. It shows that, when students graduate, they are better equipped to tackle the challenges of food safety and security in their home countries, including through policy development, scientific research and practical implementation.

**Figure 1: Answers to survey question: “Did the module content provide new information?”**



*"I acquired better collection, pest identification and diagnosis skills, as well as the ability to make the right recommendation based on diagnosis. I learned a lot from this course; such skills will help me when I go back to train my fellow agriculture officers, who will help farmers make the right decisions, know when to report and make the right interventions."*

**Esther Ssettaala Nakibuuka**, Uganda

# Graduation 2020

Despite the challenges posed by COVID-19 and its restrictions, the MAS ICM students successfully completed their course. After months of online classroom study and field experience, the students are now able to look forward and apply their new-found skills and expertise in their home countries.

The remarkable success of the 11 graduates was recognized by teaching staff, CABI and the University of Neuchâtel at an online event. Students were congratulated for their perseverance towards their well-earned MAS certificates during a very tough year for learning.

Commenting on this year's changes in response to the pandemic, students generally shared a strong sense of gratitude to the course organizers for innovating and using technology to continue lectures. They expressed their appreciation for the opportunity to experience distance learning first-hand.

"COVID-19 was unfortunate timing for us, but it was another challenge we adapted to. Changing to being taught online was a learning curve, but it provided new experiences for me and, without it, we would not have been able to learn. I plan to use this new way of learning to train farmers and officers when I return to work, and this experience has taught me exactly how to do it."

**Shoba Marimuthu**, Trinidad and Tobago

"Due to the frequently changing COVID-19 situation, 2020 was a challenging year for the MAS ICM course but, thanks to the efforts of all involved and the ongoing positive attitude of students, it turned out to be very successful. We're now developing an online version of the programme, following our experiences of running the course this year."

**Manfred Grossrieder**, CABI's MAS ICM Course Coordinator



"I would encourage my peers to take this ICM course so that the sector has more people with the skills and knowledge to deal with the various plant problems we have in our countries."

**Jayaka Lawrence Kipandula**, Malawi



"The course has been a great achievement for me as a person, and I urge anyone to do it. The benefits are not only for the individual, but for their country as well, and for fellow practising agriculture officers."

**Barbra Clesentia Nagaba**, Uganda



# Feedback from 2015–2020 MAS participants

As part of the continuous evaluation of the MAS ICM course, each year past students are asked to reflect on the course as a whole, the individual modules and the effects of the course back home. In 2020, a special survey was prepared to further analyse information about the impact the course was having on graduates' learning, studies and careers, and particularly the impact on subsequent agricultural improvements in their home countries. The review took place via an online survey sent to all students who had taken part in the course since its inception in 2015.

## The effects of the course: improving skills

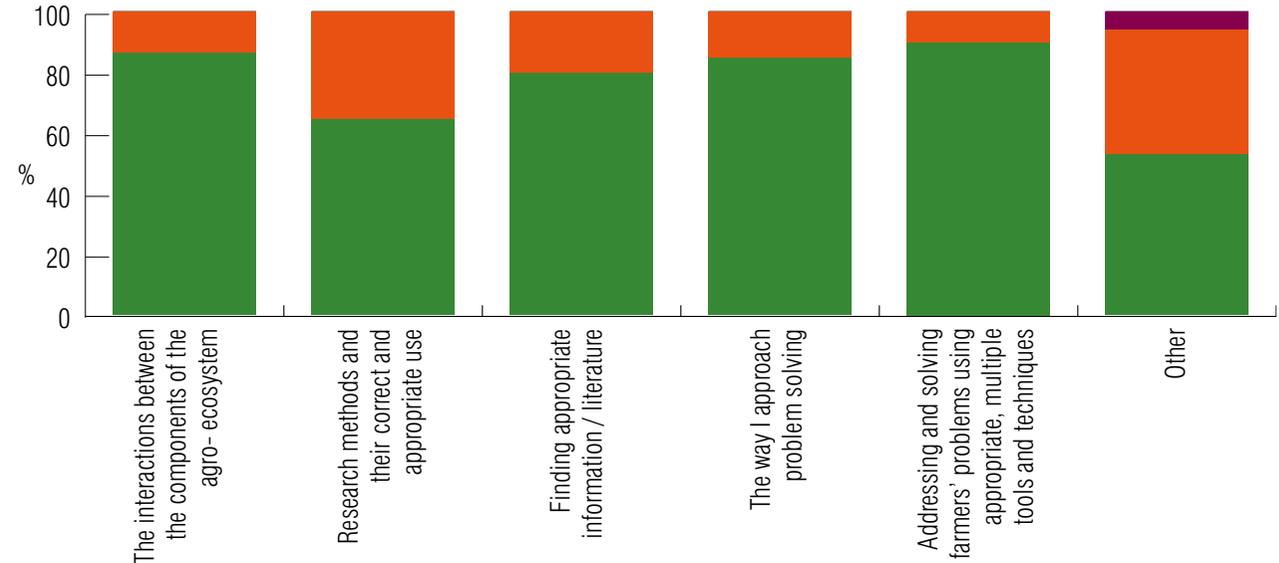
After attending the course, students found their *understanding of approaches to their work had improved* (Figure 2), *as well as their skills* (Figure 3).

The extensive knowledge and experience gained from the course also impacts students personally. When asked, students found they “strongly agreed” or “agreed” that *their attitudes had changed towards pesticides, their intercultural competence had improved and they now had access to an international network of fellow students and lecturers.*

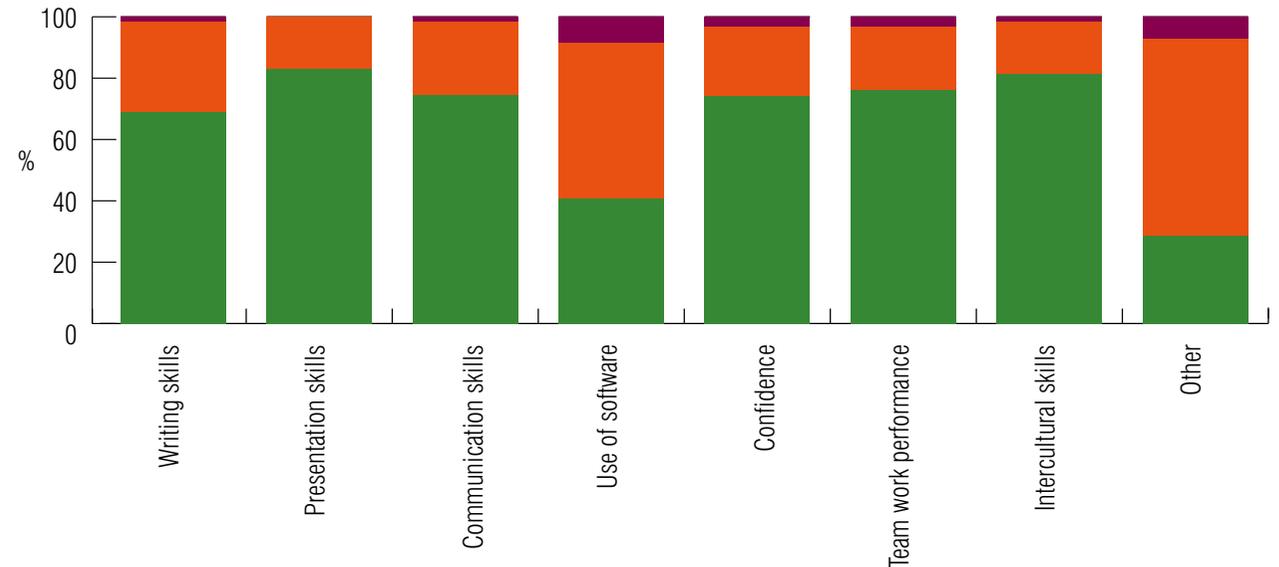
### Graph key for figures 2 and 3:



**Figure 2: Improved understanding of approaches to work**



**Figure 3: Improved skills**



## The effects of the course: sharing knowledge

The positive outcomes from the breadth of skills and information gained from MAS ICM work is also shared by students with other people, from co-workers and farmers to governmental bodies, and even to family members through various means (see figures 4 and 5).

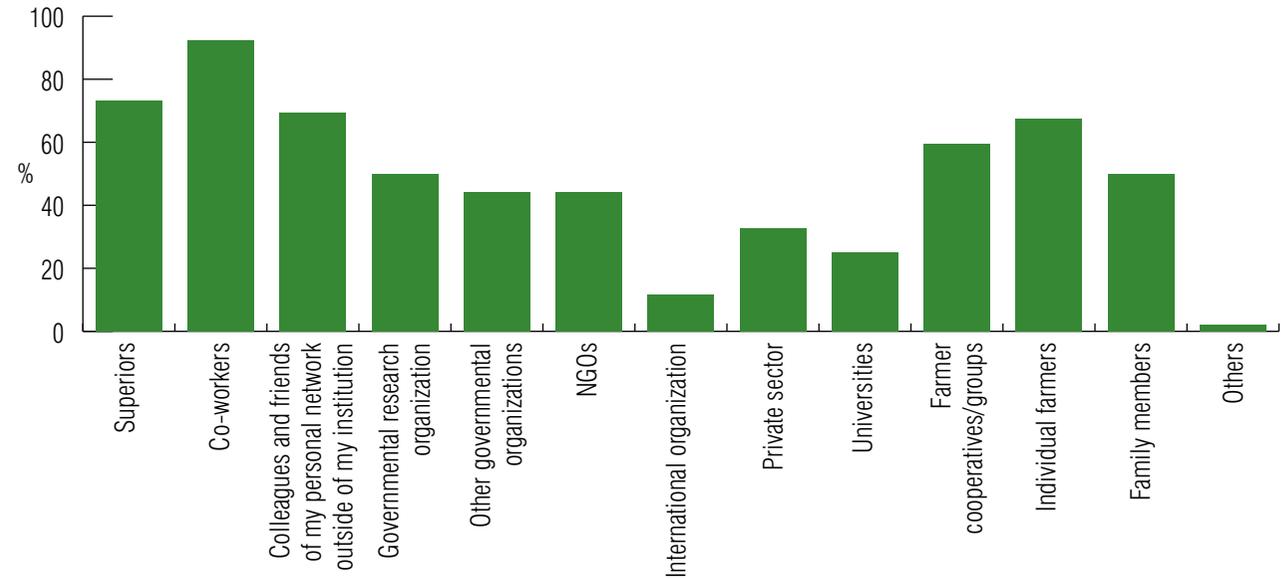
"After completing the MAS ICM course, I conducted a five-day training event for 44 agricultural officers on pest and disease identification, diagnosis and management. I also shared my thesis results and work plan with the District Technical Planning committee."

"I used technology to improve agricultural extension services by leveraging social media in the sharing of plant knowledge and services."

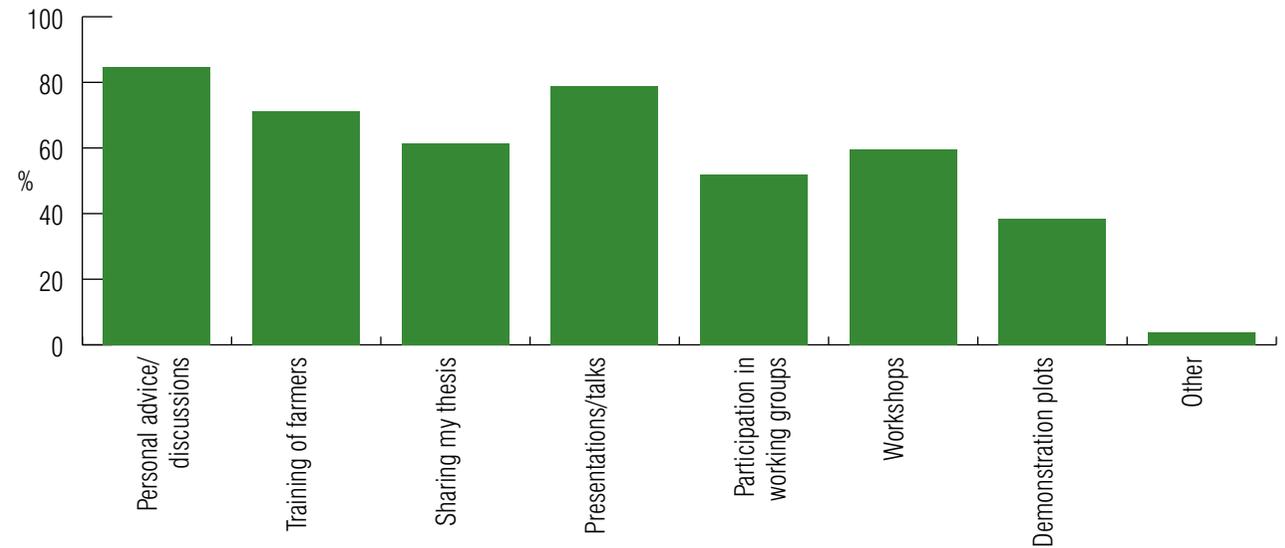
"I have trained extension workers on the knowledge and experience I gained through the MAS ICM course."

\*Anonymous quotes taken from online survey

**Figure 4: Who students shared their work with**



**Figure 5: How students shared their work**



## The effects of the course on students' careers

- Almost 90% of students continued to work for the organizations they had worked for before taking the course
- Around 20% of students continued university studies after the MAS ICM course
- 90% of students had either been formally promoted or gained new responsibilities since finishing the course, and 84% agreed the knowledge and experience gained through the MAS ICM course had contributed to this progression
- 100% of the students said they would recommend the MAS course to their peers

"The MAS ICM course—it's a modifier. I would recommend it to colleagues. If we want to solve critical agricultural and environmental challenges and problems in the world, this course will provide the new knowledge and skills to contribute to the solution we are all seeking."

**Stephen Aidoo**, Ghana

"The knowledge on Integrated Pest Management, soil management, crop nutrition, experimental designs and policy has been very helpful in my work. I am able to give informed advice to farmers and other stakeholders. I also have more confidence when teaching, guiding and mentoring my students."

"After the MAS ICM course, my knowledge was professional. I had an overview of sustainable agriculture development and was able to address and solve farmers' problems using appropriate multiple tools and techniques. Moreover, I improved my team performance and intercultural skills."

\*Anonymous quotes taken from online survey

"I highly recommended future students to apply. It is a good course; it is interdisciplinary, very practical, and it will help them better understand the benefits of managing land, managing the soil and managing water. The course also helps limit pest pressure, because we've had many challenges in agriculture but pests and diseases are key."

**Esther Ssettaala Nakibuuka**, Uganda



# Working with us on the course

## Working on the course from the University of Neuchâtel (UniNE) and CABI:

Co-directors:

**Ted Turlings**, Professor, Institute of Biology, University of Neuchâtel

**Ulrich Kuhlmann**, Executive Director, Global Operations, CABI

Course coordination:

**Manfred Grossrieder**, CABI

**Pauline Fritsch** and **Sara Santi**, UniNE

CABI Switzerland:

**Dirk Babendreier** (modules 4, 5)

**Melanie Bateman** (modules 2, 13)

**Anna Wood** (module 3)

**René Eschen**

**Manfred Grossrieder** (modules 1, 11)

**Justice Tambo** (module 12)

**Keith Holmes** (module 9)

**Wade Jenner**

**Urs Schaffner** (module 10)

**Stefan Toepfer** (module 8)

**Philip Weyl**

CABI UK:

**Rob Reeder**

**Philip Taylor**

UniNE:

**Saskia Bindschedler**

**Philip Brunner** (module 6)

**Daniel Hunkeler**

**Jean Pierre Husi**

**Pilar Junier**

**Betty Benrey**

## Our thanks to the following institutions and experts who worked with us on the course modules:

**Dario Fossati**, Agroscope, Switzerland

**Alexandra-Maria Klein**, University of Freiburg, Germany

Research Institute of Organic Agriculture (FiBL), Switzerland:

**Fabian Cahenzli**

**Lucius Tamm**

From the School of Agricultural, Forest and Food Sciences (HAFL), Switzerland:

**Nicole Ramsebner**

**Fritz Häni**

**Andreas Keiser**

**Noëmi Töndury**

**Lindsey Norgrove**

**Nathalie Oberson**

**Hans Ramseier**

**Michael Rauch**

**Matthias Stettler**

**Bernhard Streit**

**Christoph Studer**

**Pascale Wälti**

From the Fondation Rurale Interjurassienne (FRI), Switzerland:

**Julien Berberat**

**Bernard Beuret**

**Olivier Girardin**

**Beat Knobel**

**Bertrand Wüthrich**

From the Federal Office for Agriculture (FOAG), Switzerland:

**Hans Dreyer**

**Isabelle Kalbermatten**

**Claude Müller**

From Andermatt Biocontrol, Switzerland:

**Julian Brandl**

**Felix Dubach**

**Florian Bachmann**

**Stefanie Kloos**

**Aurelian Stalder**

**Samuel Stüssi**



**Matiullah Ahadi**, Afghanistan

I am an Extension Officer with the Ministry of Agriculture, Irrigation and Livestock of Afghanistan and have a BSc in Horticulture from Nangarhar University. I have six years of experience working with farmers to increase the productivity of their farms through capacity building in new technologies, better Integrated Pest Management practices and improved access to markets.

I have been working as a Plant Doctor within Plantwise, providing advice to farmers in managing and controlling pest and diseases.



**Konjit Feleke Belete**, Ethiopia

I work as an Entomologist in the Plant Protection Directorate at the Ministry of Agriculture, Ethiopia. I have a BSc in Crop Production from Jimma University and an MSc in Crop Protection from Ambo University, Ethiopia.

I have 10 years of work experience, during which I have been involved in conducting field surveys for the detection and identification of insect pests and providing recommendations for their management. I also work as a National Coordinator for Plantwise and have acted as a national trainer.



**Jayaka Lawrence Kipandula**, Malawi

I am an Agriculture Officer responsible for Crop Protection within the Ministry of Agriculture, Irrigation and Water Development in the Salima District Agriculture Office, Malawi. I have a BSc in Agriculture from the University of Malawi and over 15 years of work experience, including a role as Plantwise Cluster Coordinator.

As a crop scientist, I have practical experience in applied on-farm crop protection activities and I am an advocate of sustainable agriculture development in the face of climate change.



**Josphine Carlisle Wanjiru**, Kenya

I am a Senior Agricultural Officer at the Ministry of Agriculture, Livestock and Fisheries of Kenya, with a BSc in Agriculture and Home Economics from Egerton University. Within my current position, I am acting as sub-county Agribusiness and Marketing Officer, addressing all agribusiness issues in Kiambu County.



**Nicolas Uwitonze**, Rwanda

I have a Bachelor's degree in Agriculture Extension Education from the University of Alexandria, Egypt. I have gained over four years of experience in the agricultural sector in Rwanda, combined with professional training, short courses and workshops in Rwanda and other countries.

I have been working as the Climate Smart Agriculture and Extension Advisor for the USAID-funded "Feed the Future Rwanda Hinga Weze Activity". I am also a trained Plant Doctor and an active member of the National Taskforce for fall armyworm.



**Esther Ssettaala Nakibuuka**, Uganda

I am a District Agricultural Officer in the Mubende District of Uganda. As part of my work, I have been a Plant Doctor for six years. I have a BSc in Agricultural Land Use Management from Makerere University, Kampala, Uganda.



**Muhammad Aslam**, Pakistan

I am currently working as an Agriculture Officer in the Agriculture Department of the Government of Punjab, Pakistan, and I have been a Plant Doctor since 2014. I hold a BSc in Agriculture and Resource Economics and an MSc in Agricultural Economics from the University of Agriculture Faisalabad, Punjab, Pakistan.

The major goal of my role is to transfer new technology from the institutes to the fields in order to increase the yield of the country.



**Shoba Marimuthu**, Trinidad and Tobago

I am currently a Field Officer II in the Quality Assurance Department of the National Agricultural Marketing and Development Corporation (NAMDEVCO) in Trinidad and Tobago. I have been involved in the development of the Plantwise Programme at NAMDEVCO.



**Jordan Sichona**, Zambia

I am an Agriculture Officer with the Ministry of Agriculture, Zambia, and have over 11 years of work experience. I have a BSc in Agriculture with Education from Mulungushi University, Kabwe, Central Province, Zambia. I have been a Plant Doctor for six years.



**Barbra Clesentia Nagaba**, Uganda

I am currently an Agricultural Officer in the Kassanda District of Uganda, and a practising farmer. I have over seven years of experience, including four years with the Ministry of Agriculture, Animal Industries and Fisheries. I have a BSc in Agriculture from Makere University, Kampala, Uganda.

I have been a Senior Plant Doctor since 2013, which has helped widen my knowledge of pests, diseases and other issues related to diagnosis and appropriate management recommendations.



**Stephen Aidoo**, Ghana

I am currently working for the Ministry of Food and Agriculture, with specific duties as a Senior Agricultural Officer, Plant Protection and Regulatory Services Directorate, Ministry of Agriculture of Ghana. I have a BSc in Agricultural Technology from the University for Development Studies, Nyanpkala-Tamale, Northern Region of Ghana.

# Thank you to our partners



For more information, please visit:

[www.unine.ch/mas-icm](http://www.unine.ch/mas-icm)

[www.cabi.org/switzerland](http://www.cabi.org/switzerland)

**unine**

UNIVERSITÉ DE  
NEUCHÂTEL

