



# Masters of Advanced Studies in Integrated Crop Management

Annual Review – 2018



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**Manfred Grossrieder,**  
CABI course coordinator

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

The critical challenges facing agriculture today must be overcome to ensure that a rapidly growing world population can eat plentiful, safe and nutritious food. Beyond the need to produce more and better quality food, there is also a need to ensure that the way in which it is grown protects and improves the natural environment and people's livelihoods.

A good example of one of the many global challenges facing food production is the sustainable management of soils. According to the United Nations there is less than 60 years of farming left if soil degradation continues at current rates. Thus, urgent action is essential to maintain and enhance crop and soil health if we are to feed a growing population in a changing climate.

This Masters of Advanced Studies in Integrated Crop Management (MAS ICM) specifically addresses the key issues facing food production in developing countries, providing students with a comprehensive understanding of sustainable agriculture.

The MAS ICM course offers agricultural professionals from around the world the opportunity to adopt a modern and holistic approach to agriculture, combining ecology, soil health, crop and land management, as well as socioeconomic considerations.

The broad range of topics covered in the course explore practical solutions to help improve rural livelihoods and contribute towards achieving the United Nations Sustainable Development Goals. Once course participants return home, the sharing of new knowledge and skills benefits a diverse range of people in developing countries – from farmers to policy makers.

In March 2018, 12 students began the programme in Delémont, Switzerland, where the course is based, jointly coordinated by CABI and the University of Neuchâtel. Since its inception in 2015, the MAS ICM programme has trained 47 agricultural professionals from 19 countries across Africa, Asia and Latin America.

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.



**Mohammed Sherif  
Abubakari**  
Ghana



**Ann Bulya**  
Uganda



**Nixon Edson  
Nyalugwe**  
Malawi



**Ermias Teshome  
Taffa**  
Ethiopia



**Francine Lorraine  
Webb**  
Jamaica



**James Muema Daud**  
Kenya



**Mahesh  
Handiganala  
Munireddappa**  
India



**Melanie  
Mukashimwe**  
Rwanda



**Nguyen Thi  
Kim Ngan**  
Vietnam



**Rajeshkanna  
Sreesparalingam**  
Sri Lanka



**Tiwonge Gondwe**  
Zambia



**Ruth Buteme**  
Uganda

# What did the course cover?

The MAS ICM course aims to teach the next generation of crop experts about the benefits of ICM, addressing relevant biological, environmental, economic and social considerations. ICM involves managing crops to optimize yields and profitability, while minimizing negative impacts on the environment and human health. It considers soil, climate and socioeconomic conditions and safeguards the farm's natural assets.

The course content and teaching methodologies have been chosen to support professionals in agriculture to understand the concept and principles of ICM. The course is delivered in English, with a strong focus on how to successfully adapt and apply the approach within participants' own local contexts.

Between March and November 2018, course participants undertaking the MAS ICM programme were guided through 11 thematic modules, an international workshop entitled "visions for a sustainable agriculture" and a final case study session on building an ICM strategy. These were taught using participatory approaches, which created a space for participants to learn from one another's knowledge and experience.

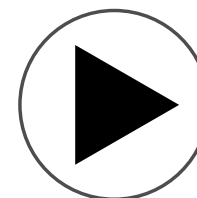
The module subjects included during this period were: soil management, seed selection, crop nutrition, cropping strategies, integrated pest management (IPM), landscape management, water management, statistics, agricultural policies and rural economics.

Besides theory and practical sessions, modules included research demonstrations and field visits with partner organizations.

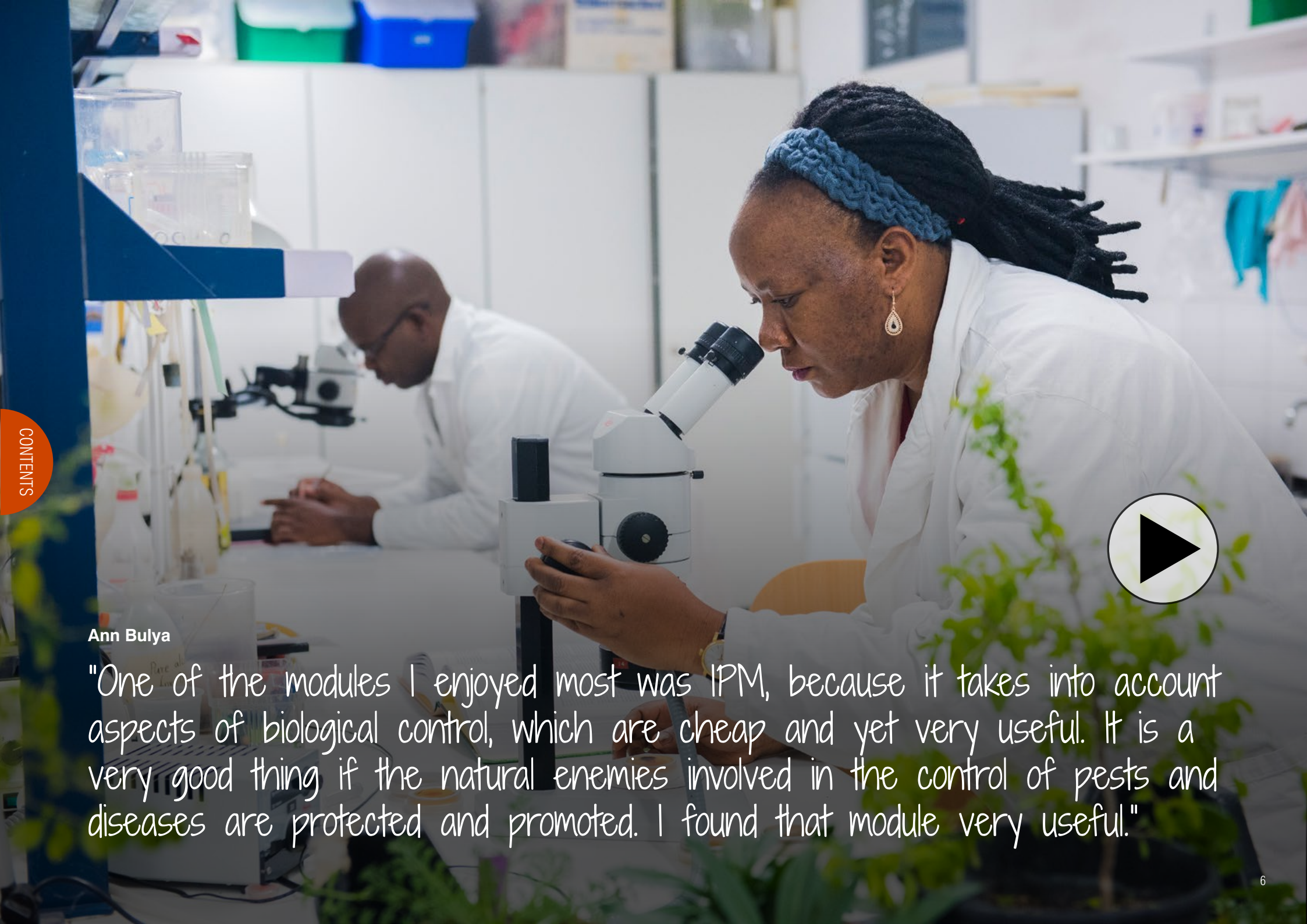
The MAS ICM course is taught by ICM experts from CABI and the University of Neuchâtel, and features interdisciplinary guest lecturers from around the world.

## Mohammed Sherif Abubakari

"The whole approach of the MAS ICM course was very motivating for me. I think this should be the direction every responsible country should go in, because it focuses on the responsible use of the environment."





A woman with dark skin and long black dreadlocks tied back with a blue headband is wearing a white lab coat. She is looking through a white and black microscope. In the background, another person is working at a lab bench. The lab is filled with various equipment and supplies.

Ann Bulya

"One of the modules I enjoyed most was IPM, because it takes into account aspects of biological control, which are cheap and yet very useful. It is a very good thing if the natural enemies involved in the control of pests and diseases are protected and promoted. I found that module very useful."

# Students' MAS theses

The last 12 weeks of the programme are dedicated to thesis writing, with students selecting topics that have a direct practical application for their own work. While writing a thesis can be one of the most challenging aspects of the MAS ICM course, students find it rewarding to use the set of applied skills and knowledge learned throughout the experience to help address real-world problems in their home countries.

In 2018, thesis topics included IPM guidelines for dragon fruit in Vietnam, wheat in Ethiopia and coffee in Uganda. Other students analysed the effectiveness of extension services in Jamaica, India and Kenya.

Supervision from lecturers allows students to refine ideas and develop the necessary analytical and writing skills to produce their theses. Additionally, students gain communication and public speaking experience by presenting their findings to fellow students and senior course staff.

"I analysed planting estates in India, where I looked at the nature of the recommendations made by plant doctors to farmers. My thesis gave me a great insight into the impact of the Plantwise programme on pest management in my country, and analysing the data was great fun and a

learning experience. I can now say that I'm confident about taking steps that would improve the quality of the recommendations given by plant doctors in India."

## **Mahesh Handiganala Munireddappa**

"Wheat is a major cash and food crop in southeast Ethiopia but farmers use their traditional knowledge when producing it, following poorly compiled guidelines. I believe my thesis work will directly benefit farmers by providing improved guidelines for them to follow, and this will improve productivity in the region."

## **Ermias Teshome**

"Since graduating I have shared my thesis findings with my supervisor and my unit team. Recommendations from the thesis have also been included with the implementation of CAB's PestSmart online training course to support both plant doctors and non-plant doctors."

## **Francine Webb**



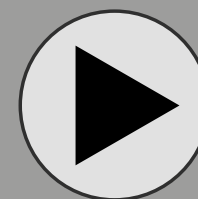
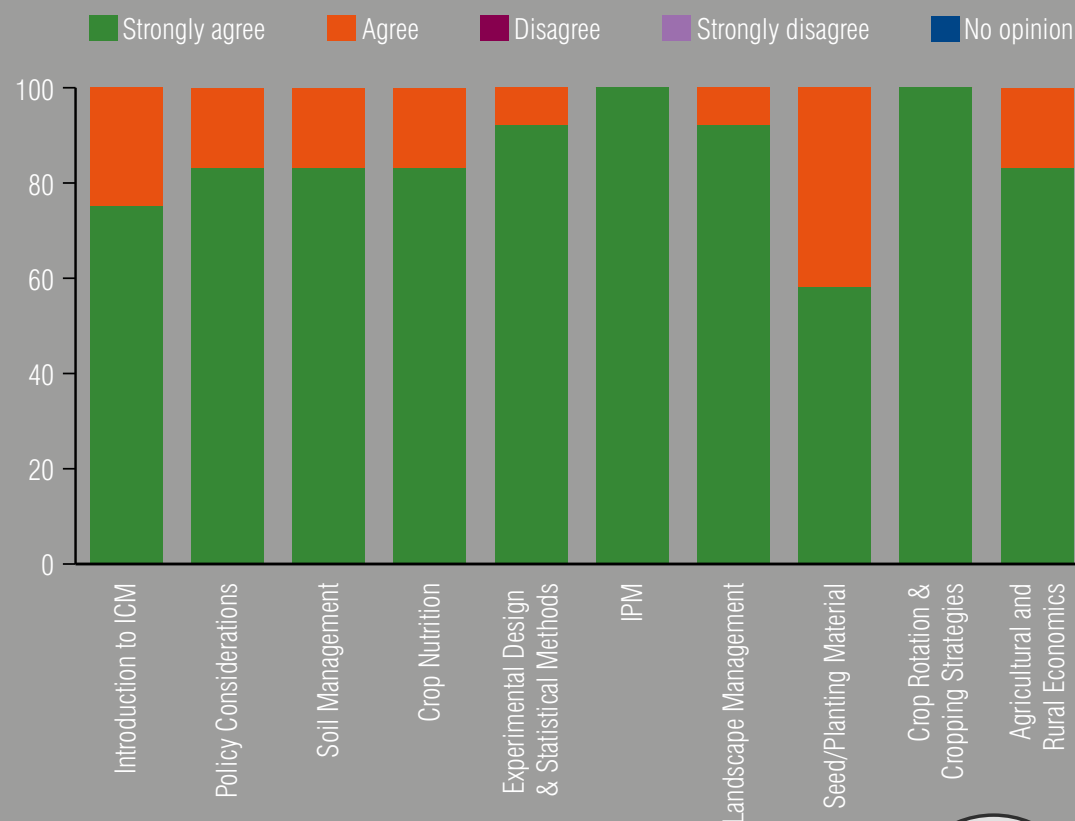
# What did students think of the course?

After completing the course, participants have the opportunity to reflect on individual modules and their overall learning experience. CABI and the University of Neuchâtel use this valuable feedback to assess and improve the course content and administration every year. The positive feedback received over the years shows the significant knowledge and skills students develop during the course. When they graduate they are better equipped to address production and productivity challenges, and to contribute to agricultural policy dialogue in their home countries.

The overall rating of the modules by the students in 2018 was mostly "excellent" and "good". 100% of students "strongly agreed" or "agreed" that the modules were interesting and of good quality. Students were also asked if the course provided new information and knowledge and the results are summarized in figure 1.

According to the feedback, the course met participants' expectations (100%) and students believe that the programme will enhance their career development. Overall, the course assessment shows that the MAS ICM course provides participants with a sound basis for tackling the challenges of food safety and food security in their home countries.

**Figure 1: Answers to survey question "Did the module provide new information on the topics?"**



## Ruth Buteme

"The message I would have for students who plan to apply for this course is that they shouldn't hesitate. If they want to be better farmers themselves, and help others become better farmers, they should take this course, because they will meet the needs that farmers have. There is no doubt about that."



# Graduation day 2018

Successfully completing the course provided all the students with a great sense of pride and achievement. After working hard for nine months they looked forward to returning home to share the knowledge and skills gained from the course and resume working to improve the lives of smallholder farmers.

The degrees were awarded at a graduation ceremony which took place on 23 November 2018 at the University of Neuchâtel, Switzerland. Delegates and course teaching staff from CABI and the University of Neuchâtel attended the ceremony to congratulate the students on their accomplishment.

During the ceremony, speeches were given by the University of Neuchâtel's Vice-Rector Professor, Daniel Schulthess and Vice-Director of the Institute of Biology, Professor Ted Turlings, as well as by CABI's Executive Director, Global Operations, Dr Ulrich Kuhlmann.

"We're very proud of your achievements on the course and keen to learn what you do with the results of your thesis. We look forward to hearing how you put into practice what you have achieved here to improve crop management in your home countries."

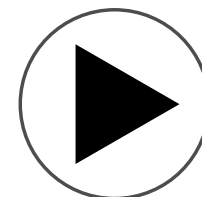
**Dr Ulrich Kuhlmann**, Executive Director, Global Operations, CABI

"A rapidly growing world population has an urgent need for safe, sustainable supplies of food. Good education of agricultural scientists and policy makers is needed to help address this challenge, which is why this course is so important. Thanks must go to all the efforts of students and staff who were involved in making the MAS ICM course such a success."

**Prof Ted Turlings**, Vice-Director of the Institute of Biology, University of Neuchâtel

"I am extremely happy that, after working hard for nine months, I've finally graduated today. I'm very grateful to the staff of the University of Neuchâtel and CABI for helping me complete this course. Now it is my duty to go back to my country and work with farmers. What I have learned here I will try to implement with farmers and my colleagues back home."

**Nixon Edson Nyalugwe**, MAS ICM student





# Feedback from 2018 MAS participants

Soon after graduating, the 2018 students returned home to begin applying the ICM approach within their own work in a range of organizations, including governments, advisory services and universities.

Although the 2018 students only completed the course around three months ago, we have already received encouraging reports that their participation in the MAS ICM course has made a difference to their work. Many of the students have shared their thesis findings with senior management and colleagues and have created plans to integrate ICM into their daily work and future programmes within their organizations.

**Mohammed Sherif Abubakari**,  
Agricultural Officer, Ghana

"I have had discussions with my district Director of the Department of Food & Agriculture to incorporate the rice ICM guidelines I created for my MAS ICM thesis into our usual demonstrations with farmers. The next stage is to source funding from the local government and other sources to pilot the implementation of the rice ICM guide."

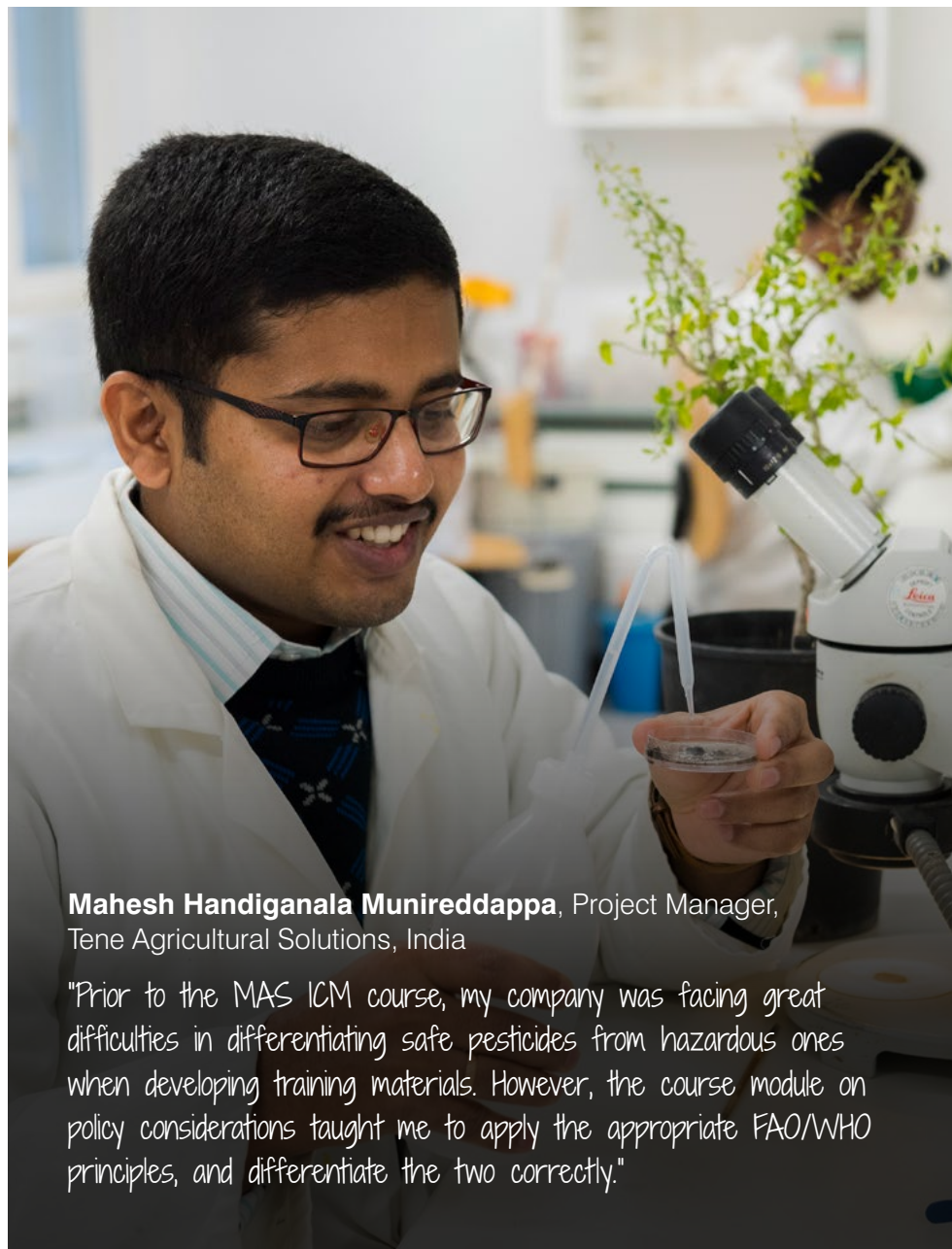


**Francine Webb**, Senior Plant Health/Food Safety Officer,  
Rural Agricultural Development Authority, Jamaica

"I am planning to look more holistically at plant health and ways to control pests on farms as a result of completing the MAS ICM course. For 2019, I am planning to tailor my teams' work to focus more on integrated crop management, not just pest management as before I went on the course. Specifically, I am keen on including more pollinators which is something I didn't consider before the course."







**Mahesh Handiganala Munireddappa**, Project Manager,  
Tene Agricultural Solutions, India

"Prior to the MAS ICM course, my company was facing great difficulties in differentiating safe pesticides from hazardous ones when developing training materials. However, the course module on policy considerations taught me to apply the appropriate FAO/WHO principles, and differentiate the two correctly."



**Nixon Nyalugwe**, Principal Agriculture Officer – Crop Protection,  
Ministry of Agriculture, Irrigation and Water Development, Malawi

"Since attending the course I have been assigned the role of Sustainable Agricultural Production Programme Coordinator for Lilongwe Agricultural Development Division. Before the MAS ICM course I had some difficulties in diagnosing nutrient deficiencies in crops, but with the knowledge and skills I got from the course I have greatly improved in that particular area. I have already assisted plant doctors when they were struggling to diagnose plant nutrient deficiency problems at plant clinics."

# Feedback from 2015-2017 MAS participants

After graduating from the MAS ICM course, students from the 2015, 2016 and 2017 intakes have also continued to apply their knowledge to bring about positive changes to agricultural practices in their respective countries. These graduates are in a better position to develop their careers in agriculture and deal with the threats facing sustainable food production, such as crop pests and pesticide misuse.

**Alexandre Rutikanga**, Director of Research and Lecturer University of Technology and Arts (UTAB), Rwanda, and PhD scholar Aberdeen University, UK

"As the recently appointed Director of Research and Consultancy at UTAB, I would say the MAS ICM course has added a great deal of value to my academic career by improving my teaching and research skills. This has also led to me being appointed as a research scientist at the Institute of Plant Protection of the Chinese Academy of Agricultural Sciences in Beijing, China, in 2016. More recently, in 2017, I was awarded a PhD scholarship under the Commonwealth Commission at the University of Aberdeen, UK."

**Alex Semakula**, Agricultural Officer, Uganda

"The course has been so helpful and relevant to my career as an agricultural officer and to my side job as a farmer. Besides training and advising farmers, I am trying out many new ideas, like Zai planting pits [for rainwater harvesting] and bio char [for improving soil fertility]. The results prove that these ideas work. I am in the process of designing a bee hotel too! The MAS ICM course has given me the confidence to practise what I preach. This will surely transform many farmers' knowledge in the long run."

**Francisca Mwanda**, Research Officer – Plant Pathology, Zambia

"The skills I gained from the MAS ICM course have been used to help farmers understand the importance of using pest control measures which are safe for the environment. Now, instead of immediately recommending a chemical, I take the time to explain that chemicals should be the last resort because of the destruction this may cause to natural pest enemies. I believe that with time, through sharing the knowledge I have gained from the MAS ICM course, farmers will learn to use chemical pesticides more sustainably."





**Haritha Nimalananda**, Assistant Director of Agriculture (Plant Protection), National Protection Service, Department of Agriculture, Sri Lanka

"As a plant protection trainer I train Department of Agriculture technical extension staff and disseminate my MAS ICM knowledge to them. During these training programmes I emphasize the importance of ecological compensation, protecting natural pollinators and landscape management – topics which are novel to extension staff in Sri Lanka."



**Michael Afranie Kwame**, Assistant Regional Officer – Plant Protection and Regulatory Services, Ministry of Food and Agriculture, Ghana

"The MAS ICM course has been a life-changing experience for me. I have been promoted at work and am now in charge of pests and disease control in my region. Improving how I analyse scientific materials and inspect planting materials during the course definitely helped me get to where I am now."

I have been able to transform knowledge gained from my published Pest Management Decision Guide thesis work to develop and share two factsheets for farmers on safe handling of agro-pesticides and on the management of pepper mottle virus.

The knowledge learned from the course has made me confident when talking about agriculture and science in general. I have shared my knowledge with 74 plant doctors in the three Northern Regions of Ghana through trainings on pests and diseases management in 2017 and 2018. I further shared my experience with 20 extension agents on landscape management and seed selection."

**Rukmali Gunapala**, Assistant Director of Agriculture (Research), Sri Lanka

"The MAS ICM course has been useful in my day-to-day research and training work. While working on the fall armyworm management campaign, I continuously used knowledge gathered from the MAS ICM course, CABI contacts and shared experiences with African course participants for the identification of the pest. This was a great opportunity to share my knowledge and experience to help my country in this way. I will continue connecting with my African friends to collect new information regarding fall armyworm and try to apply them to problems in Sri Lanka. That linkage would not have been possible without my MAS ICM experience."

**Theresia Wairimu Mbugua**, Sub-county Agribusiness Development and Marketing Officer, Kenya

"MAS ICM is a life-changing course. I look forward to enlightening more and more farmers on production aspects that are healthy for both consumers and the environment. I would recommend the course to all extension workers and agriculture policy makers."



**Ann Bulya**

"The knowledge that I've received from MAS ICM will add value to me as I pursue my career. I no longer think the way I used to think. I value things like bees and wild insects. I know they have value within the role of sustainable agriculture."

**Francine Webb**

"After graduating, I intend to utilize what I have learnt in this MAS ICM course, particularly with respect to landscape management and a more holistic approach to the management of not just pests, but looking at the crop as a whole."



# 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,

**Ricarda Knetsch**, **Sara Santi**, University of Neuchâtel

CABI Switzerland:

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

**Melanie Bateman** (module 2)

**Anna Wood** (module 3)

**Julien Dougoud**

**René Eschen**

**Manfred Grossrieder** (modules 1, 11, 13)

**Justice Tambo** (module 12)

**Luca Heeb**

**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**

**Violaine Ponsin**

**Jean Pierre Husi**

**Pilar Junier**

## Our thanks go to the following institutions and experts who have worked with us on the 2018 course modules:

**Franziska Burn**, IP-Suisse, Switzerland

**Dario Fossati**, Agroscope, Switzerland

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

**Salvatore DiFalco**, University of Geneva

**Segenet Kelemu**, International Centre of Insect  
Physiology and Ecology

**Claudio Screpanti**, **Christiane Wassmer**,  
Syngenta Foundation, Switzerland

**John A. Pickett**, Rothamsted Research, UK

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**Fritz Häni**

**Andreas Keiser**

**Christina Läderach**

**Lindsey Norgrove**

**Hans Ramseier**

**Michael Rauch**

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**Matthias Stettler**

**Bernhard Streit**

**Christoph Studer**

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**Bernard Beuret**

**Olivier Girardin**

**Beat Knobel**

**Bertrand Wütrich**

From the Research Institute of Organic Agriculture  
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**Lucius Tamm**

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

**Matthias Ofner**

**Matthieu Raemy**

**Jasmin Knutti**

From Andermatt Biocontrol, Switzerland:

**Gisela Brand**

**Felix Dubach**

**Johanna Häckermann**



**Mohammed Sherif Abubakari**, Ghana

I am a plant doctor in Mion district of northern Ghana. I hold an MPhil in Crop Science and a Bachelor of Science (BSc) degree in Agricultural Technology (Agronomy) from the University for Development Studies, Ghana. I have worked both in the private and the public agricultural sectors for 11 years and was recently involved in limiting the spread and impact of the invasive fall armyworm crop pest in Mion district. In that case I swiftly intervened and provided treatment and advice to farmers over the 2016/17 production season. I also facilitated the use of IPM to control pests in cowpea production demonstration plots in 2017.



**Ann Bulya**, Uganda

I am a Senior Agriculture Officer with the Department of Production and Extension Services for Uganda's Kayunga District Local Government. I hold a BSc from Makerere University and a Postgraduate Diploma in Public Administration and Management from the Uganda Management Institute, Kampala, Uganda.

Through my work I co-ordinate all agricultural field activities in crops and give technical guidance to field staff in Kayunga district. In my role as a plant doctor and Plantwise supervisor I set up and monitor plant clinics, organize plant health rallies, provide demonstrations, and establish seed multiplication centres and technology development centres. In this way, I help to detect, control and monitor the threat and occurrence of pests and diseases of crops in the region.



**Nixon Edson Nyalugwe**, Malawi

I work as a Principal Agriculture Officer within the Crop Protection Department in the Ministry of Agriculture, Irrigation and Water Development in Malawi and I am also the Plantwise Data Manager in Malawi. I hold a BSc in Agriculture from the University of Malawi, Bunda College of Agriculture. I have worked in Malawi's agricultural sector for 15 years where I have helped increase food security and improve rural livelihoods through reducing crop losses. I have collaborated with local and international partners to increase food security.





**Ermias Teshome Tafta**, Ethiopia

As a plant doctor based in Ethiopia's Oromia Agricultural Research Institute, I have been supporting and closely participating in the Plantwise programme for some years. I hold a Master of Science (MSc) degree in Agriculture, with a focus on plant pathology, and have worked in Ethiopia's agricultural sector for over 10 years. With my experience, and theoretical and practical skills I am able to bring positive change to directly improve the livelihoods of those who depend on agriculture.



**Francine Lorraine Webb**, Jamaica

I am the Senior Plant Health/Food Safety Officer with the Rural Agricultural Development Authority (RADA) in Jamaica. I hold a BSc in Zoology and a MSc in Plant Production and Protection from the University of the West Indies. In my position at RADA, I am a plant doctor and am tasked with co-ordinating our plant health programme, under which plant samples are sent in from across the island for us to identify pest or disease damage. My unit currently attends to 98 extension officers, who service almost 200,000 registered farmers. I am constantly faced by the challenge of increasing pest problems and concerns for food safety – often based on poor pesticide use that results in increased crop loss and health concerns.



**James Muema Daud**, Kenya

I graduated from Egerton University in Njoro, Kenya, where I obtained a BSc (Hons) in Agriculture in 2000. Since then I have worked for the Kenya Agricultural Research Institute, various agro-input suppliers and finally as a Principal Agricultural Extension Officer for the Kenyan Ministry of Agriculture, Livestock and Fisheries Development in Machkos County. Since joining the Plantwise programme as a cluster coordinator in 2013, I have set up four plant clinics, with two trained plant doctors per clinic providing advice and making a difference to Kenyan farmers.



**Mahesh Handiganala Munireddappa**, India

I am qualified as a Plantwise master trainer to train youths in rural areas as plant doctors. Currently, I am also studying for a PhD, focusing on resistance management strategies of the pink bollworm in cotton. I am also involved in implementing the Digitally Empowered Self-Employed Extension Force (DESEE Force) concept through Plantwise/Tene-ag in India. My farming family background led me to my agriculture studies and, due to a fascination with insects, I took up entomology for my postgraduate studies. Blending both subjects brought me to pest management.



**Melanie Mukashimwe**, Rwanda

I work as a research technician for the Rwanda Agriculture Board. I hold a BSc in Plant Biotechnology from INES Ruhengeri University. I have experience working with Rwandan farmers on plant protection to increase yields and provide food security in the region. I am currently a plant doctor and data manager for the Plantwise programme in Rwanda's northern zone, where I have the opportunity to support smallholder farmers to make knowledge-based decisions to increase yields.



**Nguyen Thi Kim Ngan**, Vietnam

I hold an MSc in Plant Protection and am currently employed as a lecturer at the Southern Agriculture College in Tan My Chanh community, Vietnam. As a plant doctor I support farmers in the Mekong River Delta to improve their agricultural methods to achieve better sustainability. Through the Plantwise programme I help farmers understand their crops and better their farming practices to get the highest possible benefit out of their fields while protecting their health and that of consumers.





**Rajeshkanna Sreesparalingam**, Sri Lanka

I am currently the Assistant Director of Agriculture (Research), at the Regional Agricultural Research and Development Centre, in Sri Lanka. I hold an MSc in Environmental Science from the University of Peradeniya and have qualified as a master trainer through the Plantwise programme. I am an expert in plant protection research, especially in entomology and nematology, as well as organic farming and environmental conservation through eco-friendly management of pests. I believe that in the future ICM will play a vital role in agricultural production.



**Tiwonge Gondwe**, Zambia

I am an agronomist at the Ministry of Agriculture of the Republic of Zambia and hold a BSc in Agricultural Sciences. For four years I have been working with rural communities to improve their livelihoods through increased agricultural productivity. I operate in Chibombo, central Zambia, which is home to over 45,000 small-scale farmers. In this region, adaptation to climate change is vital to secure agricultural growth, food security and poverty reduction.



**Ruth Buteme**, Uganda

I am currently enrolled for an MSc in Agriculture (plant breeding) at the Uganda Christian University (UCU). I hold a BSc in Agricultural Science and Entrepreneurship from UCU and a PGDip in Project Management from the Uganda Management Institute.

As a teaching assistant and junior researcher at UCU under the Department of Agricultural and Biological Sciences I lecture students on IPM, while my research focuses on breeding of African Indigenous Vegetables. As a plant doctor with the Plantwise programme, I provide crop advice and diagnostic services to farmers within Mukono central division.

# Thank you to our partners



For more information please visit:

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

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