

A photograph of four people in a field of yellow-flowered plants. On the left, a man in a blue and red striped polo shirt and glasses looks down at a plant. Next to him, a younger man in a blue polo shirt is also looking down. On the right, a woman in a white lab coat is holding a small clear container and looking at it. Another person is partially visible on the far right, also in a white lab coat. The background shows a green field with trees and mountains under a blue sky with light clouds.

# Masters of Advanced Studies in Integrated Crop Management

Annual Review – 2017



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Working with us on the course

Maurice Okeno:

"I encourage students to come here, because this is a course that will change your mindset in a holistic way. You learn about all aspects of agriculture and once you've completed the course, you have broad skills that you can share without fear that people will listen."

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

The 2030 agenda for sustainable development represents a new era in global food security and nutrition. With over 800 million undernourished people living in a changing climate, finding innovative and environmentally sustainable ways to address these challenges has never been more crucial.

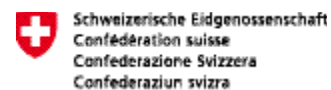
Integrated Crop Management (ICM) offers one solution by taking a holistic approach to sustainable agriculture, combining ecology, crop and land management as well as socioeconomic considerations.

The Masters of Advanced Studies (MAS) in ICM, jointly coordinated by CABI and the University of Neuchâtel, offers agricultural professionals the opportunity to develop their knowledge of modern crop management principles, while empowering them to influence national institutions in shaping a sustainable agricultural future at home.

The end beneficiaries of the course will be farmers in developing countries, and students therefore explore practical solutions for improving rural livelihoods and contributing towards achieving the Sustainable Development Goals.

In March 2017, 12 students began the programme in Delémont, Switzerland, where the course is based.

The study programme, which started in 2015, is supported by:



Swiss Agency for Development  
and Cooperation SDC





# Meet the students

Click on each student for their full biography.



**Michael Afranie**  
Ghana



**Emily Korir Ego**  
Kenya



**Francisca Mwanda**  
Zambia



**Haritha  
Nimalananda**  
Sri Lanka



**Henry Msatilomo**  
Malawi



**Purnima Chhetri**  
Nepal



**Alex Semakula**  
Uganda



**Eunice Sakong**  
Kenya



**Sheila Namuwaya**  
Uganda



**Chea Ho**  
Cambodia



**Teresia Mbugua**  
Kenya



**Maurice Okeno**  
Kenya

# What did the course cover?

The course is an interdisciplinary study programme providing knowledge on ICM. ICM involves managing crops to optimize yields and profitability, while minimising negative impacts on human health and the environment. It considers soil, climate and socioeconomic conditions and safeguards the farm's natural assets.

The MAS in ICM has been specifically designed to help agricultural professionals (such as extension agents, teachers, scientists and policy makers) understand the principles of ICM and how to successfully adapt and apply it within their own country contexts.

To achieve this, the programme also addresses

the wider implications of ICM, particularly the socioeconomic and ecological aspects, which are essential in this approach to sustainable agriculture.

Taught in English, the study programme covered two semesters and consisted of 11 thematic modules, an international workshop on the future of agriculture and a final case study session on building an ICM strategy.

Module subjects included soil management, seed selection, crop nutrition, cropping strategies, Integrated Pest Management (IPM), landscape management, water management, statistics, agricultural policies and rural economics. Each module included theory and practical sessions, research demonstrations and field visits with partner

organizations. Modules were designed to help students understand how ICM can be practically applied in working farm contexts.

To obtain the Masters degree, participants were required to write a thesis. Students selected thesis topics with a direct practical application in their own work. Subjects addressed by the students covered Integrated Production guidelines, pesticide policy and analyses of extension services in the respective countries.

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

## Eunice Sakong:

"When I look back at what I studied, there's a lot I will make use of when I go back to my country. I believe I am now well equipped with knowledge and resources in the area of crop management and IPM. I will help my colleagues as an agricultural extension trainer of trainers. I've established friends with whom I will continue to network and exchange ideas. I have so much that I am taking home."







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**Francisca Mwanda:**

"I will make use of what I've learned in integrated pest management every single day when I go back to work. There are certain things I never knew before coming here. For example, learning about agricultural economics has enabled me to know how best to advise farmers on agriculture – not just as a source of food, but as a business."

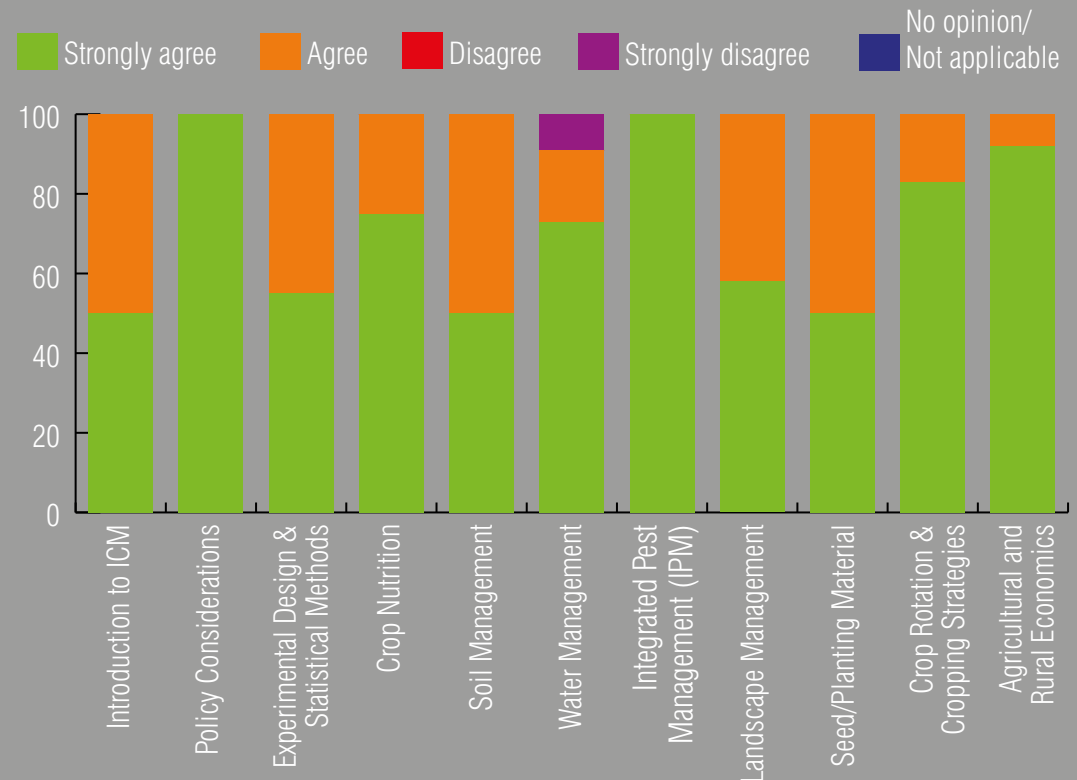
# What did students think of the course?

Student feedback is extremely valuable for MAS ICM quality assurance, and CABI and the University of Neuchâtel continually assess and adapt the course content and administration based on student comments. As part of the course evaluation, students are asked for their feedback on the modules. The favourable feedback received over the years indicates that the course has maintained its quality and relevance.

In 2017, the overall rating of the modules by the students was mostly “excellent” and “good”. Some of the commonly mentioned strengths included knowledgeable and friendly instructors, useful field excursions, interactive lectures and relevancy of modules to participants’ countries. An average of 80% of the students “strongly agreed” and 20% “agreed” that the modules provided new information and knowledge. Students were also asked if the module content was interesting and of good quality, and the results are summarized in Figure 1.

According to the feedback, the course met participants’ expectations (100%) and students believed the programme would enhance their career development, allowing them to offer quality advice on sustainable crop production to farmers and to contribute to policy discussions.


Figure 1: Answers to survey question ‘Was the module content interesting and of good quality?’



## Emily Korir Ego:

"We learned how to control or manage pests without an impact on the environment. If we improve on plant health, we will have more yield; the more yield, the more produce we'll have; more produce will lead to more income generation; more income generation will lead to food security; and at the same time, there will be economic growth."





Alex Semakula:

"I still believe the MAS ICM course is the best course ever established to help address present-day production and productivity challenges in developing countries. The course met my expectations 100%. The most interesting part now is to convert these useful teachings into practices that will help our farmers ensure long-term sustainability for food security and the environment."



# Graduation day

The intensive course programme over nine months, with continuous knowledge checks and a thesis to write, resulted in a lot of work for the students. It was therefore a great pleasure for everyone involved when all students were rewarded for the great efforts they had made. All 12 students graduated with a Masters of Advanced Studies in Integrated Crop Management during a ceremony that took place on 17 November 2017 in Engelberg, Switzerland. Congratulations again to all for this achievement!

Speeches on the occasion were given by the vice-rector of the University of Neuchâtel Professor Daniel Schulthess and Professor Ted Turlings, as well as by CABI's Executive Director, Global Operations, Dr Ulrich Kuhlmann. On this occasion, the course co-directors acknowledged and thanked donors and partners for their support in making the 2017 MAS ICM possible and for ensuring that the course will continue in 2018.

"I'm very impressed by this class of 2017. They did bring a lot of previous experience to this course of studies, and took time off from

their careers to study - I find that very impressive. It's a very international group and it is also good to see women take their due place here. We know the importance of women's role in agriculture worldwide, so it's also important that they are present in the science."

**Professor Daniel Schulthess**, vice-rector, University of Neuchâtel

"Now I am very happy! When I get back home to Malawi I'm going to use the knowledge and skills I've gained here on my own farm, but also to train other extension officers so that we can better help farmers. I also think what I've learnt through this programme will inform certain government policy decisions, so I'm really very excited - I should be able to contribute to the development of my country."

**Henry Msatilomo**, Chief Agriculture Extension Officer, Ministry of Agriculture, Irrigation and Water Development, Malawi



## Feedback from students after the course

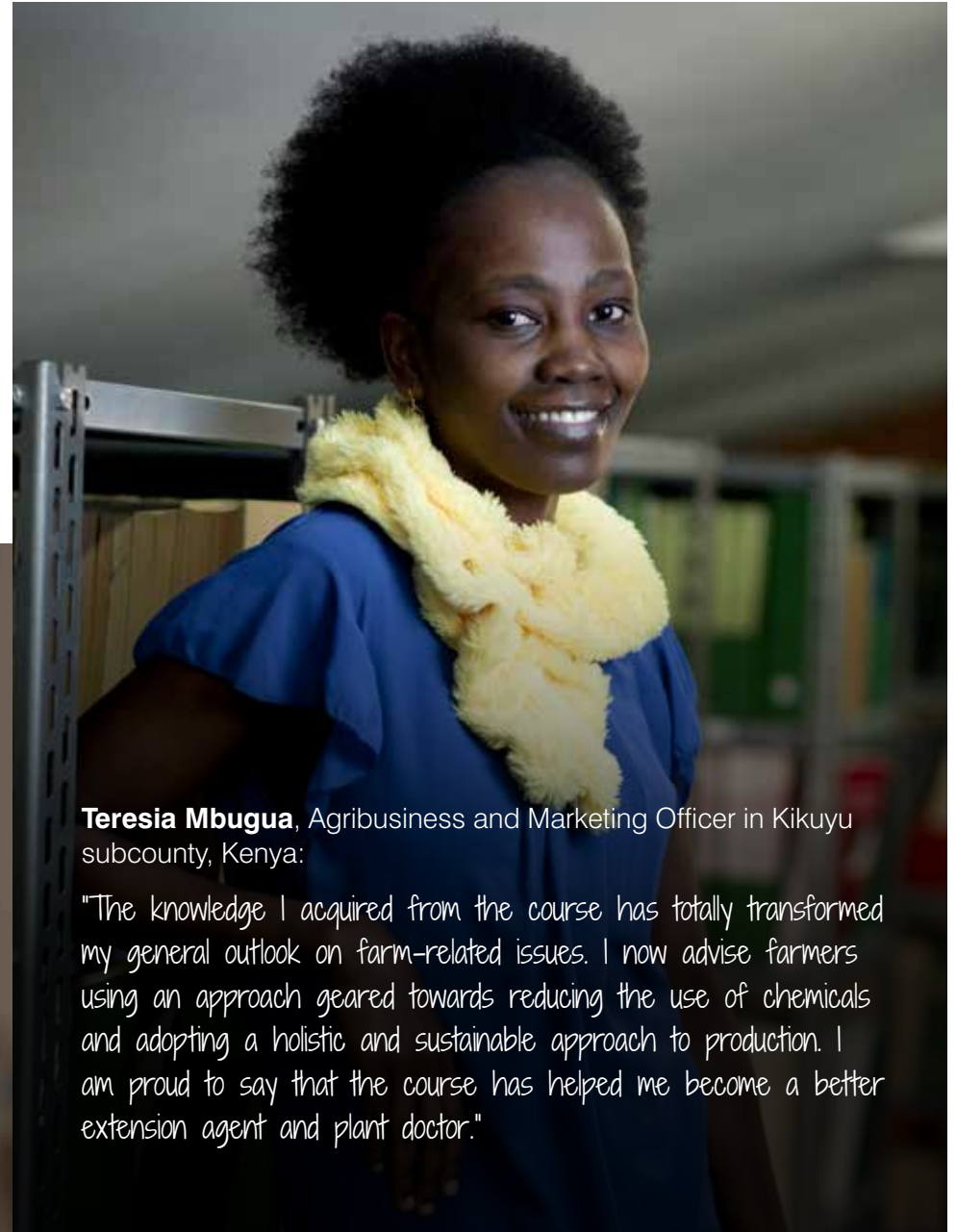
Soon after graduating, the students return home to begin applying the ICM approach within their own work in a range of organizations including governments, advisory services and universities.

Although the 2017 students only completed the course around six months ago, we have already received encouraging reports that participating in the MAS in ICM course has made a difference to their work.



**Henry Msatilomo**, Chief Agricultural Extension Development Officer, Ministry of Agriculture, Irrigation and Water Development, Malawi:

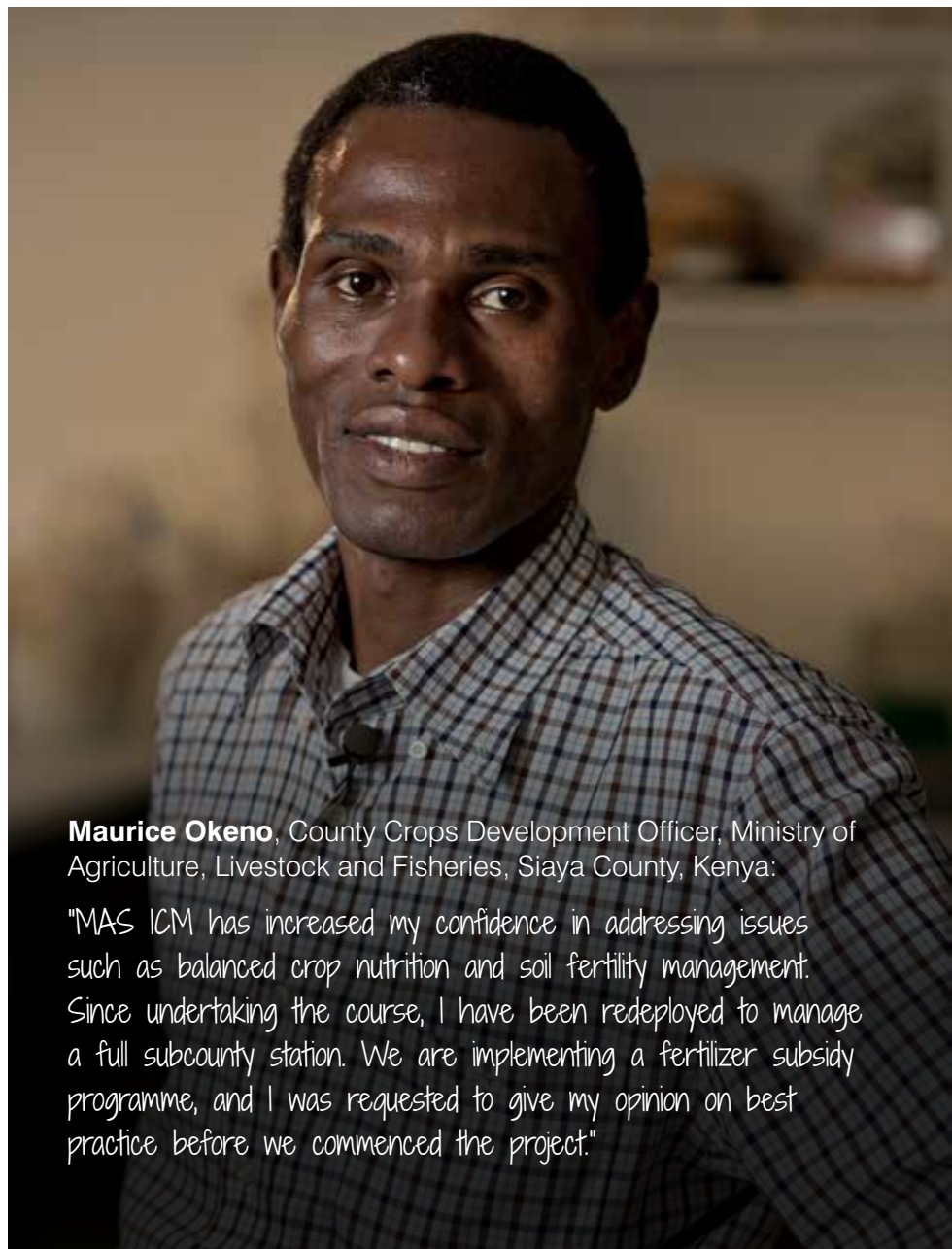
"The course was an eye-opener, and I am certain it will help me manage the project I am coordinating: a new project called the Agricultural Sector Wide Approach Support Project II, a multi-donor trust fund covering 12 districts in Malawi."



**Teresa Mbugua**, Agribusiness and Marketing Officer in Kikuyu subcounty, Kenya:

"The knowledge I acquired from the course has totally transformed my general outlook on farm-related issues. I now advise farmers using an approach geared towards reducing the use of chemicals and adopting a holistic and sustainable approach to production. I am proud to say that the course has helped me become a better extension agent and plant doctor."





**Maurice Okeno**, County Crops Development Officer, Ministry of Agriculture, Livestock and Fisheries, Siaya County, Kenya:

"MAS ICM has increased my confidence in addressing issues such as balanced crop nutrition and soil fertility management. Since undertaking the course, I have been redeployed to manage a full subcounty station. We are implementing a fertilizer subsidy programme, and I was requested to give my opinion on best practice before we commenced the project."



**Alex Semakula**, Agricultural Officer, Kangulumira Subcounty, Kayunga District, Uganda:

"I am now more confident in publicizing biological control pesticides to farmers, explaining their usefulness in integrated pest and disease management. I have already included training in sustainable land management practices to revive soil fertility in my annual work plan for 2018-2019 as the first step in improving agricultural productivity."

## 2016 students

After graduating, students from the 2016 and 2015 intakes (see page 13) also continue to apply their knowledge to bring about positive changes to agricultural practices in their respective countries. For example, graduates are better prepared to deal with threats to food production such as the fall armyworm in Africa.

**Jean Pierre Kalisa**, Plantwise Officer, Rwanda:

"The knowledge I gained from the course has enabled me to influence and bring about change in my country. As a trainer, I have tried to exchange my knowledge at a national level with several agronomists and lead farmers. A push-pull project was developed based on my thesis findings and has since been implemented by the Rwanda Agriculture Board (RAB) in partnership with the International Centre of Insect Physiology and Ecology (ICIPE)."

**Michael Kumah**, Assistant Regional Agricultural Officer in charge of Plant Protection and Regulatory Services, Ghana:

"I returned from completing the course when issues of fall army worm infestation were at their peak in Ghana. I was thus tasked with leading the regional team in charge of managing

the infestation, and with the help of the other team members the situation has been contained. My experience was able to benefit my country, because even though a lot of money was spent on achieving this goal, we did not lose our produce to this invasive pest."

**Paul Musa Lahai**, Agricultural Research Employer, Sierra Leone Agricultural Research Institute:

"After completing the MAS ICM programme, I now have the confidence and necessary skills to address plant health problems. I can say without hesitation that I am now a key player in the field of agronomy and the production of cocoa, coffee, palm oil and cashew."

**Mathews Matimelo**, Principal Agriculture Research Officer, Zambia Agricultural Research Institute:

"The course has broadened my understanding of different aspects of plant production, enhancing my knowledge in developing effective pest control strategies. I have shared the knowledge I have acquired in this field through MAS ICM with the Ministry of Agriculture and non-governmental organizations. For example, I worked

with entomology team members to deal with a fall army worm epidemic in Zambia, which was particularly affecting small-scale farmers. Pesticides approved by international agreements are now being used there with very little effect on the flora and fauna."

**Erick Haraman**, Programme Manager for Blantyre Agricultural Development Division (ADD), Malawi:

"My participation in MAS ICM has changed my mindset in the control of pests and diseases, where use of pesticides can only be applied if other, safer control options (biological, physical and cultural) have failed to contain the situation. The course has also been very useful in my career, allowing me to apply holistic and integrated approaches in resolving the production challenges facing farmers while safeguarding the natural ecosystem. As a result of the course I was appointed Programme Manager for Blantyre Agricultural Development Division (ADD), with responsibility for coordinating extension services in the ADD to achieve food security and the economic wellbeing of farmers. My fast promotion to this very senior government post was the direct result of my achievements on the course."



# 2015 students

Student feedback obtained nearly three years after graduation shows that the knowledge and skills acquired during the course are still having a positive influence on how problems in agriculture are addressed. In addition it shows that improved career paths of MAS in ICM graduates can increase the reach and impact of these solutions.

**Alexandre Rutikanga**, Director of Research and Consultancy and Lecturer of Crop Protection Modules, University of Technology and Arts, Byumba (UTAB), Rwanda:

"The MAS ICM course led to my successful appointment as Director of Research and Consultancy at UTAB. What I found particularly relevant about the course were the practical sessions and fieldwork provided by experts with hands-on skills and experience in our home countries, or countries with a similar background to ours. I have introduced principles of landscape management and policy consideration that are currently being considered for inclusion in the undergraduate programme curriculum on agriculture at UTAB."

**Vakeesan Arulanandam**, CABI Associate (Consultant) for CABI Plantwise, Sri Lanka:

"MAS ICM provided me with a platform for learning from subject matter specialists and experts. The practical sessions provided by the course were very useful, as were the exercises we practised in delivering presentations based on a scientific article. As a result of the course I have become a recognized person in the field of ICM, especially crop protection. Several organizations have contacted me for advice on crop management and organic agriculture in planning their activities."

**Frehiwot Sileshi Woldetsadik**, PhD candidate at Gent University, Belgium, and Jimma University, Ethiopia:

"The course has enabled me to secure a place on the PhD programme run by Gent University, Belgium, and Jimma University, Ethiopia. I have been able to transfer the knowledge and skills I acquired through the course to my students, in the hope that by transferring my knowledge to them, they will transfer it to others, too."

**Muhammad Rizwan Khan**, Research Scientist PhD candidate at Huazhong Agricultural University, China:

"The way in which I look at different issues of plant and soil health has changed, and I am in a better position to advise farmers on how to solve their problems. The course not only diversified my knowledge in various aspects of Integrated Crop Management, but also improved my CV, enabling me to get a doctoral scholarship from the China Scholarship Council."

**Raymonda Johnson**, Head of Crop Protection and National Plantwise Coordinator, Sierra Leone:

"The new skills and technological knowledge I acquired through the course have changed my perception and broadened my ability to implement my duties. The course has allowed me to address issues effectively relating to crop management and sustainable agriculture in my post as a National Plantwise Coordinator. Because of my work, the area of landscape management is now being incorporated into some agricultural programmes in my country, with more emphasis being placed on nutrient and soil management."

# 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**, UniNE

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)

**Julien Grunder** (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**

**Jean Pierre Husi**

**Pilar Junier**

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

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**Romano De Vivo**, Syngenta Foundation, Switzerland

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

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**Hans Meier**

**Lindsey Norgrove**

**Hans Ramseier**

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**Bernhard Streit**

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**Johan Six**

From the University of Zurich, Switzerland:

**Jan Seibert**

From Andermatt Biocontrol, Switzerland:

**Gisela Brand**

**Felix Dubach**

**Johanna Häckermann**



**Shelia Namuwaya:**

"What makes the course important is this - that we go back home and we are change agents. We change the way we do things so that it's not business as usual. We are fired up for change and that's what makes it important that this change is going to be for good. So that at the end of the day everybody does not only has food, but also something in their pockets so they can live a better life."

**Purnima Chhetri:**

"It was a really good experience to study with people from all over the world. I got to learn about their agriculture and the challenges they face, which are quite similar to those we face in our own country."

**Michael Afranie:**

"As they say in my country, knowledge is power. I am better informed on how to make decisions. If you want to improve agriculture in your country, this is the course you need to attend. At the end of the nine months you will be better informed on how to move agriculture to the next level in your country."





**Michael Afranie**, Ghana

I have been working with the Ministry of Food and Agriculture since 2010 as an assistant regional officer in Ghana's Plant Protection and Regulatory Services Directorate. I am also a regional data manager, plant clinic assistant, regional coordinator, trainer and plant doctor. I hold a BSc in Plant Science from Olabisi Onabanjo University (OOU), Nigeria. My job entails the coordination of plant clinic activities; crop pest and disease surveying and management; training of farmers and agricultural extension officers in Integrated Pest Management (IPM) and food safety; and technical backstopping on plant protection and regulatory services activities. I am also involved in monitoring and regulating the activities of the pesticide and fertilizer industry, as well as providing training to pesticide, fertilizer and seed dealers and users on good agricultural practices.



**Emily Korir Ego**, Kenya

I am a crop officer working for the Ministry of Agriculture, Livestock and Fisheries in the Department of Agriculture, Kiambu County, Kenya. I am also a Plantwise cluster coordinator. I hold a BSc in Agriculture (Agronomy option) from Egerton University, Njoro Campus, Kenya. Before joining the ministry, I worked in a parastatal (Kerio Valley Development Authority) as an agronomist for seven years. My duties and responsibilities include surveillance, monitoring and reporting of migratory pests; provision of extension services; clinic coordination and operation; and the training of staff and farmers. These services are aimed at improving the food security and economic wellbeing of farmers.



**Francisca Mwanda**, Zambia

I am involved in Plantwise Zambia as a trainer of plant doctors and in the preparation of disease and pest management decision guides in the form of fact sheets. I also verify diseases from plant samples presented by plant doctors to the plant pathology laboratory disease clinic. I have been working for eight years at the Zambia Agricultural Research Institute as a plant pathologist under the plant pathology section. My day-to-day work involves inspecting farmers' fields, collecting diseased samples, diagnosing diseases and advising farmers on how best to manage and control plant diseases and pests. I hold a BSc in Microbiology from the University of Zambia and an MSc degree in Project Management from the Copperbelt University of Zambia.





**Haritha Nimalananda**, Sri Lanka

I am serving as an assistant director of agriculture (Development) in the Plant Protection Service, Department of Agriculture, Sri Lanka. I am responsible for the development programme in plant protection, with special emphasis on Integrated Pest Management in major agricultural crops using environmentally friendly technologies. Over the last few years, my time has mostly been dedicated to the CABI Plantwise programme in Sri Lanka, working closely with CABI staff. Within Plantwise, I work as a master trainer, training extension staff as plant doctors and actively participating in the practical sessions. I am also engaged in organising, managing, guiding and supervising the operation of plant clinics across the country. I hold a BSc degree in agriculture from the Ruhuna University and an MSc degree in Plant Protection Technology from the Peradeniya University in Sri Lanka.



**Henry Msatilomo**, Malawi

I am the chief agriculture extension officer in the Department of Agricultural Extension Services of Malawi's Ministry of Agriculture, Irrigation and Water Development. I hold a BSc from Bunda College of the Lilongwe University of Agriculture and Natural Resources. My job involves delivery of extension services aimed at improving food security and the economic wellbeing of farmers. In 2014, the ministry appointed me to coordinate the Agriculture Sector Wide Approach Support Project, which is a Multi Donor Trust Fund. I have worked at the ministry for 15 years in different capacities (as an agriculture officer, district agriculture development officer and chief agriculture development officer), interpreting policies at district and national level. I am also the deputy national coordinator for Plantwise in Malawi.



**Purnima Chhetri**, Nepal

Since October 2016, I have worked as a plant protection officer in the Pesticide Registration and Management Division under the Department of Agriculture, Ministry of Agriculture Development, Nepal. I received a BSc in Agriculture in 2009 and an MSc in Agriculture (Horticulture) in 2012 from Tribhuvan University, Nepal. Previously, I was in the District Agriculture Development office in Bhaktapur as a subject matter specialist responsible for crop protection activities such as sericulture, apiculture, mushroom cultivation and pesticide management in the district. I also work as a plant doctor, conducting regular plant clinics for the CABI-led Plantwise programme in the district.



**Alex Semakula**, Uganda

I am an agricultural extension officer with the Department of Production and Extension, Kayunga District Local Government, Uganda. I have BSc in Agriculture from Makerere University, Uganda. Since 2011, I have been delivering agricultural advisory services and providing training to rural farmers in the areas of agronomy, agribusiness and pest and disease control. I am a trained plant doctor for Plantwise, operating mobile plant clinics and plant health rallies in Kayunga District; I am also a trainer of trainers (TOT) for plant doctors (modules I and II). In addition to this, I am involved in piloting Plantwise ICT for agriculture as an extension methodology aimed at bringing agricultural information closer to farmers, using e-plant clinics and other mobile application platforms. My role also involves providing support for the development of agricultural extension messages (Pest Management Decision Guides) for crop pests and diseases; ensuring the harmonization and validation of plant clinic data; and the backstopping (M&E) of plant clinic operations in Uganda.



**Eunice Sakong**, Kenya

I work for Kenya's Ministry of Agriculture Livestock and Fisheries in the Department of Agriculture, and am currently deployed to Machakos County as the crops officer at the sub-county level. I hold a BSc in Agriculture and Home Economics from Egerton University, Kenya, and I have 12 years of work experience in the agriculture sector. My duties and responsibilities involve coordination, technical support and follow-up on crop-related projects, as well as the provision of extension services aimed at improving food security and the economic wellbeing of farmers. I am also a cluster coordinator for the Plantwise programme.



**Sheila Namuwaya**, Uganda

I hold a BSc in Environment Management from Makerere University, Uganda. I also have an MSc in Geographical Information Systems with a specialisation in Land Degradation and Conservation from the University of Twente, the Netherlands. Currently, I am a lecturer and coordinator of masters degree students in the Department of Agricultural and Biological Sciences in the Faculty of Science and Technology, Uganda Christian University, Mukono. I am also a plant doctor.





**Chea Ho**, Cambodia

I currently work as a technical officer and researcher in the Department of Plant Protection Sanitary and Phytosanitary, GDA, Phnom Penh. This role involves conducting research, providing extension services and the development of extension materials. I also supervise student research projects. I hold a BSc in Agronomy (specialising in Plant Protection) from the Royal University of Agriculture, Cambodia. I am a national data manager within the Plantwise programme for Cambodia, responsible for entering and analysing data, checking diagnoses and recommendations and monitoring and evaluating plant clinics.



**Teresia Mbugua**, Kenya

I have been working with Kenya's Ministry of Agriculture, Livestock and Fisheries since 2008 to promote agriculture business. I hold a BSc in Agribusiness from the University of Nairobi (UoN), Kenya. My day-to-day activities involve providing technical backstopping to extension staff and farmers on sound crop management aspects geared towards business-oriented farming. This includes business planning, enterprise analysis and selection, risk analysis and management to reduce farm 'busyness' and improve farm business. I joined Plantwise in October 2015 as a plant doctor. In the plant clinic, I assist farmers with disease and pest diagnosis and management.



**Maurice Okeno**, Kenya

I currently work as a county crops development officer in Kenya's Ministry of Agriculture, Livestock and Fisheries, Siaya County. My responsibilities include designing and coordinating the implementation of crop development programmes in the county; capacity-building and backstopping on crop management; the development and disseminating crop production information; and assessing food requirements, deficits, post-harvest losses and production trends. I hold a BSc in Agriculture (Agricultural Economics) from the University of Nairobi. I am also a plant doctor and county desk officer for Plantwise.

# Thank you to our partners



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