

Training Workshop Proposal

Theme: SDGs

1. Course Title: Climate Smart Agriculture: Smart Farming Practices
2. Duration: 3 Weeks
3. Background and Rational

Crop production is vital to global food security strongly affected by climate change all over the world, and more severe in impoverished communities. In the next decade, climate change would be a main cause of shortages of water and food and greater risks to health and life for billions of people living in developing countries. With fewer social, technological and financial resources for adapting to changing conditions, developing countries are the most vulnerable to the impacts of climate change (UNFCCC, 2007). Climate-smart Agriculture is defined by the Food and Agriculture Organization (FAO) as agriculture that sustainably increases productivity, enhances the resilience of livelihoods and ecosystems, reduces and/or removes greenhouse gases (GHGs) and enhances the achievement of national food security and development goals. Climate-smart agriculture production contributes to food security, by addressing different aspects of current climate change impacts through adaptation and mitigation actions. The agriculture sector is not only among the most vulnerable sectors to the impacts of climate change, it is also directly responsible for 14 percent of global greenhouse gas emissions. In addition, the sector is a key driver of deforestation and land degradation, which account for an additional 17 percent of emissions. The agricultural sector can be an important part of the solution to climate change by capturing synergies that exist among activities to develop more productive food systems and improve natural resource management.

Climate-smart agriculture is rooted in sustainable agriculture and rural development objectives which, if reached, would contribute to achieving the Millennium Development Goals (MDGs) of reducing hunger and improved environmental management. More productive and resilient agriculture is built on the sound management of natural resources, including land, water, soil and biodiversity. Conservation agriculture, agroforestry, improved livestock and water management, integrated pest management and ecosystem approaches to fisheries and aquaculture can all make important contributions in this area. Our knowledge and practices should be firmly rooted in the rich culture and heritage of the people of southeast Asia to enable them to grow into responsible citizens through consciously practicing Climate Smart Agriculture in view of climate change and its effects.

In setting out this framework for the training on climate smart agriculture using smart farming practices, we provide for the ambitions of sustainable living through climate smart agricultural practices by empowering learners with the necessary skills in view of the changing

climate. Climate smart agriculture looks at the prosperity of the people of developing countries for improved living, better quality of life, for growth and development, for improved agricultural practices that take cognisance of the changing climate incorporate new sensor and IoT technology to manage their farms.

The 21st century is a time of rapid technological growth and social change and this workshop is aiming at ensuring that the people of all developing countries are well prepared to meet the challenges of climate change. They should also be able to explore the opportunities for improved agricultural outputs in view of the changing climate using smart farming practices. The training on climate smart agriculture using smart farming practices has to prepare both the youth and adults not just for the day to-day but for the changing life ahead and in particular climate changes.

The training on climate smart agriculture using smart farming practices at Walailak University should instil confidence in individuals and all agricultural practitioners to face the challenges of climate change ahead of them and they need to develop love and appreciation for good agricultural practices that will address climate change issues. The individuals should also become successful life-long learners and continue to operate/live effectively through practicing the appropriate agricultural methods in a rapidly changing climate.

To achieve the ambitions of climate smart agriculture using smart farming practices, we need a vibrant and dynamic workshop. A climate-smart agriculture workshop at Walailak University will provide challenges to individuals/farming practitioners/people through use of inquiry based learning and research based approach that will stimulate and inspire everyone to practice. Understanding the actual impacts of climate change in various sectors especially in agriculture is critical for purposes of sustainability and moving in the right direction. Under the Center of Excellence for Ecoinformatics, School of Science, Walailak University, we have more than 15 years of experience implementing sensor technology, automatic weather stations, soil stations with soil moisture/temperature sensors, leaf-wetness sensors, eco-camera, IoT technology in agriculture. We are experts on utilized weather and soil data for smart-agriculture and frequently do training for farmers in various crops e.g. corns, coffee, Siam ruby pomelo, mangosteen and also shellfish aquaculture. Training in climate smart agriculture using smart farming practices at Walailak University will create awareness, provide knowledge and management skills, disseminate and replicate best practices on climate smart agriculture adaptation and mitigation approaches for improved agricultural yields/production and improved quality of living.

4. Objectives

4.1. To strengthen the current agricultural training programmes to be responsive to the climate change challenges and sustainable development

4.2. To build a critical cadre of human resource who will promote/practice of climate smart agriculture adaptation and mitigation.

5. Course Contents

5.1 Course Outline

Day	Key concepts/activities
1 (Lecture 3 hrs)	Openning ceremony with a special talk by Prof. Dr. Sombat Thamrongthanyawong, the President of Walailak University on “Climate Smart Agriculture, the way Walailak University moving forward” Participants present their country reports on the climate-smart agriculture in their country.
2 (Lecture 3 hrs)	Why Climate-smart agriculture? Food security and climate change. More efficient and resilient systems. Increase systemic efficiency and resilience: policies, institutions finances.
3 (Lecture 3 hrs)	Managing landscapes for Climate-smart agricultural systems. Why is a landscape approach needed for achieving Climate-smart agriculture? How can a landscape approach be implemented in developing countries?
4 (Lecture 3 hrs)	Water management in agriculture, Potential impacts of climate change on water in agriculture, Vulnerability to climate change and resilience, Assessing risk, preparing responses, Water management for climate change mitigation
5 (Lecture 3 hrs)	Climate smart agriculture includes proven practical techniques such as mulching, intercropping, conservation agriculture, crop rotation, integrated crop-livestock management, agroforestry, improved grazing and improved water management
6 (Lecture 3 hrs)	Soils management for climate-smart agriculture. Soil health, key functions and soil: plant-water interrelations. Challenges of climate change, adaption, mitigation and enhancing resilience to soils. Successful examples of soil management practices for climate-smart agriculture with a focus on resilience

7 (Lecture 3 hrs)	Climate-smart crop production system. Climate change impacts. Sustainable crop production intensification. Management of natural biological processes.
8 (Lecture 3 hrs)	Climate smart agriculture innovative practices on weather forecasting, early-warning systems and climate-risk insurance.
9 (Lecture 3 hrs)	Climate smart agriculture innovative practices using sensor technology and IoT.
10 (Lecture 3 hrs)	Visiting Siam Ruby Pomelo smart farming. Observe good practices in how to manage soil, manage water, fertilizer, pest management, deploying sensors technology in the farm for best product quality.
11 (Lecture 3 hrs)	Visiting Mangosteen smart farming. Observe good practices in how to manage soil, manage water, fertilizer, pest management, deploying sensors technology in the farm for best product quality
12 (Lecture 3 hrs)	Capacity development for climate-smart agriculture. Assessment, monitoring and evaluation on climate-smart agriculture projects
13 (workshop 3 hrs)	Participants write a project proposal on the knowledge of climate-smart agriculture from the workshop and show how to implementation climate-smart agriculture in your country.
14 (workshop 3 hrs)	Participants write a project proposal on the knowledge of climate-smart agriculture from the workshop and show how to implementation climate-smart agriculture in your country.
15 (workshop 3 hrs)	Participants present climate-smart agriculture project. Each participant will have 15 min oral presentation with 15 min for questions and answers. Closing ceremony

5.2 Practices

The online course contains lectures, exercises, study visits and group work. Oral and written presentation of a project is included.

5.3 Study Trips/Field Trips

1. Siam ruby pomelo farms
2. Mangosteen Orchards

Day	Field trips/location/date/objectives
10	<p>Location: Siam Ruby Pomelo smart farmings.</p> <p>Date: Day 10 of the workshop.</p> <p>Objectives: to observe good practices in how to manage soil, manage water, fertilizer, pest management, deploying sensors technology in the farm for best product quality.</p>
11	<p>Location: Mangosteen smart farmings.</p> <p>Date: Day 11 of the workshop.</p> <p>Objectives: to observe good practices in how to manage soil, manage water, fertilizer, pest management, deploying sensors technology in the farm for best product quality.</p>

5.4 Advance Assignments

5.4.1 Country Report

5.4.1.1 Participants are required to submit a country report together with an Application Form and present a country report during the workshop.

5.4.1.2 Country report should include these followings

Topics: general information of the country, historical background of the climate-smart agriculture of the country, existing laws and regulations concerning the climate-smart agriculture, existing problems in the applicants' section, future program/project on the climate-smart agriculture, and expectation for the training course.

Materials: statistical data/data/figures are required where it is applicable.

Length: 3-5 A4 pages, Times News Roman font 12 points, single space

Dateline: submit a country report form together with an Application Form 2 months before the workshop starts.

Country Report Form: see appendix A

5.4.2 Reading Assignment

Cambridge University (2013). Climate Change: Action, Trends and Implications for Business.

Climate-Smart Agriculture Manual for Zimbabwe. (2017). Climate Technology Centre and Network, Denmark.

IISD, UNITAR & UNEP. (2009). IEA Training Material: Vulnerability and Climate Change Impact Assessment for Adaptation.

IPCC. (2013). Climate Change 2013. The Physical Science Basis -Summary for Policymakers.

OECD. (2009): Guidance on Integrating Climate Change Adaptation into Development Co-operation.

UNEP. (2009). Climate Change Science Compendium

UNEP. (2009). Climate in Peril, a Popular Guide to the Latest IPCC Report.

UNEP & UNDP. (2011). Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners. UNFCCC. CGE Climate Change Training Materials.

UNFCCC. (2008). Compendium on Methods and Tools to Evaluate Impacts of, and Vulnerability and Adaptation to, Climate Change.

UNFCCC. (2006). UNFCCC Handbook.

UNFCCC & UNEP. (2002). Climate Change Information Kit.

World Bank Report. (2012). Turn Down the Heat.

World Meteorological Organization. (2012). Greenhouse Gas Bulletins.

5.4.3 Project Assignment

Day	Project Assignment
13-14	<p>Writing on a project assignment</p> <p>Participants write a project proposal on the knowledge of climate-smart agriculture from the workshop and show how to implementation climate-smart agriculture in your country.</p> <p>Date: Day 14 of the workshop.</p> <p>Documents: will be provided and can be downloaded in the google drive.</p>
15	<p>Project assignment presentation</p> <p>Participants present climate-smart agriculture project in their country.</p> <p>Date: Day 15 of the workshop. Each participant will have 15 min oral presentation with 15 min for questions and answers.</p> <p>Closing ceremony</p>

5.4.4 Others

Participants should have a computer notebook and information that is relevant to climate-smart agriculture project in your country.

6. Participants Criteria

Walailak University is expected to have a various and flexible participants from all developing countries around the globe who are interested in training on climate smart agriculture. The course provides clear, concise and up-to-date information for anybody interested in obtaining a general understanding about climate smart agriculture. The course should be of particular interest to the following audiences: Civil servants in national ministries, provincial departments and local authorities; Environmental managers in private sector and civil society organizations; Faculty, researchers and students; farmers and Interested citizens.

7. Venue

Workshop location: Walailak University, Nakhon Si Thammarat, Thailand

8. Expected Results

The workshop should enable trainees to:

- 8.1 Demonstrate an in-depth understanding of Climate Smart Agriculture
- 8.2 Promote technical skills for a transition to a greener economy
- 8.3 Conduct cutting edge climate smart agriculture Research and/or activities in their countries
- 8.4 Think, communicate, cooperate and solve problems from interdisciplinary perspectives on climate smart agriculture issues adequately
- 8.5 Promote social innovations and practices for climate smart agriculture in their countries
- 8.6 Formulate ethical problems and clearly communicate possible solutions orally and in writing at the appropriate levels for a given audience

9. Evaluation

The type of assessment to be used will involve continuous and summative assessment. The Assessment tools include some of the following: projects, assignments, theoretical exams, practicals field trials, using the science laboratory and computer labs, field attachment and Participatory assessment e.g. presentation to stakeholders farmers /students.

10. Institution

10.1 Executive/Implementing Agency

10.1.1 Implementing Agency

School of Science, Walailak University
222 Thasala, Nakhon Si Thammarat 80161 Thailand
Tel: +66-075-672005-6, Fax: +66-075-672004

10.1.2 Present Facilities

1. Staff

School of Science, Walailak University has 52 faculty members with more than 90% PhD. degree and 17 academic staff to organize this workshop as lectures and supporting staff. In addition, we also invite 3 faculty members from School of Agriculture Science to gave some special lectures on agriculture.

2. Training Materials/Equipment Availability

Walailak University has a modern centralized laboratory and equipments, workshop participants will be trained in the modern laboratory and plenty of equipments required by the workshop.

10.2 Collorborative Organization

10.2.1 Name of organization

1. School of Science, Walailak University
2. Smart Siam ruby pomelo farms
3. Smart Mangosteen Orchards

10.2.2 Address/Contact Information/Web Site

- (1) Assoc. Prof. Dr. Krisanadej Jaroensutasinee (Sensors and Smart Agriculture expert)

School of Science, Walailak University, email: krisanadej@gmail.com

- (2) Assoc. Prof. Dr. Mullica Jaroensutasinee (Data Analysis expert)

School of Science, Walailak University, email: mullica.jn@gmail.com

- (3) Mr. Wirat Sooksaeng

Smart Siam ruby pomelo farms, Pakpanang, Nakhon Si Thammarat, Thailand

- (4) Mrs Orawan Jaipaew

Smart Mangosteen Orchards, Nakhon Si Thammarat, Thailand

Appendix A: Country Report Form

Country report should be submitted together with the Application Form in complying the following items.

I. Introduction

1. Name of the Training Course:.....
2. Name of applicant:
- Home Address:
- Phone No. (Home & Office):
- Fax:Email:
3. Name of Country:
4. Name of Organization:
5. Main Tasks of the Organization & Organization Chart
6. Applications' Position: Roles and Responsibilities

II. General Information of the country (1-2 pages of A4 size paper):

III. Historical Background of the Subject Related to the Training Course (within 1 page of A4 size paper)

IV. Existing Laws and Regulations concerning the subject (if any)

V. Existing Problems in the Applicants' section (1-2 pages of A4 size paper)

1. Current problems and/or constraints you are facing (please describe concrete details).
2. Obstacles in the process of solving those problems.
3. Countermeasures of questions for those problems or any idea which you would like to study or solve through the course.

VI. Future Program/Project on the Related Subject

1. What is the future policy/program/or project concerning with the subject.
2. How the training course is related with those future.

VII. Expectations for the Training Course (up to 1 page of A4 size paper)

1. Main interest subject areas or topics in this training course and reasons why you pick up them.
2. How do you expect to apply the knowledge and skills received from this training course after you return to your home country.
3. Other matters you are expecting for this course (if any) (Basically this training program is fixed and cannot be changed upon your request).