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# ERASMUS+

HIGHER EDUCATION – INTERNATIONAL CAPACITY BUILDING  
PROGRAM

## Participatory and Integrative Support for Agricultural Initiative

### Module 2 Environmental/Ecosystem for Sustainable Agriculture



## Module 2 –Production Environment

- 1. Scope** Environmental/Ecosystem for Sustainable Agriculture
- 2. Team** Leader: Khon Kaen University  
Members: 1. IRD (Agrinatura)/SupAgro  
2. Helsinki University
- 3. Period:** 12<sup>nd</sup> November – 1<sup>st</sup> December 2018
- 4. General Learning Objectives**
- 1) To understand the effect of agriculture practice on environment
  - 2) To identify the various of cropping systems for the sustainable agriculture

| Date                   | Time         | Topics                                                                  | Resource persons |
|------------------------|--------------|-------------------------------------------------------------------------|------------------|
| Thursday<br>(8/11/18)* | All day      | Arrival date of professor team                                          | KKU staff        |
| Friday<br>(9/11/18)    | 9:00 – 16:00 | Meeting group and discussion on the course outline and topic activities | KKU staff        |
| Saturday<br>(10/11/18) | 9:00 – 16:00 | Visit some exemplified farms                                            | KKU staff        |
| Sunday<br>(11/11/18)   | All day      | Arrival date of students (16 Thai students + 2 to 5 European students)  | KKU staff        |

\*EXPECTING DATE AND CAN BE CHANGED

| *Session 1 (week 1): Nov 12 <sup>nd</sup> -17 <sup>th</sup> , 2018                                                                                                                                                                                |            |                                                                                                                       |                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Session 1 Ecosystems service for sustainable agriculture in a challenging environment (week 1)                                                                                                                                                    |            |                                                                                                                       |                                                                                                             |
| Learning Objective(s):                                                                                                                                                                                                                            |            |                                                                                                                       |                                                                                                             |
| 1) To understand the common farming systems in northeast Thailand                                                                                                                                                                                 |            |                                                                                                                       |                                                                                                             |
| 2) To develop capacity for building a farming systems appraisal                                                                                                                                                                                   |            |                                                                                                                       |                                                                                                             |
| 3) To be able to identify and characterize a farming system at the farm scale, i.e; a set of agricultural activities combined and interrelated with each other (cropping systems and animal rearing systems), guided by coherent decision taking) |            |                                                                                                                       |                                                                                                             |
| 4) To be able to identify farming properties of each farming type (productivity, profitability, autonomy and resilience)                                                                                                                          |            |                                                                                                                       |                                                                                                             |
| Keywords: plant production, animal production, farming system, cropping system, animal husbandry system, environment, farmer's survey, Participatory Rural Appraisal, farm typology                                                               |            |                                                                                                                       |                                                                                                             |
| (Department of Agricultural extension and Agricultural systems, Department of Agricultural Economics)                                                                                                                                             |            |                                                                                                                       |                                                                                                             |
| Date                                                                                                                                                                                                                                              | Time       | Topics                                                                                                                | Resource persons                                                                                            |
| Monday                                                                                                                                                                                                                                            | 8:30-9:00  | Opening ceremony                                                                                                      | Dean of Agriculture, KKU                                                                                    |
|                                                                                                                                                                                                                                                   | 9:00-12:00 | Introduction on sustainability in North-East Thailand: Challenge issues on sustainable agriculture ( <u>Lecture</u> ) | Assoc. Prof. Dr. Suchint Simaraks, Program on System approaches in Agriculture for Sustainable Development, |

|           |             |                                                                                                                                         | KKU                                                                                                                                                                                                                                                                       |
|-----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | 13:00-16:00 | Concept and methodology of farmers' survey, Participatory Rural Appraisal and System analysis ( <u>Lecture</u> )                        | Assist. Prof. Dr. Satit Adaito (Department of Agricultural Economics, KKU), Dr. Benedicte Chambon (CIRAD) Dr. Sukanlaya Cheunkwan and Dr. Arunee Promkhambut, Department of Agricultural Extension and Agricultural Systems, KKU) and Dr. Didier Pillot (SupAgro, France) |
| Tuesday   | 9:00-12:00  | Student prepare simple questionnaire for farming system identification of farmers                                                       | Assist. Prof. Dr. Satit Adito (Department of Agricultural Economics, KKU) and Dr. Didier Pillot (SupAgro, France)                                                                                                                                                         |
|           | 13:00-16:00 | Students prepare interview guide and tools for farming system identification                                                            | Dr. Benedicte Chambon (CIRAD) Dr. Sukanlaya Cheunkwan and Dr. Arunee Promkhambut, Department of Agricultural Extension and Agricultural Systems, KKU) and Dr. Didier Pillot (SupAgro, France)                                                                             |
| Wednesday | 9:00-12:00  | Farming systems identification survey 6 groups of 3 to 4 students: 3 work in zone 1 (Undulating area), 3 work in zone 2 (Lowland area). | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
|           | 13:00-16:00 |                                                                                                                                         | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
| Thursday  | 9:00-12:00  | In two days, each group surveys 2 households, both "integrated" and "conventional"                                                      | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
|           | 13:00-16:00 |                                                                                                                                         | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
| Friday    | 9:00-12:00  | Discussion on cases studies (organic/integrated vs conventional farming systems)                                                        | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
|           | 13:00-16:00 | Discussion on cases studies (organic/integrated vs conventional farming systems)                                                        | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |
| Saturday  | 9.00-16.00  | Analyses data and group discussion                                                                                                      | KKU/IRD/SupAgro                                                                                                                                                                                                                                                           |

| *Session 2 (week 2): Nov 19 <sup>st</sup> -24 <sup>th</sup> , 2018                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Session 2 Ecosystems service for sustainable agriculture in a challenging of environments (week 2)                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| Learning Objective (s):                                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| 1) To learn on the tools for evaluate of environment conditions                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| 2) To analyze the sustainable agriculture systems                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| Keywords: plant production, soil quality, biodiversity, macro and micro fauna                                                     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| (Department of Soil Science and Environment, Department of Entomology, Department of Horticulture, Department of Plant Pathology) |             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
| Date                                                                                                                              | Time        | Topics                                                                                                                                                                                                                                                                                                                                                                                                                              | Resource persons                                                     |
| Monday                                                                                                                            | 9:00-12:00  | Integrative soil quality assessment & Functional biodiversity ( <u>Lecture</u> )                                                                                                                                                                                                                                                                                                                                                    | KKU/IRD/SupAgro<br>(Dr. Chuleemas/<br>Dr. Phrueksa/Dr. Alain)        |
|                                                                                                                                   | 13:00-16:00 | Biofunctools( <u>Lecture</u> )                                                                                                                                                                                                                                                                                                                                                                                                      | KKU/IRD/SupAgro<br>(Dr. Phrueksa/Dr. Alain)                          |
| Tuesday                                                                                                                           | 9:00-12:00  | Practice the tools in the field (Biofunctools):<br>Soil properties analysis<br>[2 selected farms (same farm as session 1-1)]<br>- Split students into two groups<br>- Each group will take responsibility for each farm<br>- Using Biofunctool for monitoring carbon transformation (litter decomposition, in situ respiration), soil nutrient, soil moisture and pH analyses, soil structure analysis, macro-fauna population etc. | KKU/IRD<br>(Dr. Phrueksa/Dr. Alain)                                  |
|                                                                                                                                   | 13:00-16:00 | Practice the tools in the field (Biofunctools):<br>Soil properties analysis<br>[2 selected farms (same farm as session 1-1)]                                                                                                                                                                                                                                                                                                        | KKU/IRD<br>(Dr. Phrueksa/Dr. Alain)                                  |
| Wednesday                                                                                                                         | 9:00-12:00  | - Practice the tools in the field (Biofunctools):<br>Soil properties analysis<br>- Insect and micro-organism indicators for environment<br>[2 selected farms (same farm as session 1-1)]                                                                                                                                                                                                                                            | KKU/IRD<br>(Dr. Phrueksa/Dr. Alain/<br>Dr. Anan W./<br>Dr. Chutinan) |
|                                                                                                                                   | 13:00-16:00 | - Practice the tools in the field (Biofunctools):<br>Soil properties analysis<br>- Insect and micro-organism indicators for environment<br>[2 selected farms (same farm as session 1-1)]                                                                                                                                                                                                                                            | KKU/IRD<br>(Dr. Phrueksa/Dr. Alain/<br>Dr. Anan W./<br>Dr. Chutinan) |
| Thursday                                                                                                                          | 9:00-12:00  | Crops effect on water cycling ( <u>Lecture</u> )                                                                                                                                                                                                                                                                                                                                                                                    | KKU/IRD<br>(Dr. Supat/Dr. Mallika)                                   |
|                                                                                                                                   | 13:00-16:00 | Analyses data and preparing the presentation on agricultural effect on environments                                                                                                                                                                                                                                                                                                                                                 | KKU/IRD/SupAgro/<br>All team                                         |
| Friday                                                                                                                            | 9:00-16:00  | Analyses data and preparing the presentation on agricultural effect on environments                                                                                                                                                                                                                                                                                                                                                 | KKU/IRD/SupAgro/<br>All team                                         |
| Saturday                                                                                                                          | 9.00-16.00  | Group or individual presentation and                                                                                                                                                                                                                                                                                                                                                                                                | KKU/IRD/SupAgro/                                                     |

|  |            |          |
|--|------------|----------|
|  | discussion | All team |
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**\*Session 3 (week 3): Nov 26<sup>th</sup>-1<sup>st</sup>, 2018**

**Session 3 Utilizing genetic resources for sustainable agriculture (week 3)**

**Learning Objective(s):**

- 1) To understand on the animal production in term of sustainable agriculture
- 2) To understand of the importance of the genetic resources for sustainable agriculture

**Keywords:** Genetic resource, animal production, fishery production

(Department of Animal Science, Department of Fishery)

| Date      | Time        | Topics                                                                                      | Resource persons                                     |
|-----------|-------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|
| Monday    | 9:00-11:00  | Integrated Pest management and case study<br>( <u>Lecture</u> )                             | KKU/Helsinki U.<br>(Prof. Heikki and Prof. Ingeborg) |
|           | 11:00-12:00 | Genetic resource for animal production in sustainable agriculture ( <u>Lecture</u> )        | KKU/IRD<br>(Dr. Theerachai/Dean)                     |
|           | 13:00-14:00 | Genetic resource for animal production in sustainable agriculture ( <u>Lecture</u> )(Cont.) | KKU/IRD<br>(Dr. Theerachai/Dean)                     |
|           | 14:00-16:00 | Genetic resource for crop production in sustainable agriculture ( <u>Lecture</u> )          | KKU/IRD<br>(Dr. Jirawat)                             |
| Tuesday   | 9:00-12:00  | Animal and fishery productions in northeast Thailand ( <u>Lecture</u> )                     | KKU/IRD/SupAgro<br>(Dr. Penpan/Dr. Theerachai)       |
|           | 13:00-16:00 | Visit the integrated animal/fishery farm in KKU (Livestock unit/fishery farm unit)          | KKU/IRD/SupAgro<br>(Dr. Penpan/Dr. Theerachai)       |
| Wednesday | 9:00-12:00  | Visit the animal production in the small farmer scale (Farm 1)                              | KKU/IRD/SubAgro<br>(Dr. Theerachai)                  |
|           | 13:00-16:00 | Visit the animal production in the commercial scale (Farm 2)                                | KKU/IRD/SupAgro<br>(Dr. Theerachai)                  |
| Thursday  | 9:00-12:00  | Visit the fishery production in the farmer scale (Farm 3)                                   | KKU/IRD/SupAgro<br>(Dr. Penpan)                      |
|           | 13:00-16:00 | Visit the fishery production in the commercial scale (Farm 4)                               | KKU/IRD/SupAgro<br>(Dr. Penpan)                      |
| Friday    | 9:00-12:00  | Life cycle assessment ( <u>Lecture</u> )                                                    | KKU/IRD/SupAgro                                      |
|           | 13:00-16:00 | Discussion and conclusion in whole Module 2                                                 | KKU/IRD/SupAgro/<br>Helsinki U./ All team            |
| Saturday  | 9:00-12:00  | Individual assessment of student                                                            | Dr. Didier and team                                  |

\* Remark: number of session depends on each module design