# **Towards strengthening**

# AGROFORESTRY **EDUCATION**

# in Southeast Asia

**Highlights of a Webinar-Workshop** 21 January 2021 via Zoom





**Food and Agriculture Organization of the** United Nations

## Background of the webinar-workshop

The webinar-workshop, Strengthening Agroforestry Education in ASEAN, was organized in the context of the FAO-ASEAN Technical Cooperation Programme (TCP) for Scaling-up Agroforestry in ASEAN for Livelihoods and Environmental Benefits where ICRAF is a technical partner. The TCP was funded by the Food Agriculture Organization of the United Nations as part of its commitment and support to the process of bringing agroforestry into the mainstream of ASEAN Member States.

## Webinar-workshop organizers

Institute of Agroforestry, University of the Philippines Los Baños (IAF) Southeast Asian Network for Agroforestry Education (SEANAFE) Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) World Agroforestry (ICRAF)

## Compilers

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## Acknowledgements

We would like to express our thanks to presenters of papers during the webinar-workshop: Dr Budiadi Suparno of Universitas Gadjah Mada; Dr Affendy Hassan of Universiti Malaysia Sabah; For Rowena Esperanza D. Cabahug of the University of the Philippines Los Baños; and Dr Truc Quoc Hung of Thai Nguyen University of Agriculture and Forestry. The Institute of Agroforestry of the University of the Philippines Los Baños is likewise recognized for hosting the event. Finally, we deeply acknowledge the webinar participants representing different organizations across Southeast Asia for their valuable inputs, particularly, in setting the direction for agroforestry education in the region.

## Key messages

- With increased recognition of agroforestry as a means to address many pressing challenges — such as food insecurity, land degradation, dwindling natural resources and the climate crisis — demand for agroforestry experts is foreseeable yet the supply is lacking in Southeast Asia.
- Agroforestry should be integrated and mainstreamed in tertiary education throughout Southeast Asia.
- There are a growing number of universities engaged in agroforestry education programs in the region, which indicates increasing interest to engage with, and promote, agroforestry as a science and discipline.
- Enrolment in agroforestry programs is declining. Limited employment opportunities for agroforestry graduates and lack of awareness of the field of agroforestry discourages increased enrolment.
- Teaching staff and learning resources in agroforestry are limited. There is a mismatch between the integrated nature of agroforestry and the single expertise of academics.
- Improving curricula and learning resources, enhancing student recruitment to agroforestry, ensuring job placement and strengthening support to agroforestry education, research and learning networks in the region are highly recommended.

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# Rationale

**R**ecognizing the contribution of agroforestry in achieving food security, enhancing climatechange adaptation and mitigation, and reducing land degradation; to many of the Sustainable Development Goals (SDGs); and in an effort to strengthen links between forestry and food production through an integrated approach to landscape management as well as enhancing sustainable forest management, the 20th Meeting of the ASEAN Senior Officials on Forestry agreed to develop ASEAN guidelines on agroforestry. Thereafter, in October 2018, the Meeting of the 40th ASEAN Ministers on Agriculture and Forestry adopted the Guidelines.

ASEAN leaders expect the Guidelines to stimulate the development of focused policies and programs for agroforestry in Member States (AMS) that will contribute to improving the livelihoods and increasing the asset-base of millions of farmers in the region as well as the supply of food that they produce while also improving the environment and increasing the sector's resilience to the vagaries of extreme events resulting from a changing climate. Further, the Guidelines are expected to foster even greater collaboration between ASEAN Member States (AMS) in sharing technical and policy developments, promoting increased trans-border trade in agroforestry products and bolstering the enhancement of ecosystem services. All of which will support closer and quicker integration in-keeping with the vision of the ASEAN Economic Community. To date, three Member States (Cambodia, Lao PDR and Myanmar) are on their way to developing national roadmaps for agroforestry development while Myanmar and Viet Nam are setting agroforestry targets in their Nationally Determined Contributions (NDCs).

Globally, agroforestry is also increasingly recognized as amongst the most effective strategies in building the resilience of ecosystems and communities. An assessment in 2018 revealed that

- 60 of 147 countries assessed explicitly proposed agroforestry as a solution in their NDCs. Among them: 71% in Africa, 34% in the Americas, 21% in Asia, 7% in Oceania.
- Of 73 developing countries with REDD+ strategies, about 50% identified agroforestry as a way to combat deforestation and forest degradation.
- Seven countries proposed agroforestry as part of Nationally Appropriate Mitigation Actions.

Along with the increasing demand for agroforestry, it has been recognized that a lack of national capacity and, in particular, professionally trained agroforesters, impedes wider adoption at local levels. Neither the agricultural nor the forestry sector has claimed expertise in agroforestry, hence, extension activities are focused on crop production and technology dissemination and reforestation and/or tree plantations, respectively. For this reason, the ASEAN Guidelines for Agroforestry Development identified 'research and continuous learning' as one of the key implementation considerations.

This includes the 'development of agroforestry curricula to ensure that agroforestry is taught in institutes of higher education, particularly building upon the work of the Southeast Asian Network for Agroforestry Education (SEANAFE) that was established by World Agroforestry ICRAF) in the late 1990s with funding from the Swedish International Development Agency, as well as other higher education networks existing in the region. Such efforts should also be aligned with the broad goals of the Southeast Asian Ministers of Education Organization's Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA).

# **Objectives**

**C**reated in 2004, SEANAFE's vision and mission — of improving livelihoods and ensuring sustainable rural development through improved agroforestry education — has never been more apt than today when 'resilience' of landscapes and communities is central to national, regional and global agendas. Agroforestry education in the region has had its wins and its challenges. More agroforestry curricula in universities has been observed but enrolment is still declining owing to a weak job market for agroforestry graduates. If this trend continues, a mismatch of agroforestry demand and supply of experts may lead to not meeting the potential of agroforestry to contribute towards the attainment of AMS' climate change and SDG objectives.

The webinar-workshop, organized jointly by the University of the Philippines Los Baños-Institute of Agroforestry, SEANAFE, ICRAF Southeast Asia and SEARCA aimed to 1) update the status of agroforestry education in the region; 2) identify problems, challenges and opportunities for strengthening agroforestry education; and 3) outline important recommendations for strengthening agroforestry education in Southeast Asia

# Participants

A total of 169 participants joined the webinar-workshop, representing the colleges and universities already engaged or those with plans of engaging in agroforestry education programs; teaching staff of forestry and agricultural programs; researchers, development workers, private individuals and national government agencies.

## Webinar program

The webinar was welcomed with messages from the organizers and featured plenary presentations from the national agroforestry education networks and universities in Indonesia, Malaysia, Philippines and Viet Nam that focused on the current state of agroforestry education, based on certain indicators, and a break-out session aimed at identifying the issues confronting the development of agroforestry curricula; opportunities and prospects for agroforestry education; and recommendations for improved agroforestry education in the region.

Schedule	Activity/Session Person/s-in-charge				
	OPENING CEREMONY				
		Dr Jose V. Camacho Jr, Chancellor, University of the Philippines Los Baños			
10:00 - 10:15	Vvelcome remarks	Dr Jose Nestor M. Garcia, Director, Institute of Agroforestry, University of the Philippines Los Baños			
	Opening message and overview	Dr Delia C. Catacutan, Regional Coordinator, ICRAF SEA			
	PLENARY PAPER PRESENTATIO Moderator: Dr Jesus C. Fernandez	N , Deputy Director, SEEMAO-RECFON			
	Current Status and Future of Agroforestry Education in Indonesia	Dr Budiadi Suparno, Lecturer, Universitas Gadjah Mada, Yogyakarta, Indonesia			
	Status of Agroforestry Education in Malaysia	Dr Affendy Hassan, Lecturer, Universitas Malaysia Sabah, Sabah, Malaysia			
10:20 – 11:20	State of Agroforestry Education in the Philippines	For Rowena Esperanza D. Cabahug, University Researcher, Institute of Agroforestry, University of the Philippines Los Baños			
	Status of Agroforestry Education at Thai Nguyen University of Agriculture and Forestry	Dr Tran Quoc Hung, Lecturer, Faculty of Forestry, Thai Nguyen University of Agriculture and Forestry			
	OPEN FORUM				
	BREAK-OUT SESSIONS				
	Group 1. Philippines	Dr Jose Nestor M. Garcia, Facilitator; Mr Arnold Karl A. Castillo, Documentor			
	Group 2. Philippines	Dr Leila D. Landicho, Facilitator; For Maryanne G. Abadillos, Documentor			
11:20 - 11:40	Group 3. Philippines	Ms. Nhyria G. Rogel, Facilitator; For Russel Son A. Cosico, Documentor			
	Group 4. Indonesia	Dr Christine Wulandari, Facilitator; For Ma Armie Janica P. Ramirez, Documentor			
	Group 5. Malaysia/Viet Nam/ Myanmar	Dr Delia C. Catacutan, Facilitator; Ms Maria Theresa Nemesis P. Ocampo, Documentor			
11:40 - 11:45	Video Clip: Agroforestry in Viet Na	am			
11:45 -12:00	Synthesis	Dr Wilfredo M. Carandang, Executive Director, SEANAFE			
	CLOSING CEREMONY				
12:00 - 12:10	Closing remarks	Dr Pedcris Orencio, Head, Research and Development, SEARCA			
	Vote of thanks	Dr Delia C. Catacutan			

# The state of agroforestry education in Southeast Asia

The state of agroforestry education in Southeast Asia was assessed based on reports from four countries in the region: Indonesia, Malaysia, Philippines and Viet Nam. The assessment revolved around the different elements of agroforestry education programs: the type of agroforestry education program available; enrolment and graduation trends; learning resources; placement of agroforestry graduates; as well as problems, challenges and opportunities in the offering of agroforestry education programs.

## Agroforestry integrated into tertiary education

Agroforestry's potential in improving livelihoods and ecological stability is being recognized in tertiary education in the region. In Indonesia, Malaysia and Viet Nam, agroforestry is incorporated either as a required course or as a major program of Bachelor of Science in Forestry and graduate programs (Table 1). Interestingly, a non-formal program on agroforestry is also available at Thai Nguyen University of Agriculture and Forestry (TUAF) in Viet Nam. In the Philippines, however, agroforestry is already mainstreamed in the tertiary education system, having a full-degree program leading to a Bachelor of Science in Agroforestry (a four-year program), composed of 147 units of general education, foundation/core courses, major courses and electives guided by the policy, standards and guidelines of the Philippines include agroforestry as a major field of a Master of Science in Forestry, a Doctor of Philosophy in Rural Development, a major program of a

LEVEL OF	STATUS OF AGROFORESTRY CURRICULA IN SOUTHEAST ASIA 2021					
EDUCATION	Indonesia	Malaysia	Philippines	Viet Nam		
UNDERGRADUATE PROGRAM	Required 3-unit Agroforestry course in the Bachelor of Science in Forestry	Forest Plantation and Agroforestry as a major field of Bachelor of Science in Forestry	<ul> <li>Four-year degree program leading to a Bachelor of Science in Agroforestry</li> <li>Bachelor of Science in Agriculture, major in Landscape Agroforestry</li> <li>Required 3-unit Agroforestry course for the Bachelor of Science in Forestry</li> </ul>	<ul> <li>Three subjects on Agroforestry under the Bachelor of Science in Agroforestry</li> <li>Principles of Agroforestry</li> <li>Agroforestry Systems' Design and Diagnosis</li> <li>Landscape Agroforestry</li> </ul>		

Table 1. Agroforestry	education	curricula	available in	Southeast	Asia
5 /					

LEVEL OF	STATUS OF AGROFORESTRY CURRICULA IN SOUTHEAST ASIA 202				
EDUCATION	Indonesia	Malaysia	Philippines	Viet Nam	
GRADUATE PROGRAM			<ul> <li>Master of Science in Forestry, major in Agroforestry</li> <li>PhD in Rural Development, cognate in Agroforestry</li> </ul>		
NON-FORMAL/ TRAINING PROGRAM				Agroforestry training course (non-formal)	

Bachelor of Science in Agriculture, and as a core course under the Bachelor of Science in Forestry program.

There is also a growing number of universities engaged in agroforestry education programs in the region. Figure 1 (Annex C) shows that there are 32 state colleges and universities offering different types of agroforestry education in the Philippines. Meanwhile, two universities offer agroforestry courses in Malaysia (Figure 1, Annex B); and 18 in Indonesia (Figure 1, Annex A). In the early 1990s, agroforestry was being offered as a training topic at TUAF in Viet Nam. Beginning in 1994, the University elevated the offering of agroforestry to the formal level. This growing number of agroforestry institutions indicates the increasing interest in engaging with agroforestry as a science and discipline of study.

## **Enrolment trends**

For the past two years, there has been a downward enrolment trend in agroforestry courses and programs. For instance, there were around 110 students enrolled in agroforestry in 2016–2017 in Universiti Malaysia Sabah. The number declined in the next three years to the point where in 2020–2021 there were only 75 students enrolled (Table 2). Being a mandatory course in the Bachelor of Science in Forestry in Indonesia, all students of take agroforestry. In the Philippines, where a full-degree program in agroforestry is available, data from 10 state colleges and universities indicate a decline in student enrolment 2019–2020. From a total of 1274 agroforestry students, the number reduced to 1106 in 2019–2020.

SCHOOL	ENROLMENT IN AGROFORESTRY CURRICULA				
YEAR	Malaysia	Philippines		Viet Nam	
	Bachelor of Science in Forestry, major in Forest Plantation and Agroforestry <sup>1</sup>	Bachelor of Science in Agroforestry <sup>2</sup>	Bachelor of Science in Agriculture, Agroforestry <sup>3</sup>	Bachelor of Science in Agroforestry <sup>3</sup>	
2018–2019	89	1274	31	48	
2019–2020	75	1106	20	54	

#### Table 2. Enrolment trends in agroforestry curricula, 2018–2020\*

\*No data from Indonesia; <sup>1</sup>Data from UMS; <sup>2</sup>Data from 10 universities; <sup>3</sup>Data from one university

#### Highlights of the webinar-workshop

## Learning resources in agroforestry

Teaching staff in agroforestry are classified into full-time agroforestry lecturers with specialization in agroforestry; and affiliate staff drawn from other departments, colleges, faculties, which indicates the multidisciplinary nature of agroforestry. In most cases, faculty members from Agriculture and Forestry are engaged as affiliate teaching staff, particularly in the Philippines, where the Bachelor of Science in Agroforestry curriculum consists of mostly agriculture and forestry subjects as core and foundation courses.

In general, agroforestry teaching staff have limited experience of research in agroforestry and, therefore, there is limited publication of agroforestry research in international journals. In Indonesia, for instance, only 39 out of 2000 lecturers in agriculture and forestry are able to conduct agroforestry research and publish research outputs in journals.

There are generally adequate physical resources being used for the delivery of agroforestry education (Table 3). On-campus demonstration areas and forest reserves serve as learning laboratories for agroforestry students. In some cases, off-campus field facilities — such as the project sites of national government agencies and also farming communities — are used as laboratories. Instructional material and references in agroforestry were reportedly adequate, except in the Philippines. This could be explained by the fact that newly instituted major courses in the Bachelor of Science in Agroforestry required separate or new instructional material, syllabi and references.

LEARNING	STATUS OF LEARNING RESOURCES				
RESOURCES	Indonesia	Malaysia	Philippines	Viet Nam	
Teaching staff	Adequate teaching staff but with single expertise only	33 in fields related to agroforestry and forest plantation	Adequate teaching staff in agroforestry: full-time and affiliate faculty	Faculty of Forestry is in-charge of agroforestry courses Teaching staff from other fields, such as crop science, animal husbandry, economics and rural development, natural resources and environmental management, are also engaged as lecturers	
Instructional material and references	Adequate instructional material on agroforestry from Indonesian Network for Agroforestry Education; abundant teaching material for Forestry	Adequate learning material and references	Inadequate learning material and references in agroforestry	Teaching material is generally available and developed by the Faculty (from deduction, translation and re-editing or from actual research topics)	

#### Table 3. Status of learning resources in agroforestry in Southeast Asia

LEARNING	STATUS OF LEARNING RESOURCES				
RESOURCES	Indonesia	Malaysia	Philippines	Viet Nam	
Demonstration farm and field facilities	Demonstration farms and University Forests are maintained for agroforestry and social forestry programs	Campus Forest Reserve; greenhouse and nurseries as learning laboratories Field facilities of other agencies	Adequate on- campus and off-campus field facilities as learning laboratories	Models for the fields of forestry, agriculture and animal husbandry. TUAF links with external agencies for students' internship program	
Research and extension activities	Few teaching staff are engaged in agroforestry research		Limited time for research; limited research funds		

## **Employment of agroforestry graduates**

Agroforestry graduates can be employed in the forestry sector of national governments; in private industries, academic and research institutions; and in non-governmental organizations. In the Philippines and Viet Nam, agroforestry graduates are also employed by the agriculture sector because the Department of Agriculture and Ministry of Agriculture and Rural Development incorporate agroforestry in their research and development agenda.

Int of ent and esourcesState agencies, such as Ministry of Agriculture and Rural Development; General Department of Forestry; Sub-Department of Forest Protection; Sub- Department of Forestry; National Center for Agriculture – Forestry Extension; Department of Agriculture and Rural Development; Agricultural extension centres from central to commune levels; state enterprise forestryUstriesConsulting programs and projects

### Table 4. Employment opportunities for agroforestry graduates in Southeast Asia

# Problems and challenges in offering agroforestry education programs

The four country presentations and the group workshops identified the following problems, issues and challenges that confront agroforestry education in Southeast Asia.

## Outdated and less attractive agroforestry curricula

Agroforestry is offered only as a 3-unit course under the Bachelor of Science in Forestry in Indonesia (Table 5). As such, the discussion and sharing of knowledge in agroforestry is very limited in scope. The topic of agroforestry is more theoretical and conceptual rather than practical, as observed in Viet Nam. In the Philippines, where agroforestry is offered as a full-degree program, the curricular content has yet to be updated since 2006. Numerous developments and knowledge in the field of agroforestry have been generated by research and development programs since then and these may not have been incorporated in the policy, standards and guidelines for the Bachelor of Science in Agroforestry. Except in Indonesia, agroforestry education programs are considered less attractive than other degree programs and are less preferred by the incoming students.

## Limited public awareness of agroforestry

Results of the group workshop indicate that the public seemed unaware of agroforestry and its unique differentiation from the fields of agriculture and forestry. The lack of separate departments of agroforestry in the government sector indicates that agroforestry is a 'grey' area. Specifically, incoming college students are not familiar with agroforestry as a discipline or a field of study. This could explain why the agroforestry curricula may not be attractive among college students.

## Limited resources

In terms of learning resources, teaching staff with agroforestry specializations are wanting. Currently, teaching staff are drawn from different units with single expertise and, therefore, lesser emphasis on the integrative nature of agroforestry. In addition, these teaching staff, who have the three-fold function of instruction, research and extension, are, most of the time, overloaded. This limits their opportunity to conduct agroforestry research. In the Philippines, in particular, the learning material and references in agroforestry are inadequate.

## Limited employment opportunities for agroforestry graduates

Perhaps the limited employment opportunities for agroforestry graduates are one of the reasons why agroforestry education is less preferred by students. In the Philippines, for instance, the lack of a licensure examination for graduates of the Bachelor of Science in Agroforestry makes them less competitive as compared to a licensed Forestry graduate. In Viet Nam on the other hand, agroforestry graduates have lesser employment opportunities in state agencies.

Indonesia	Malaysia	Viet Nam	Philippines
COUNTRY PRESENTAT	TIONS		
Mismatch between integrated nature of agroforestry and the single expertise of academics	High competition offered by other baccalaureate programs in all 20 public universities	Lesser employment opportunities in state agencies	Bachelor of Science in Agroforestry is not the first choice among students
Wide variations in agroforestry systems and practices, which are difficult to capture in learning situations in classrooms, with few learning laboratories showcasing them	Students choose more famous courses, like medicine, engineering, education	Agroforestry is considered a less attractive field compared to other disciplines	Policy, standards and guidelines for the Bachelor of Science in Agroforestry not revised since 2006
Limited scope and number of units of agroforestry in the study program	Lack of science stream students	Curriculum is heavy on theory and less on the practical side	<ul> <li>No separate licensure examination for Bachelor of Science in Agroforestry graduates and limited opportunities to take Forestry Board Examination</li> <li>Overloaded teaching staff who can no longer do research work</li> <li>Inadequate reference material</li> <li>Limited funds for research and extension</li> </ul>
WORKSHOP OUTPUT	S		r
<ul> <li>No mainstreaming of agroforestry education</li> <li>Agroforestry is only a course in Faculty of Forestry and Agriculture</li> <li>Agroforestry curricula need improvement</li> <li>No expert lecturers in agroforestry</li> </ul>	<ul> <li>No mainstreaming of agroforestry education</li> <li>Agroforestry is only a course in Faculty of Forestry and Agriculture</li> <li>Agroforestry curricula need improvement</li> <li>No expert lecturers in agroforestry</li> </ul>		<ul> <li>Lack of employment opportunities</li> <li>Public sector is confused about the domain of agroforestry</li> <li>Declining enrolment</li> <li>Lack of licensure exams for agroforestry graduates</li> <li>Lack of faculty members to teach agroforestry</li> <li>High school students not familiar with Agroforestry as a course</li> </ul>

 Table 5. Issues confronting agroforestry education in Southeast Asia

## **Opportunities for agroforestry education**

There are a number of opportunities that can address the challenges confronting agroforestry education in Southeast Asia, as shown in Table 6. Foremost, agroforestry has always been considered as an integral component of many global and international development frameworks, policies and programs, particularly, in the areas of climate change mitigation and adaptation, combatting desertification, conservation of biological diversity, and food security. The recognition of agroforestry's potential to address development and environmental issues offers opportunities for engaging in research, implementing development programs in agroforestry and, ultimately, in mainstreaming agroforestry in the education, forestry and agriculture sectors. The strong links between and among agroforestry institutions play a key role in channelling issues and concerns in agroforestry education, as well as expanding the discourse on agroforestry. SEANAFE and the national agroforestry education networks (that is, INAFE, MANAFE, PAFERN, VNAFE) provide an opportunity not only for information and resource exchange and sharing but also for strengthening institutional and regional collaboration, which is essential in lobbying policymaking bodies and funding institutions. Furthermore, issuance of national policies, as in the case of Republic Act 10690 in the Philippines, provides opportunities for Bachelor of Science in Agroforestry graduates to qualify for the Forestry Licensure Examination.

Indonesia	Malaysia/Viet Nam	Philippines			
COUNTRY PRESENTATIONS	COUNTRY PRESENTATIONS				
<ul> <li>High interest of students in agroforestry</li> <li>Flexibility of agroforestry curriculum</li> <li>Opportunities for collaboration among universities and research institutes, as well as the private sector</li> <li>Vigorous research and opportunities for doing so in agroforestry</li> </ul>		<ul> <li>RA 10690, Which allows Bachelor of Science in Agroforestry graduates to take the Forestry Licensure Exam</li> <li>Graduates also allowed to take the Agriculture Licensure Examination</li> <li>Excellent networks and links among agroforestry institutions</li> <li>Vigorous interest in agroforestry research</li> <li>International initiatives recognizing agroforestry as an intervention for sustainable development and climate- change mitigation and adaptation</li> </ul>			
WORKSHOP OUTPUTS					
Presence of ICRAF and other international and global institutions serves as an opportunity for transfer and sharing of agroforestry research for the improvement of agroforestry curricula	Agroforestry is a recognized strategy for climate-change mitigation and adaptation	<ul> <li>On-going revision of the Policy, Standards and Guidelines for Bachelor of Science in Agroforestry provides an opportunity for graduates to take the Forestry Board examination</li> <li>Potential employment of graduates in agencies engaged in environmental, biodiversity and ecological conservation</li> <li>Career guidance program for senior high school students could serve as an opportunity to promote agroforestry as a field of study</li> </ul>			

#### Table 6. Opportunities for agroforestry education in Southeast Asia

# Recommendations and ways forward

- 1. Review and revision of agroforestry curricula. The need to fast-track the revision of the Policy, Standards and Guidelines for Bachelor of Science in Agroforestry in the Philippines was raised by the workshop participants; this would set the direction towards the development of agroforestry professionals. This could help improve employment opportunities for the Bachelor of Science in Agroforestry graduates. Curricula content of the agroforestry courses integrated in the Bachelor of Science in Forestry in other countries should also be enriched to cover recent developments and issues. Curricula review and revisions should involve the active participation of different stakeholders, particularly, potential employers of the graduates. Internship programs with industry should likewise be integrated in agroforestry curricula to enable students to acquire skills and competencies that are required by private industries.
- 2. Improve the learning resources for agroforestry. There is a need to establish more agroforestry models and demonstration areas as a way of creating public awareness about agroforestry and, at the same time, serving as field laboratories for agroforestry students. Watershed areas being managed by government agencies could be used as field laboratories for enhancing the entrepreneurial skills of agroforestry students. Furthermore, instructional material in agroforestry such as agroforestry syllab should be improved by integrating concepts of non-timber forest products, traditional agroforestry systems, and payment for environmental services, among other recent agroforestry developments.
- **3.** Enhance student recruitment program. There is a need to conduct a more innovative career orientation program among junior and senior high school students. Involving agroforestry experts and conducting agroforestry fairs during career orientation programs could help students appreciate agroforestry as a field of study. Provision of scholarship programs and other incentives could also attract incoming students.
- 4. Strengthen national and regional collaboration in agroforestry education, research and development. Specifically, there is a need to activate and provide support to the country networks and to SEANAFE. These national and regional networks serve as channels for ventilating issues related to agroforestry education and for lobbying with concerned agencies and institutions to help strengthen agroforestry education. Besides academic institutions, national and regional networks could also explore membership from those in the governmental and private sectors engaged in agroforestry promotion. Scientific meetings among the different stakeholders in agroforestry should be conducted periodically to help enrich knowledge of agroforestry.
- **5.** Ensure job placement for agroforestry graduates. Matching the needs of potential employers of agroforestry graduates and agroforestry curricula is necessary to ensure that graduates possess the competencies required. Internship programs with private industries and the conduct of market demand research for agroforestry graduates are among the strategies that could be undertaken by academic institutions engaged in agroforestry.
- 6. Compile all relevant information on agroforestry education from the various academic institutions and national governments into a country profile reference which can be updated regularly. This information material should be accessible to all agroforestry stakeholders.

- 7. Mainstream agroforestry into the educational system in Indonesia. Currently, there is strong interest in the field and practices of agroforestry, and yet, agroforestry is only offered as a 3-unit course under the Bachelor of Science in Forestry. Given global recognition of the potential of agroforestry in addressing developmental and environmental issues, agroforestry, therefore, should be instituted as a specific field of study.
- 8. Develop a 'white paper' on the current status of agroforestry education in Southeast Asia. This paper will highlight developments in agroforestry education in the region, the prospects and opportunities that are in existence. Thanks to the large amount of research now available, from farm through to landscape levels. In addition, the white paper will contain strategies and a proposed program of activities (long, medium and short term) to provide solution to the problems noted during the country presentations and the discussions during the break-out sessions. A basis for this is the ASEAN Guidelines for Agroforestry Development. The Guidelines support focused policies and programs for agroforestry in AMS as part of the Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry 2016–2025.

#### Table 7. Recommendations for strengthening agroforestry education in Southeast Asia

Indonesia	Malaysia	Viet Nam	Philippines
WORKSHOP OUTPUTS A	AND PLENARY		
<ul> <li>Mining restoration to be added to the agroforestry syllabus</li> <li>Socio-economic concerns from upstream to downstream to be added to the syllabus</li> <li>Human welfare concerns to be added in the agroforestry course</li> <li>Improvement of syllabus of agroforestry to be added with non-timber forest products, local species, traditional agroforestry, payment for environmental services</li> <li>Agroforestry should have benefits for economic, social and ecology in production forests, protection and conservation forests</li> <li>Agroforestry to be mainstreamed into education in Indonesia</li> </ul>	<ul> <li>Joint training with industr</li> <li>Agroforestry internships of Support from SEANAFE a such as ICRAF</li> <li>Expert support to enhance</li> </ul>	Y with industry and international bodies re agroforestry collaboration	<ul> <li>Fast-track the revision of the Bachelor of Science in Agroforestry curriculum</li> <li>Provision of scholarship programs to attract more students</li> <li>Synchronize agroforestry curricula with other countries offering the same courses</li> <li>Strengthen field laboratories to support entrepreneurial aspects</li> <li>Establish more agroforestry model sites for building awareness</li> <li>Enhanced Career Orientation programs for junior and senior high school Students</li> <li>Promote agroforestry by launching agroforestry demonstration programs</li> <li>Agroforestry references and training material should be more accessible</li> <li>Strengthen inter-country agroforestry internship program</li> <li>Agroforestry job fairs and inviting high school students for them to appreciate the program</li> <li>Promotion of agroforestry programs' outputs involving agroforestry</li> </ul>

# **ANNEX A. Current status** and future of agroforestry education in Indonesia



Problem and prospects of offering Af curricula

#### Problems

- "A multi-disciplinary study program must be belonged to a (integrated) vocational or graduate school in a university, while faculties manage a mono-disciplinary program"
- Variation of Af practices in the whole country are challenging to be involved in course content Less demonstration plots dedicated to improve traditional Af
- Agroforestry subject is still under a (undergraduate) study program with 2 credit of classical course and 1 credit of field practice

#### **Prospect and Challenges**

- · Whether mandatory or compulsory, students are interested to engage in the courses · Research in Af is on progress in many places with various theme; beyond silviculture and

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- agronomy
   Af curricula can be offered to farmers, government officers and practitioners
- · Possibility to engage education between universities, or with research institutes and companies LOCALLY ROOTED, GLOBALLY RESPECTED

#### Recommendation for strengthening Af curricula

Major concern of INAFE is to prepare capable human resources in agroforestry subject, so:

1. Curricula and content of Af education must be reviewed and improved, based on fundamental science and basic knowledge in Af. Enrichment as well as widen scopes of the content are important.

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LOCALLY ROOTED, GLOBALLY RESPECTED

- 2. Teaching materials and education book of Af must be re-composed and updated. Collaborative education involving universities or INAFE members will be initiated to cover varieties of local Af practices in Indonesia.
- More often scientific meetings must be conducted to improve knowledge of Indonesian Af for lecturer and students.
- Af education is highly in-lined with the term of independent learning process (Merdeka Belajar) for students to freely engage lectures with any institutes

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# **ANNEX B. Status of agroforestry education in Malaysia**



## RECOMMENDATIONS FOR THE STRENGTHENING OF AF/FORESTRY EDUCATION

- SEANAFE member institutions-MaNAFE
- Internship/job opportunity by ICRAF-SEANAFE
- Engaging F/AF program with stakeholders for curriculum revision.
- \* Curriculum revision from expert or SEANAPE member
- 'Exchange Environment' approach in AF curriculum.
- AGROFORESTER short seminar SEANAFE member inst.



# **ANNEX C. State of agroforestry education in the Philippines**



### PROBLEMS AND CONSTRAINTS



- OBS Agroforestry is usually not the first choice program of students OPSG for BS Agroforestry has yet to be revised and updated since its
- issuance in 2006 OThe PSG-BSAF lacks "must" forestry subjects to qualify for the
- Forest Board Examination
- OLacks updated references on agroforestry
- OSome teaching staff are overloaded; no more time for research
- OLimited funds for research and extension

### PROSPECTS AND OUTLOOKS

### O Networks and linkages

- Philippine Agroforestry Education and Research Network
- Philippine Forestry Education Network
- Recent calls for research proposals from institutions integrating agroforestry their program component
- International and national policies and programs recognizing agroforestry as the main technological intervention for sustainable development, climate change mitigation and adaptation

#### PROSPECTS AND OUTLOOKS



- Republic Act 10690 (Revised Forestry Board Examination) providing opportunity for BS AF graduates to take Forestry Board Examination on the condition that the required and must forestry subjects are taken
   Could attract more students
  - Could provide better employment opportunities for the graduates
- Graduates of BSA major in Agroforestry are allowed to take the Agriculture Licensure Examination

#### RECOMMENDATIONS

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- O Speed up the revision of the PSG for BS Agroforestry
- Intensify recruitment of agroforestry students through provision of scholarship programs
- O Sustain the operation of PAFERN
- Conduct a nationwide study on the Demand and Placement of Agroforestry Graduates

# **ANNEX D. State of agroforestry** education at Thai Nguyen **University of Agriculture and Forestry, Viet Nam**



Status of Agroforestry Education in Thai Nguyen University of Agriculture and Forestry



#### INTRODUCTION

Thai Nguyen University of Agriculture and Forestry (TUAF):

 located in the North of Vietnam (80 kilometers north of Hanoi).

responsible for training graduate, postgraduate, research and technology transfer in agriculture and forestry, natural resource management and environm agricultural economics and biotechnology for the Northern region of Vietnam





By 2005. • Officially opened the Agroforestry Education program for the undergraduate system on the Vubnamasa training system at the 5 universities mentioned above.

## AGROFORESTRY EDUCATION PROGRAMS/CURICULA Students type Landscape AF AF diagnosis and design AF principle stion. AF is also taught in other fields such as crop science, agri lural economics in TUAF

#### RECRUITMENT/ENROLLMENT IN LAST FIVE YEARS

Since opening: the agrit/oresity Education program, the number of students enrolled has increae From 2010 – 2014: the number of students enrolled has reached hundreds of students per year. Since 2015 up to now: the number of students studying agrit/oresity has gradually decreased.

Students Year		2010		2018	2019	
Full-time training	33		0	0	0	0
Pattine training	170	•	295	0	48	н
Total		•			-	

Full-time students: decreasing dramatically.
 Part-time students: maintain a relative number, because most of them have worked in localities but have not yet reached the professional level, so they should study to ensure that request.

#### RESOURCES AVAILABLE IN AGROFORESTRY CURICULA

Since 2005 when the AF was opened, TUAF has assigned this task to the forestry faculty of the university. Howeve, TUAF also has other specialized faculties participating in training in this field of AF such as cop science, annual hubbandry, economics and nucleonemn natural resources and environment management. Therefore, the TUAF is team ensures the teaching in all fields related to AF in fact, in the transversi of the training program assigned to the Faculty of Forestry to manage, but other faculties will be shrowed in teaching up to 50% of the subjects.

Regarding models of practice, this problem has been parity solved now when TUAF has focused on building a number of models for the fields of foresty, apriculture and animal huibandry in addition, the TUAF also has cooperation with external agencies to send students to graduate internations (even abroad. This is an advantage of the University).

The teaching materials are generally available and developed by the faculty (from deduct translation and re-editing, or from actual research topics).

#### PLACEMENT/EMPLOYMENT OF AGROFORESTRY GRADUATES

State agencies Agencies under the Ministry of Agriculture and Rural Development, General Department of Forestry, Sub-Department of Forest Protection, Sub-Department of Porestry, National Center for Agriculture - Forestry Extension, Department of Agriculture and Rural Development, Department of Agriculture, Agricultural Extension Center from central, to provinci district, commune levels, agriculture and forestry extension offices, and state enterprise forestry

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1. Change the training program to suil the reality, apply information technology into the program

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2 Joint training with enterprises on Agroficnestry (training according to the needs of enterprises and society).

Consulting programs and projects in the field of agriculture, forestry and rural development at all invels.

#### PROBLEMS AND CONSTRAINTS IN THE OFFERING OF AGROFORESTRY CURRICULA

1 Positions are less and less in the state (There are not many recruits for jobs in the state with the AF field in particular and agriculture and forestry in general).

2. The work in AF is often considered less attractive compared to other fields (Young people don't want to work in the field, they want to work in the factory or sit in the office, ...).

The salary of AF graduates is lower than what the other fields offer (Especially business and technology). Therefore, not many young people like to work in the field of agriculture and foresity.

4. The curricula are heavy in theory, less practice (Knowledge about management and planning is still weak), and not update the technology (still many subject very old and the farmer can do better).



RECOMMENDATIONS FOR THE STRENGTHENING OF AGROFORESTRY EDUCATION/CURRICULA





2. Equip multidisciplinary knowledge (e.g. technique, keting analysis, manageme



Open graduate training programs for the field of agroforeetry.

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3. Increase practice and internship for students.

Highlights of the webinar-workshop