

Name	Counterpart	Title
Leti Sundawati, Adisti PP. Hartoyo, Fitta Setiajiati	PR	Agroforestry for higher education in Indonesia: Status and future development

Background and Methods

Agroforestry (the practice of growing trees and crops in interacting combinations) is recognized worldwide as an integrated approach to sustainable land use. Agroforestry also plays an essential role in reducing forest degradation in Indonesia. As a science, agroforestry is a complex science due to its many applications in the field. Although agroforestry is taught in many universities in Indonesia, an assessment of the status and impact of the course is needed, since the higher education curriculum tends to develop top-down, while agroforestry is carried from the bottom (field). Therefore, an online questionnaire survey was conducted among 20 universities that are members of the Indonesian Forestry Higher Education Leadership Forum, 210 forestry extension agents (both apparatus and non-apparatus staff) from 27 provinces, 58 farmers/practitioners of agroforestry, as well as literature review with a descriptive analysis in qualitative and quantitative terms.

Objective

The objectives were to 1) analyze the agroforestry curriculum's status in Indonesia and compare it with advanced universities/institutions in other countries; 2) identify user needs related to agroforestry at the field level and the gap between the user needs and the current agroforestry curriculum in Indonesia.

Approach

A mixed-method approach was applied for data collection. A questionnaire survey and in-depth interview were conducted by the online system. The data were analyzed descriptively in quantitative and qualitative terms: problem analysis and gap analysis.

Results and Conclusion

Agroforestry has been offered as a course in Indonesian higher education institutions from about 10 years to more than 30 years ago. The survey results show that the agroforestry is taught not only in the faculty of forestry but also in the faculty of agriculture. This is related to the nature of agroforestry as a multidisciplinary science. Most universities (90% of respondents) implemented agroforestry as an independent course. Only 5% integrated agroforestry into other courses and 5% implemented agroforestry as a study program. As an independent course, agroforestry is offered for 2-3 credits/semester. Most Indonesian higher education institutions have implemented agroforestry as a compulsory course (67%).

All respondents from universities perceived that the implementation of agroforestry courses in the future should be synchronized with the program of the Ministry of Education, Culture, Higher Education and Research such as program of MBKM (*Merdeka Belajar Kampus Merdeka*) or Free Learning Campus Free program in which a student could take about 20 credits until 40 credits or one to two semesters outside their study program, or their faculty and even outside their universities to broaden their knowledge and skills. Furthermore, agroforestry courses should also be better adapted to the needs of users, most of whom are involved in the Social Forestry program. The Indonesian government program in which people living surrounding the state forest area are given access (permission) to managed a portion of state forest area sustainably. Agroforestry as a land-use that integrated perennial woody plants with agricultural crops and/or livestock, is considered a very suitable land-use model for the implementation of the Social Forestry Program. Some universities also planned to emphasize agroforestry practices more than theory and focus more on local agroforestry practices that are different from other agroforestry practices in other areas.

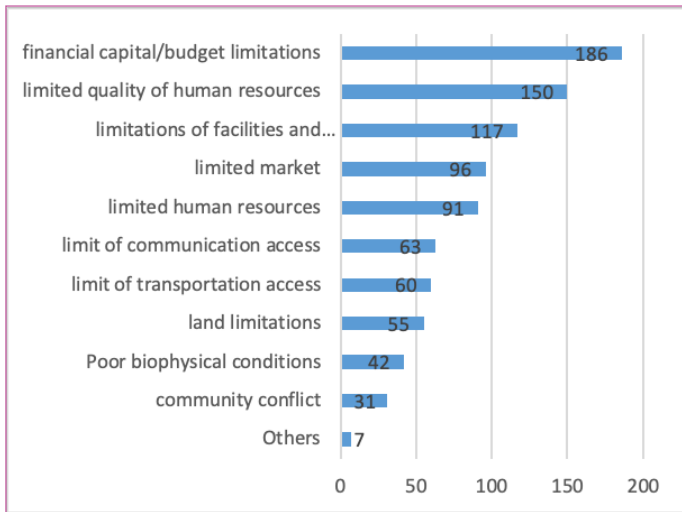


Figure 1. Obstacles in extension

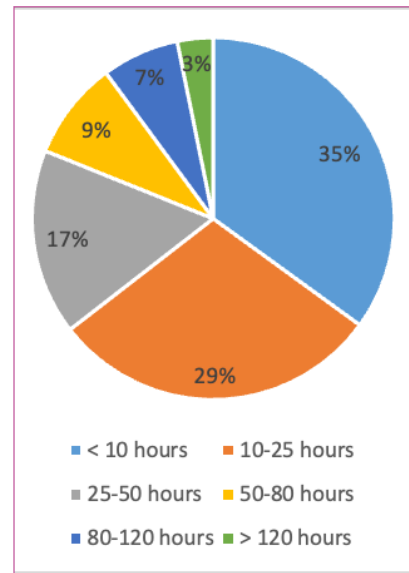


Figure 2. Visiting hours in a village in a month

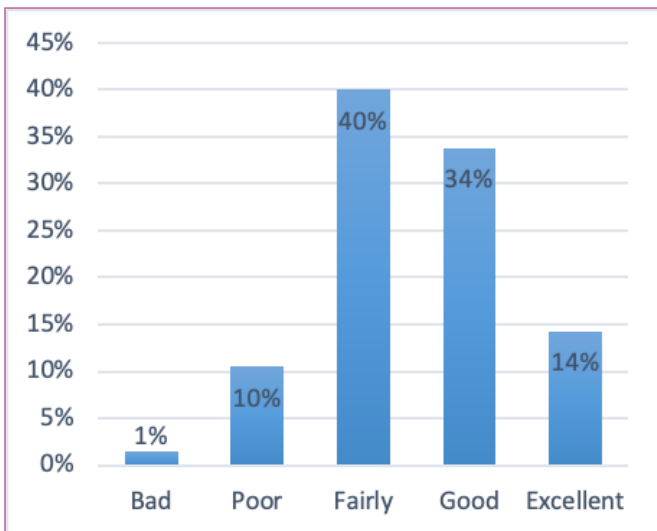


Figure 3. Performance of agroforestry practice

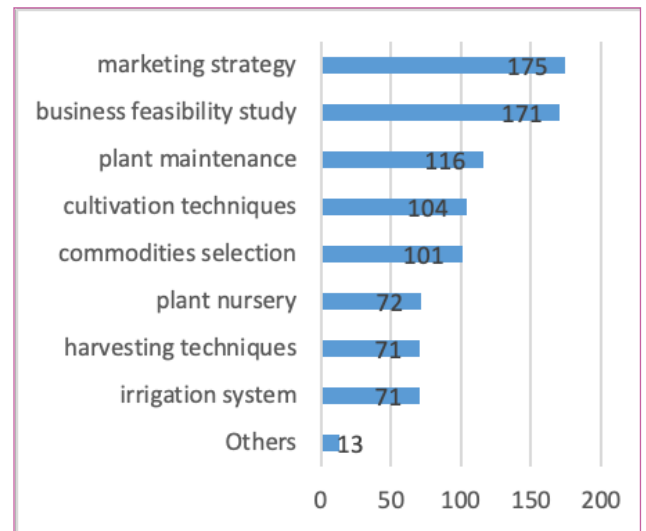


Figure 4. Subjects of agroforestry that need to be taught in higher education

On the other hand, agricultural and forestry extension workers also play an important role in developing agroforestry practices in Indonesia. They are tasked with assisting and empowering the community to improve their performance and achieve better socio-economic and ecological results in agriculture and forestry. However, they found that the budget for extension activities was limited and the scope of the work area was very large. In general, the working area of 1 extension staff was more than 5 villages with limited human resources in terms of both quality and quantity, limited facilities and infrastructure, inadequate transportation and communication accessibility. In one month, they only spent less than 25 hours in one village or less than four working days conducting activities in the field. The staff had already provided some materials to farmers, but they also admitted that they did not fully understand and lacked knowledge about the material. Their knowledge of irrigation techniques is poor, so the material has been delivered to farmers on a limited basis. They also suggested that materials on marketing strategies and business feasibility studies should also be included in agroforestry courses. In general, agroforestry courses taught technical aspects such as planting, plant maintenance, and harvesting. These technical aspects remain important and are also needed by extension staff, especially due to technological developments and increasingly dynamic market demands.

The extension staff revealed that the budget for extension activities was limited and the scope of the work area was very large. In general, the working area of 1 extension staff was more than 5 villages with limited human resources both quality and quantity, limited facilities and infrastructure, inadequate transportation and communication accessibility (Fig. 1), so that in one month they only carried out counseling in the field is less than 25 hours per month in a village (Fig. 2) or less than four workdays in a month.

Some of these obstacles caused the conditions and performance of agroforestry practices to be not optimal (Fig. 3). The practitioners including farmers showed and expected some topics (especially marketing strategy, plant maintenance, and business feasibility) are delivered in the university to develop the agroforestry practices (see Fig. 4). This means that not only the technical aspect of biophysics, but also the socio-economics studies are essential to be taught in the agroforestry course.

As conclusion, future education of agroforestry at the higher education institutions level should be better adapted to the needs of extension workers as well farmers and support the government program on social forestry. This mean that ongoing evaluation of the agroforestry course curriculum is very important to develop agroforestry as a science that can be linked to policy and practice.