

# **Agrotechnology Study Program Revitalization Through Integrated Pest Management Farmer Field School on Indonesian National Qualification Framework-Based for Quality Improvement**

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**Abstract:** The revitalization of the study program is carried out to improve education quality and relevance, one of which is by implementing periodic evaluation and curriculum development to improve quality, process, and results of the program by involving stakeholders. Stakeholders involvement is quite essential, so that the graduate competencies is in accordance with the stakeholders' need. Integrated Pest Management Farmer Field School or IPM Farmer Field School on Indonesian National Qualification Framework (INQF)-based is a curriculum developed by stakeholders as an effort to adjust the graduates competence to the needs of labor market. This study uses Research and Development method which is longitudinal. It is carried out in stages and multi years by the following steps: 1) Preliminary Study, 2) Model Development, and 3) trials over the Model in partner institutions. All comprehensive efforts taken resulted enhancing the leadership quality and governance performance system resource management, strategic partnership, and the implementation of IQAS. Partnerships with stakeholders when executing IPM Farmer Field School are implemented in the integration of educational program, training and field practices, collaboration of expertise and contribution of resources from each institution to improve agricultural higher education's quality.

**Keywords:** *field school, IPS farmer field school, INQF*

## **INTRODUCTION**

### **A. Background**

Since 2005, prospective students registered faculty of agriculture in private universities continuing to decline. This condition demonstrates that the study program is less enthused by the younger generation. An effort to overcome this issue is to publish Decree of the Directorate General of Higher Education (Dirjen Dikti) No. 163 / DIKTI / Kep / 2007 on 29 November 2007 concerning the arrangement and codification of all study programs at universities by streamlining a number of study programs in the Faculty of Agriculture.

Starting in 2010, Faculty of Agriculture UNINUS Bandung has begun to implement this decision by establishing the agro-technology study program. It is actually a joint study program of two study majors: Agronomy and Plant Diseases.

Higher job market demands for the graduate competence, so that the quality improvement in every area is encouraged urgently. This quality improvement strategy has made the program survives still. Since 2017, in accordance with SK BAN PT No. 4357 / SK / BAN-PT / Accredited / S / XI / 2017, the study program has been accredited to "B".

In order to improve the education quality, the revitalization in all areas is also one thing to consider. Along with the enactment of 4.0, the revitalization includes improvement in the field

of governance, cooperation, students, human resources, finance, facilities and infrastructure, education, research, community service, outcomes and achievements of Tridharma.

Suited to The Act No. 12 of 2012 Article 35, paragraph 2 about the curricula which mentions that the Higher Education Curriculum developed by a university has to refer to The National Standards Higher Education that must include the development of intellectual intelligence, noble character, and skills. (Director General of Learning and Student Affairs, 2019)

One effort to revitalize the study program is by carrying out evaluation and curriculum development. According to Ahmad Intan (2018), education curricula has its institution mandate which must always be updated, according to the need development, science and technology as outlined in the learning achievement. Higher education as a source to create educated human resources needs to measure graduates, whether they have an ability suited to the learning achievement that has been formulated in Indonesian National Qualification Framework (INQF). Therefore, every university is being obliged to adjust these conditions.

According to Nurwardani (2018), curriculum change in higher education is a routine activity that must be carried out in response to the development of Science and Technology (scientific vision), community needs ( societal need ) as well as stakeholder needs .

In general, the problems in the study program are an understanding of how to revitalize a diverse curriculum. The curriculum evaluation and development is very important to be implemented, so that academic relevance and quality can be maintained.

The curriculum developed in the study program refers to the National Standards of Higher Education covers education research, and community service. In addition to the issuance of Presidential Decree No. 8 of 2012 on INQF, the study program has to accelerate to these provisions. The INQF is a statement of the quality of Indonesian human resources whose qualification gaps are based on the level ability stated in the learning outcome formulation.

Therefore, the curricula of the agro-technology study program have to set plans and arrangements regarding learning outcomes among graduates, the study materials, processes, and assessment. It is used as an operation guideline. Executed curriculum is oriented to the learning outcomes. The formulation of minimum learning outcomes is listed on SNDIKTI and based on similar study program agreement.

As stated in the 2016-2020 strategic plan, curriculum evaluation and development in the Agro-technology Study Program UNINUS is conducted regularly to improve the quality, processes and results by involving stakeholders. The involvement of stakeholders in the evaluation and development of the curriculum is in terms to agree the graduate competency with stakeholder needs.

IPM Farmer Field School on Indonesian National Qualification Framework (INQF)-based is an alternative curricula developed by stakeholders as attempts to adjust the graduates' competence with labor market needs.

Presidential Regulation No. 8 of 2012 about IPM Farmer Field School on Indonesian National Qualification Framework (INQF)-based itself is a qualification framework that can juxtapose, equalize, and integrate among education, job training, and work experience in terms of granting recognition of work competencies suited to the work structure in agricultural sector .

Purpose:

Agro-technology Study Program revitalization through IPM Farmer Field School on Indonesian National Qualification Framework (INQF)-based aims at:

- 1) Revitalizing the agro-technology study program by carrying out the development of education, research and community service;

- 2) Implementing of curriculum evaluation and development to improve graduate competency in the agro-technology study program UNINUS;
- 3) Establishing IPM Farmer Field School to implement a quality education and training system based on Indonesian National Qualification Framework (INQF);
- 4) Building Partnership with stakeholders to evaluate and develop the curricula which are expected to improve the study program's quality.

## **METHOD**

### **1. Research methods**

This research uses Research and Development Method which is a research method used to create certain product or model, and test the effectiveness of the product.

According to Sujadi (2003: 164), Research and Development (R&D) is a process or steps to develop a new product, or perfect existing products which can be accounted for. The research questions are the followings.

- 1) How is the revitalization of the Agro-technology study program through IPM Farmer Field School as a longitudinal research and development (carried out in stages and multi years).
- 2) How is the result of IPM Farmer Field School implementation which is modified from ten steps of research and development by Borg and Gall. It was then developed by Sukmadinata, et al consisting of three stages: 1) Preliminary Study, 2) Model Development, and 3) Model Test.

### **2. Three Stages of IPM Farmer Field School Implementation**

As what stated in the R&D method, research on the revitalization was conducted for 3 years (3 stages). Year 1 as first stage is the preliminary study. Second stage is model development. The last stage or year 3 was testing the model. For more details, see the mentioned stages below.

#### *Preliminary studies*

The preliminary study is the initial stage or preparation for carrying out self-evaluation and performance evaluation of the study program. By analyzing the strengths, weaknesses, opportunities, and challenges in the fields of education, research, and community service as well as analyzing achievements of Tridharma outcomes and making improvements in all stages.

To improve the quality and relevance of education, stakeholder mapping is done by identifying stakeholders, analyzing stakeholder needs, and increasing partnership in the fields of education, research, and community service.

Implementing IPM Farmer Field School model is through three stages: the study of literature, stakeholders needs analysis, field survey, and initial product preparation or draft model.

Literature study is a concept or theories related to the product or model that will be developed. Apart from this, it also examines results of previous research regarding IPM Farmer Field School.

Draft model produced will be revised afterwards within a meeting which was attended by experts in the field of curriculum and learning, Agro-technology, Pests and Disease, and partner agencies that have experiences in learning and training of IPM Farmer Field

School. Based on inputs from the meeting, the research team made improvement towards the draft. The refined draft is then duplicated as needed.

#### *Curriculum Evaluation and Development, and Trials at Partner Institutions*

After the first phase of the preliminary study done, the activity continued with the second: curriculum evaluation and development, and Trial Development of IPM Farmer Field School in partner institutions.

The next step is with limited trials in partner institutions, starting with curriculum evaluation and preparation, discussion on the implementation of IPM Farmer Field School model, trials, and then refinement of the model by paying attention to input from all parties.

Observations, discussions, and improvements were carried out continuously until it was assessed that there were no shortcomings or weaknesses, so the trial ends. The researchers held a final draft refinement meeting, and the draft was judged final afterwards.

#### *Implementation and Dissemination of Pest Control Field School Models*

Beside implementation and dissemination processes of IPM Farmer Field School Model, testing phase is also carried out based on improvements and input both association and partner institutions. The product is being socialized to the partners.

#### *Research sites*

Research about IPM Farmer Field School on INQF-based model to improve the quality of Agriculture Faculty is supported by the agro-technology study program UNINUS itself, and partner institutions such as the Provincial Agricultural Service, District Agricultural Service, Agricultural Quarantine Agency, Plant and Food Protection Agency and Horticulture in West Java, Segunung Ornamental Crops Research Institute, Research Institute for Lembang Vegetable Crops and IPM Jatisari Forecasting Center.

## **RESULTS AND DISCUSSION**

### ***1. The Revitalization of Agriculture Faculty, Agro-technology Study Program UNINUS***

In facing the challenges of Industrial Revolution 4.0, faculty of agriculture must continue to develop and be able to maintain the quality of agricultural education in a dynamic way. A proper study program can produce graduates who not only have the ability in the field of agriculture, but also new literacy skills including data literacy, technological literacy, and noble human literacy based on understanding religious beliefs (Director General Belmawa, 2018). It requires high level commitment from the academics in the study program and stakeholders, so that they are able to hold quality and to establish Tridharma.

The revitalization of the study program refers to SN Dikti and Bandage PT No. 2 in 2019. They are:

- a) Improving leadership quality and governance performance includes vision and mission integrity, leadership, resource management system, strategic partnership, and implementation of Internal Quality Assurance System (IQAS).

- b) Increasing the quality and productivity of outputs, outcomes, and impacts in form of improving the graduates quality, scientific products, and innovation as well as benefits for the community.
- c) Improving the process quality includes learning process, research, community service, and academic atmosphere.
- d) Increasing input quality performance includes human resources (lecturers and education staff), students, curriculum, facilities, financing and funding.

All efforts to improve quality in all these fields are carried out comprehensively based on stakeholder participation in a sustainable manner. Increasing partnership with stakeholders in the faculty is very important. In addition, to improve the implementation quality of Tridharma would also bring the study program closer to the labor market which is in accordance with stakeholders' need.

## **2. Stages Implementation of IPM Farmer Field School**

Learning process and IPM Farmer Field School implementation takes place in form of interaction among lecturers, students, field supervisors and learning resources at partner institutions.

The field learning and implementation process are carried out in accordance with IPM Farmer Field School planning which refers to national standards of INQF DIKTI and Human resources of agricultural competency standards.

- IPM Farmer Field School learning process through curricular activities must be carried out systematically and in a structured way within various subjects and measurable learning burdens.
- IPM Farmer Field School learning process in partner institutions through curricular activities must use effective field learning and implementation method in line to the course characteristics to achieve certain abilities which have set in the course of fulfillment series of graduate learning outcomes.

When implementing IPM Farmer Field School learning process, students are trained to be able to develop environmentally friendly farming system and pest control using ecological and economic approaches, so that an understanding of the biology and ecology both pests and diseases becomes very important. Furthermore, students must have certain competences in carrying out:

- a. **Healthy plant cultivation**  
Healthy and strong plant cultivation is an important part of the plant pest control program. Healthy plants will be able to withstand pests and diseases and more quickly overcome damage due to attacks by pests and diseases. Therefore, every effort in cultivating healthy plants such as the selection of superior seeds. Seeds that are resistant to pest attacks should consider about the seeding, planting, spacing, cropping patterns, plant maintenance, and crops handling in order to obtain healthy, strong, and productive plantation with high yields and not polluting the environment.
- b. **The use of natural enemies**  
Biological control by utilizing potential natural enemies is the principle of implementing IPM Farmer Field School. Students are trained to look for natural enemies that can suppress the pest population. With the use of natural enemies, it is expected that agro-ecosystem will have a balance between pest population and its natural enemies. In a consequence, the pest population does not exceed the tolerance threshold of the plant.

- c. Regular observation or monitoring  
Agro-ecosystem is dynamic, because many factors influence each other. To be able to follow the population development of pests and natural enemies and to determine the plant condition, students must carry out observations regularly. The information obtained is used as a basis for the control measures.
- d. Students as pest control experts  
Pest control application must be adjusted to the state of the local ecosystem. Recommendation for implementing pest control was developed by students, so that students are able to apply and recommend appropriate ways of controlling pests to farmers.

Some pest control alternatives that can be implemented suited to IPM Farmer Field School concept are:

- a) Control by using resistant varieties  
By a way of reducing or suppressing pest population, attacks and the extent of damage to crops with planting varieties which are resistant to pest. This technique is an initial phase for building a healthy plant cultivation system. It is also not expensive, effective and environmentally safe.  
However, controlling with resistant varieties also has weaknesses and disadvantages, among others are the seeds' price is relatively more expensive. If planted over a long period of time, the resistance will decrease.
- b) Technical culture control  
Pest control in a technical culture is called as pest control through a system or method of farming. Some actions in farming method that can reduce or suppress population and pest attacks include the following;
  - Reducing the suitability of pest ecosystem by conducting sanitation, host modification, water management, and land management;
  - Disrupt the continuity of the life necessities provision of pest population which is done by means of crop rotation, temporarily leaving fallow, and planting simultaneously on a wide territory;
  - Transfer of pest population away from plantation, for example by planting trap crops.
- c) Physical control  
Physical pest control is an effort in utilizing or changing physical environmental factors, so as to reduce pests. Physical control can be carried out in several ways, namely: heating, combustion, cooling, wetting, drying, trap lights, infrared radiation, sound waves and barriers or fences.
- d) Mechanical control  
Mechanical control is done manually by humans. Mechanical control can be done in a simple way but requires a lot of labor and duration. The effectiveness and efficiency are also low, but does not negatively affect the environment.
- e) Biological control  
Biological control is the control of pests or diseases by utilizing biological agents (natural enemies) like predators, parasitoid and pathogenic pests.
- f) Law / regulation control

Control of the legislation is the prevention of dissemination or transfer pests through policies and regulations set by the government. The legal basis for prevention with regulations is as follows;

1. Law No. 16 Th 1992 concerning Animal, Fish and Plant Quarantine
2. PP No. 6 Th 1995: concerning Plant Protection
3. PP No. 14 Th 2000 concerning Plant Quarantine

g) Chemical control

Chemical control using synthetic pesticides is the last alternative if other control methods are unable to cover an increase of pest population that has exceeded the control threshold. The purpose of pesticide use is to reduce the pest population to the balance limit. Pesticides usage must also be right on target and in the right time.

h) Learning Methods in IPM Farmer Field School

Learning methods in IPM Farmer Field School include: group discussions, simulations, case studies, collaborative learning, cooperative learning, project-based learning, problem-based learning, field practice as well as other learning methods, which can effectively facilitate the fulfillment of the graduates learning outcomes.

### ***3. Total Credits of IPM Farmer Field School in Agro-technology Study Program, Faculty of Agriculture***

The implementation of total credits in IPM Farmer Field School is determined according to the learning outcomes. Student learning load is 3 credits. Established over partner institutions for the students of Agro-technology on the 8th semester has been applied.

One credit of the learning process is in form of lectures, responses, or tutorials below:

- a) Face-to-face activities 50 (fifty) minutes per week per semester;
- b) Structured assignment activities 60 (sixty) minutes per week per semester; and
- c) Independent activities 60 (sixty) minutes per week per semester.

Whereas one credit in learning process in form of practicum, studio practice, workshop practice, field practice, research, community service, and / or other similar learning processes, one hundred and seventy minutes per week per semester.

a) Learning Assessment Standards in IPM Farmer Field School

The learning assessment standards in IPM Farmer Field School are a minimum criterion regarding the assessment of the process and student learning outcomes in order to fulfill graduates learning outcomes. Assessment of student learning processes and outcomes includes:

b) Assessment Principle in IPM Farmer Field School

The assessment covers educative, authentic, objective, accountable and transparent principles that are carried out in an integrated manner. The educative principle is an assessment that motivates students to be able to improve planning and how to learn to achieve graduate learning outcomes. Second, authentic principles are assessments that are oriented towards a continuous learning process and learning outcomes that reflect students' abilities during the learning process. Third, the objective principle is an assessment that is based on a standard agreed upon between the lecturer and the student and is free from the influence of the subjectivity from the assessor and the assessed. Fourth is the accountable principle means an assessment carried out in accordance with clear procedures and criteria, agreed upon at the course beginning, and agreed by

students. The last is transparent principle which is defined as an assessment whose procedures and results of the assessment are accessible to all stakeholders.

c) Assessment instruments and techniques in IPM Farmer Field School

IPM Farmer Field School assessment techniques consist of observation, participation, performance, written tests, oral tests, and questionnaires. Whereas the instruments consist of assessment of processes in the form of rubrics and results evaluation stacked in a portfolio or design work. Other assessment assesses attitude which uses observation assessment techniques. And assessing knowledge, general skills, and special skills could be done by choosing one or a combination of sharing techniques and assessment instruments. The final results are the integration between the various techniques and assessment instruments used.

d) Assessment mechanism and procedures in IPM Farmer Field School

The evaluation of mechanism and procedures consists of:

- Compiling, submitting, agreeing over the stages, techniques, instruments, criteria, indicators, and weight between the assessor and those assessed in accordance with the lesson plan and field practice;
- Carrying out the assessment process suited to the stages, techniques, instruments, criteria, indicators, and weight that contain the assessment principles
- Providing feedback and the opportunity to question the results of the assessment to students; and
- Documenting the assessment of student learning processes and results accountably and transparently.

e) Implementation of assessments in IPM Farmer Field School

The implementation of assessment is carried out by:

- supporting lecturers or team of lecturers
- field advisor designated by partner institutions

It includes planning phase, the giving assignments or questions, observing performance, returning the observation results, and giving final grades.

f) Student graduation in IPM Farmer Field School implementation

The results of graduation were announced to the students after the implementation phase of the model was finished. Students report about the implementation results is disseminated and promoted by partner institutions and the agro-technology study program. Students who passed this are entitled to:

- The value of implementing IPM Farmer Field School;
- Competency certificates from partner institutions suited to the expertise.

g) Standards of lecturer and education staff

Lecturers in the implementation of IPM Farmer Field School are professional educators and scientists with the main task of transforming, developing, and disseminating knowledge, technology through education, research, and community service.

The standards of lecturers and education staff here are the minimum requirement regarding the qualifications and competencies of them both to carry out education in order to fulfill graduate learning outcomes .

Beside the lecturers from the agro-technology study program, students who carry out IPM Farmer Field School are also guided by field supervisors from partner institutions. An appointment of field supervisor is determined jointly and appointed by the (leaders) partner institutions. The field supervisor's decree was issued by the agro-technology study program at agriculture faculty.

- h) Standar learning facilities and infrastructure  
 The standard of learning facilities and infrastructure is a minimum criterion of facilities and infrastructure in line to the needs of the content and learning process in order to fulfill graduate learning outcomes. (Permenristek DIKTI no. 44 of 2015)  
 Facilities and infrastructures for learning, training and field practice such as land, classrooms are provided. Libraries, laboratories, studios, workshops, production units needed are provided by the study program in collaboration with partner institutions.
- i) The standards of learning management  
 Learning management standards are the minimum criteria regarding planning, implementation, control, monitoring and evaluation, and reporting learning activities at the study program level. (Permenristek DIKTI no. 44 of 2015)  
 The learning management standards implementation of IPM Farmer Field School model is carried out by the study program referred to the standards of graduate competency, learning content, learning process, lecturer and education staff, as well as learning facilities and infrastructure.  
 In the implementation of IPM Farmer Field School, the faculty: a. compiles policies, strategic plans, and operational activities that can be accessed by academics and stakeholders. It also can be used as a guidance for the study program in to implement the program; b. organize the model in accordance with the types and programs that are in line to the graduate learning achievement; c. maintain and improve the management quality of study program in implementing IPM Farmer Field School in a sustainable manner and focused on the vision and mission of the university; d. conduct monitoring and evaluation of the study program in carrying out IPM Farmer Field School activities; e. have guidelines for planning, implementing, evaluating, monitoring, quality assurance, and developing the activities; f. submit the report of implementation performance to the faculty, universities and partner institutions. And its activities reported on a database of higher education.
- j) Financing of learning standards  
 Financing of learning standards are the minimum criteria regarding the components, investment costs and operational costs that are prepared in order to fulfill graduate learning achievement (Permenristek DIKTI No. 44 of 2015).  
 The standards are determined by the study program and partner institutions based on the components and the amount of investment costs which are part of the higher education cost. It is used for the procurement of facilities and infrastructure, lecturer development , and education staff.  
 Operational costs are costs needed to implement IPM Farmer Field School activities including lecturer fees, education personnel costs, operational material costs, and indirect operational costs. Those are arranged in order to meet the graduates learning outcomes.

#### ***4. Plant Pest Control Organism Field School Model (SLPOPT)***

To produce competent and competitive human resources in agriculture, a quality in higher education system is highly encouraged. Qualified education system is executed while addressing students' need and stakeholders. It should also be implemented continuously in every field.

Quality improvement in higher education system is adjusted to INQF. In Permenristekdikti No. 44 of 2015, the National Standards for Higher Education is a standard unit that covers the standards of education, research, and community service.

The National Education Standards are the minimum criteria in learning at higher education level throughout the jurisdiction of the Unitary State of Indonesian Republic. Higher education National Standards consist of:

- a. Graduates competency;
- b. Learning content;
- c. Learning process;
- d. Learning assessment;
- e. Lecturers and education staff;
- f. Education and learning infrastructure;
- g. Learning management; and
- h. Learning finance.

Quality improvement program implemented by the faculty is conducted through the revitalization to improve the education system, suited to the set quality standards. Besides, curriculum evaluation and development are done and based on the demands of the job market.

IPM Farmer Field School Model on INQF-based in the faculty is an improvement of comprehensive agricultural education system based on stakeholder participation with the partnership principles. The curriculum is developed by Dikti based on INQF and human resources competency standards of Ministry of Agriculture to prepare competent and competitive human resources in agriculture.

IPM Farmer Field School is carried out to improve general skills that must be possessed by every graduate of the Agro-technology study program. It is to ensure the equality of graduates' abilities according to the level program, higher education type, and special skills to perform concepts, theories, methods, materials, and/or instruments, obtained through learning, student work experience, and research and/or community service related to learning.

IPM Farmer Field School is the application of Integrated Pest Management (IPM) concept in principle to provide knowledge of skills and attitudes to students and to develop environmentally friendly farming system, also pest control system by combining various methods. It is expected that they can be implemented into a harmonious program unit, so that the pest population remaining does not cause economic loss and safe for the environment.

Law Number 12 Year 1992 article 20 paragraph 1 which states about plant protection should be carried out with this IPM system. IPM is an approach and technology for controlling plant disturbing organisms which costs economically and ecologically and has become basic policy on national crop protection.

The focus of IPM Farmer Field School is controlling plant pests in form of pests or diseases, based on a multidisciplinary ecological and economic approach. It is to manage population of pests and diseases by utilizing a variety of compatible control tactics in a management coordination unit to create environmentally friendly in agriculture. As mentioned by Untung (2002), who is more focused on integrated pest management and implements it based on:

- a) IPM targets are not pest eradication or extermination, but the control of pest population restriction so that they are not detrimental,
- b) IPM is a holistic approach, so its application must include various disciplines and development sectors, so that optimal recommendation is obtained,
- c) IPM always considers ecosystem dynamics and variations in social condition. IPM recommendations for controlling certain pests will also be very varied and flexible,
- d) IPM prioritizes control processes that run naturally (non-pesticides), namely farming techniques and utilization of natural enemies, such as parasites, predators, and

pathogens. The pesticides usage must be carried out wisely and only carried out if other controls are still not able to reduce pest population, and

- e) biological and environmental monitoring or observation program is very absolute in IPM, because through monitoring, farmers can recognize the state of agro-ecosystem in a moment and certain places, and analyze to choose proper management of cropping.

- a) Implementation of OPT Control Field Schools to improve the Quality of the Agro-technology Study Program

The purpose of Plant Pest Control Organism Field School (SLPOPT) is to increase the knowledge of skills and attitudes of students of the Faculty of Agriculture's study program Agro-technology so that they are competent in developing environmentally friendly agricultural systems and can apply plant pest control technology based on ecological approaches and economy. That is with integrating a variety of compatible control techniques so that plant pest organisms are below the economic threshold.

- b) Assessment report in SLPOPT

Assessment report in form of student success qualifications when taking IPM Farmer Field School is based on criteria. The reporting forms agreed upon by study programs and partner institutions. Assessments are stated in the range:

- 1) Letter A is equivalent to number 4 (four) categorized very well;
- 2) Letter B is equal to number 3 (three) or good category;
- 3) Letter C equivalent to number 2 (two) or sufficient category;
- 4) Letter D equivalent to number 1 (one) categorized as less; or
- 5) The letter E is equivalent to the number 0 (zero) categorized as very less.

## **CONCLUSION**

All comprehensive efforts taken resulted enhancing the leadership quality and governance performance , system resource management, strategic partnerships, and the implementation of IQAS. Quality improvement and output productivity, outcomes, and impacts are in form of quality graduates, scientific products and innovations, as well as benefits to the community. Quality improvement process includes the learning process, research, community service, and academic atmosphere . Meanwhile enhancing the inputs of performance quality includes human resources (faculty and staff), students, curriculum, facilities, financing and funding.

IPM Farmer Field School is established by implementing improvements to a comprehensive agricultural education system based on active participation from stakeholders by integrating partnership principles. The curriculum was developed based on the national standards of INQF Dikti and human resources competency standards from the Ministry of Agriculture. This is to prepare competent and competitive agricultural human resources. Partnership with stakeholder when executing IPM Farmer Field School is by way of integrating education, training, field practice, as well as the cooperation and resources expertise contribution, so that each institution can act in accordance with its function.

## **RECOMMENDATION**

Improvements in the agricultural education system in various sectors need to be held comprehensively based on student needs and stakeholder needs.

Curriculum evaluation and development with stakeholders need should be executed periodically to adjust the graduates competency to the labor market needs.

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