


MODULE HANDBOOK

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|  | UNIVERSITAS PADJADJARAN FACULTY OF MATHEMATICS AND NATURAL SCIENCES BACHELOR OF BIOLOGY PROGRAMME | COURSE CODE: D10D-601018 |
| Module designation | Biopesticides and Natural Enemies for Insect-pest Control | |
| Semester in which the module is taught | 5 | |
| Person(s) responsible for the module | 1. Dr. Melanie, S.Si.,M.Si 2. Prof. Dr. Wawan Hermawan, MS | |
| Medium of instruction | Indonesian | |
| Relation to curriculum | Elective course | |
| Teaching methods | Lectures, discussions, cooperative learning, and inquiry learning, project based learning | |
| Workload | <p>Total workload : 5440 minutes = 90.67 hours</p> <p>Lectures, discussions, : 2 x 50 minutes x 16 weeks = 1600 minutes = 26.67 hours cooperative learning, and inquiry learning</p> <p>Exercises : 2 x 60 minutes x 16 weeks = 1920 minutes = 32 hours</p> <p>Self-study : 2 x 60 minutes x 16 weeks = 1920 minutes = 32 hours</p> | |
| Credit points | 2,00 (3,62 ECTS) | |
| Required and recommended prerequisites for joining the module | - | |
| Module objectives/intended learning outcomes | <ol style="list-style-type: none"> 1. Able to explain the diversity of plants that are sources of biopesticides, natural enemies of insect predators, parasitoids, and entomopathogens of insect pests. 2. Able to identify the ecological and economic roles of plants that are sources of biopesticides, natural enemies of insect predators, parasitoids, and entomopathogens of insect pests. 3. Able to analyze observations and studies on the use of botanical biopesticides and insect pest enemies applied by local communities. 4. Able to examine the prospects for utilizing natural enemies of predators, pathogens, parasites, and nematodes in biological control for sustainable agriculture. 5. Able to analyze the negative impacts of synthetic pesticide use and implement alternative solutions for biopesticides and biological control to improve the quality of life. 6. Able to evaluate strategies for managing biological resources and the environment based on research studies and propose improvements based on scientific evidence. | |
| Contents | <ol style="list-style-type: none"> 1. Interactions between herbivores (OPT) and plants 2. Theory and concept of biopesticides and biological control 3. Potential and diversity of natural product-producing plants as sources of botanical biopesticides 4. Diversity and ecological role of natural enemies: predators 5. Diversity and ecological role of natural enemies: pathogens (viruses, fungi, and bacteria) 6. Diversity and ecological role of natural enemies: parasites and nematodes | |

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| | <ol style="list-style-type: none"> 7. Negative impacts of synthetic pesticides on humans and the environment 8. Studies and research on the use of biopesticides and natural enemies 9. Important prospects for biopesticides and biological agents to support sustainable development |
| Examination forms | Quiz, midterm exam, assignment, and final exam |
| Study and examination requirements | The minimum attendance in lectures is 80%. Final grades are evaluated based on quiz (10%), midterm exam (15%), assignment (10%), final exam (15%), project and participation (50%) |
| Reading lists | <ol style="list-style-type: none"> 1. Purnomo, H.(2010) Pengantar Pengendalian Hayati. Penerbit Andi. Yogyakarta 2. Debach, P.(1991) Biological Control by Natural Enemies 2nd Edition, Cambridge University Press, Cambridge 3. Pedigo, L. (1999), Entomology and Pest Management, MacMillan Pub. Co 4. Tanada, Y., and Kaya, H. K. (1993), Insect Pathology. Academic Press, Inc. California. 5. Boucias, D.G and Pendland, J.C. (1998), Principles of Insect Pathology, Kluwer Academic Publishers, Massachusetts. 6. Reddy, P. P. (2022). Biopesticides and Bioagents: Novel Tools for Pest Management. Academic Press (Elsevier). 7. Abrol, D. P. (2019). Integrated Pest Management: Current Concepts and Ecological Perspective. Academic Press. |