Subject Module
Department of Agrotechnology
Faculty of Agriculture
University of Islam Malang

Module Handbook

Module Title	Analysis of Plant Growth and Production
Module Level, if available	Undergraduate Study Program of Agrotechnology
Course Code	MKW 60619
Headings, if available	-
Subject (MK)	Analysis of Plant Growth and Production
Semester	V
Course Coordinator	Dr. Ir. Anis Rosyidah, MP
Teaching Team	-
Language of instruction	Indonesian language/English
Linkages with the Curriculum	Study Program : Agrotechnology Specialization: Agrotechnology Type: Compulsory/~~elective~~
Learning Methods and Duration	1. Lecture: 100 minutes/meeting (14 meetings) 2. Practicum 170 minutes/meeting (7 meetings) 3. Structured Assignments/individual and group Assigments presentation
Student Study Load	1. Lecture: 100 minutes/meeting (14 meetings) 2. Practicum: 170 minutes/meeting (8 meetings) 3. Structured Assignments/quiz/group presentation 4. Attendance: 75% of total attendance
Credit Weight	3 credits or 5.1 ECTS
Requirements for Passing theCourse	• Attendance >75% • The final score of all the components of the learning evaluation >44 The final score component: • 20% Midterm Exam • 20% Final Exam • 30% Practicum • 20% Structured Assignments (individual and group) • 10% Presence
Prerequisite Courses	-
Learning Outcomes	The expected learning outcomes are: 1. Have good and deep knowledge in the field of basic agricultural science that supports Agrotechnology (ILO 3) 2. Able to work independently or in a team, and use various methods of communication (ILO 4) 3. Able to solve problems that arise in the field of agrotechnology and related fields of science (ILO 5) 4. Able to apply various research methods in the field of Agrotechnology (ILO 7) 5. Able to manage plant production system (ILO 9)

Learning Content	After completing this course students are able to: 1. Understand the theory of plant growth and production analysis techniques and apply them in a sustainable crop production system. 2. Analyze plant growth and production using appropriate methods. 3. Evaluating and solving various field problems related to differences in plant growth based on the science of Plant Growth and Production Analysis. 4. Analyze the relationship between various plant growth variables that support crop yield and quality. 5. Plan and manage growth-related problems that are constrained by differences in crop yields. The topics include: 1. Introduction • Scope of plant growth analysis • Analysis of plant growth and production 2. Plant growth and development 3. Stages of Plant Growth Derived from Seeds and Cuttings • Plant growth comes from seeds (germination, seedling growth, juvenile, mature, senescence • Plant growth comes from cuttings 4. Quantification of Plant Growth • Growth diversity (Genetic, environmental, past influences, planting material) • Response to plant growth due to environmental influences 5. Plant Arrangements in the Field • Cropping patterns • Crop competition 6. Considerations in plant growth analysis • Destructive Observations • Non Destructive Observations 7. Destructive Harvesting and Sampling • Harvest time • Harvest observation procedures (measurement implementation, number of samples, dead plants, fallen plant organs, human labor and facilities, variety of planting material, observation intervals) 8. Determination of Plant Growth and Yield Variables 9. Analysis of Plant Growth Rate • Absolute growth rate • Relative growth rate • Leaf unit price • Leaf area ratio • Leaf weight ratio • Specific leaf area 10. Analysis of plant growth for the community level • Leaf area index • Leaf area • Relative leaf growth rate 11. The Relationship Between Relative Leaf Growth Rate and Relative Growth Rate 12. Source and Sink Relationship • Photosynthate-producing plant organs • Plant organs using photosynthate 13. The concept of balance source and sink 14. Assessing Organs of Economic Value • panicle plant • pod plants • tubers plant • Fruits Plants

Test Terms and Forms	Examination requirements: A minimum of 75 % attendance to attend the final exam Forms of examination: Essay
Learning Media	Projector and screen, Zoom application, e-book, WA Group, Practical guide book, plant samples
References	Main References : 1. Rosyidah, A. 2020. Buku Ajar Analisis Pertumbuhan Tanaman. Fakultas Pertanian. UNISMA. Malang. 124 hal 2. Sitompul, S.M. , Bambang G. 1995. Analisis Pertumbuhan Tanaman.Gajahmada University Press. 3. R. Hunt. 2002. Plant Growth Analysis for Beginners. 2002.Chapman & Hall. 112 p 4. Rosyidah, A. 2020. Panduan Praktikum Analisis Pertumbuhan dan Produksi Tanaman. Fakultas Pertanian. UNISMA. Malang Supporting References : 1. Plant growth analysis https://www.researchgate.net/publication/321267971_Plant_growth_analysis http://eagri.org/eagri50/PPHY261/lec19.pdf 2. Estimating leaf area index on non-destructive observations https://journals.ashs.org/hortsci/view/journals/hortsci/45/10/article-p1459.xml 3. https://besjournals.onlinelibrary.wiley.com/doi/epdf/10.1046/j.0269-8463.2001.00582.x 4. https://core.ac.uk/download/pdf/42545328.pdf 5. https://core.ac.uk/download/pdf/294965033.pdf 6. Source and sink relationship https://www.frontiersin.org/articles/10.3389/fpls.2018.01889/full