



JOGJAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE

LESSON PLAN 6

FRM/FMIPA/062-01

5 June 2013

1. Faculty /Study Program : Mathematics and Science / Biology Education
2. Course / Code : BIC 227
3. Credits : 2
4. Semester and Duration : VI , 100 minutes
5. Basic competence : Describe the history and methods used in plant biotechnology
6. Achievement indicator :
 - a) Students are able to explain the history / development of plant biotechnology
 - b) Students are able to explain the methods used in plant biotechnology
 - c) Students are able to analyze the purpose and the aim of each methods used in plant biotechnology
7. Topics / Sub-topics : Methods of Plant Biotechnology
8. Lecture activity :

Activity	Details of activity	Duration	Method	Media	References
Introduction	<ul style="list-style-type: none"> • Discussion on what is studied in plant biotechnology • Explanation briefly, on the history of plant breeding which correlates to biotechnology 	10 minutes	Discussion and lecture	PPT, boardmarker	<p>Mantell, S.H., J.A.Matthews, and R.A.McKee. 1985. <i>Principles of Plant Biotechnology</i>.</p> <p>Renneberg, R. 2006. <i>Biotechnology for Beginners</i>. (Ed. Arnold.L.Demain).</p>
Main Presentation	<ul style="list-style-type: none"> • Lecture : explanation on the history of plant biotechnology 	30 minutes	Lecture	PPT, animation, boardmarker	<p>Mantell, S.H., J.A.Matthews, and R.A.McKee. 1985. <i>Principles of Plant Biotechnology</i>.</p>

	<ul style="list-style-type: none"> • Students are asked to analyze how plants/crops have evolved due to human • Explanation on the methods of plant biotechnology (conventional and non-conventional) • Students are asked to analyze the differences in the two methods and its effects on the evolution of crops 	10 minutes	Discussion		Renneberg, R. 2006. <i>Biotechnology for Beginners</i> . (Ed. Arnold.L.Demain).
		30 minutes	Lecture	PPT, animation, boardmarker	
		10 minutes	Discussion		
Closing	<ul style="list-style-type: none"> • Students are asked to conclude the topic and a task is given to test students understanding of the topic 	10 minutes	Discussion	PPT	
Follow up	<ul style="list-style-type: none"> • A reading assignment is given to students for next weeks' topic (Plant Transgenesis) 				

9. Evaluation

Questions :

- 1) What is the conventional method of obtaining new plant varieties ?
- 2) What are the advantages of modern plant biotechnology ?

Answer :

- 1) The conventional methods are artificial crossings and selections
- 2) Using plant biotechnology we can obtain new plant varieties faster (saving time) dan using limited area

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Yogyakarta, June 2013
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