



**JOGJAKARTA STATE UNIVERSITY**  
**FACULTY OF MATHEMATICS AND SCIENCE**

**LESSON PLAN 7**

**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 method of obtaining transgenic plants and the use of molecular markers
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 : Plant Transgenesis
8. Lecture activity :

Activity	Details of activity	Duration	Method	Media	References
Introduction	<ul style="list-style-type: none"><li>• Explanation briefly, on the definition of plant transgenesis</li></ul>	10 minutes	Discussion and lecture	PPT, boardmarker	Mantell, S.H., J.A.Matthews, and R.A.McKee. 1985. <i>Principles of Plant Biotechnology</i> .  Renneberg, R. 2006. <i>Biotechnology for Beginners</i> . (Ed. Arnold.L.Demain).

Main Presentation	<ul style="list-style-type: none"> <li>Lecture : explanation on the methods used for plant transgenesis</li> </ul>	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> <p>Renneberg, R. 2006. <i>Biotechnology for Beginners</i>. (Ed. Arnold.L.Demain).</p>
	<ul style="list-style-type: none"> <li>Students are asked to explain and analyze how plants/crops have been changed using conventional method of plant transgenesis</li> </ul>	10 minutes	Discussion		
	<ul style="list-style-type: none"> <li>Explanation on several techniques used for direct transfer of foreign gene into plants</li> </ul>	30 minutes	Lecture	PPT, animation, boardmarker	
	<ul style="list-style-type: none"> <li>Students are asked to analyze each methods used in plant transgenesis</li> </ul>	10 minutes	Discussion		
Closing	<ul style="list-style-type: none"> <li>Students are asked to conclude the topic and a task is given to test students understanding of the topic</li> </ul>	10 minutes	Discussion	PPT	
Follow up	<ul style="list-style-type: none"> <li>A reading assignment is given to students for next weeks' topic (Plant Transgenesis)</li> </ul>				

## 9. Evaluation

Students are asked to work in groups of three to discuss a new plant variety / transgenic plant that they would like to create using one of the methods explained during the lecture. The plant and method used must have reasonable explanation of its use for mankind.

Points are given for :

- a. Explanation of the chosen plant
- b. Aim of making the transgenic plant
- c. The method used is accurate for the aim

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Yogyakarta, June 2013  
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