Important Concepts . . .

Preview Review

Science *Grade 7* *TEACHER KEY*

W2 - Lesson 2: Plant Propagation and Reproduction

V5-07

Important Concepts of Grade 7 Science

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W1 - Lesson 2 ..... Nutrient Cycles, Energy Flows, and Changes in Ecosystems
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Materials Required.

Textbook:
Science in Action 7

Science Grade 7
Version 5
Preview/Review W2 - Lesson 2 TEACHER KEY

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Preview/Review Concepts for Grade Seven Science

TEACHER KEY

W2 - Lesson 2: Plant Propagation and Reproduction

OBJECTIVES

By the end of this lesson, you should be able to

- define and explain various methods of asexual reproduction in plants
- define and explain how plants reproduce sexually
- define and explain how and why selective breeding is done in plants

GLOSSARY

asexual reproduction - reproduction by an individual (A part of the individual plant grows into another plant.)

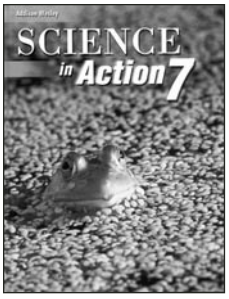
selective breeding - reproduction where people choose the parent plants based on their traits

sexual reproduction - reproduction that involves the mixing of genetic material from two parents

W2 - Lesson 2: Plant Propagation and Reproduction

All organisms must reproduce for their species to continue. Plants either reproduce sexually, asexually, or both ways.

Asexual Reproduction



Reproduction of a plant by having part of its body grow into a new individual is vegetative or asexual reproduction ("a" means "not"). The offspring are identical to their one parent. There are a number of ways that plants can reproduce asexually. You are probably already familiar with some of them. Read pages 114 and 115 of *Science in Action 7* to learn more.

1. Imagine you are a new gardener with a friend who has strawberry plants. You'd like to grow the same kind of strawberries, but you know of no other source. What could your friend do to give you some?

   Root some runners from their strawberry plants and give them to you.

2. Many ornamental trees produce small stems that come up from their roots close to the tree. What are these new plants called?

   suckers

3. How would you start a new plant such as a geranium?

   Take a cutting and root it.

4. Suppose someone told you there is a way too get numerous types of apples to grow on one tree. After some research, you found the method you could use to do that. What is it?

   Graft small branches from different types of trees onto one tree.

5. If you were asked to plant a bed of tulips, would you look for tulip seeds at the greenhouse? Explain.

   No. Ask for tulip bulbs. They don't grow from seed

6. What is a reason people may want to grow produce such as fruit that has been bred to be seedless?

   Consumers may not want to deal with seeds when eating the produce. eg. in watermelon

Sexual Reproduction

Sexual reproduction involves a mixing of male and female genetic material. That means the offspring will not be identical to the parents. They grow from seeds that are produced in either cones or flowers. Read page 111 of *Science in Action 7*.

Male parts of a flower are called the stamens. On the end of each stamen is an anther where the pollen develops. The female part has the stigma at the top. This is where the pollen is caught. The ovary is at the bottom of the female part.

To produce a seed the male reproductive cell carried in pollen must combine with the female reproductive cell, the ovule. Pollination occurs when pollen is transferred from a male plant part to the female. It must then tunnel down to the ovary where it fertilizes the ovule.

7. Name one plant that reproduces sexually.

   Many types do. Any that produce seeds.

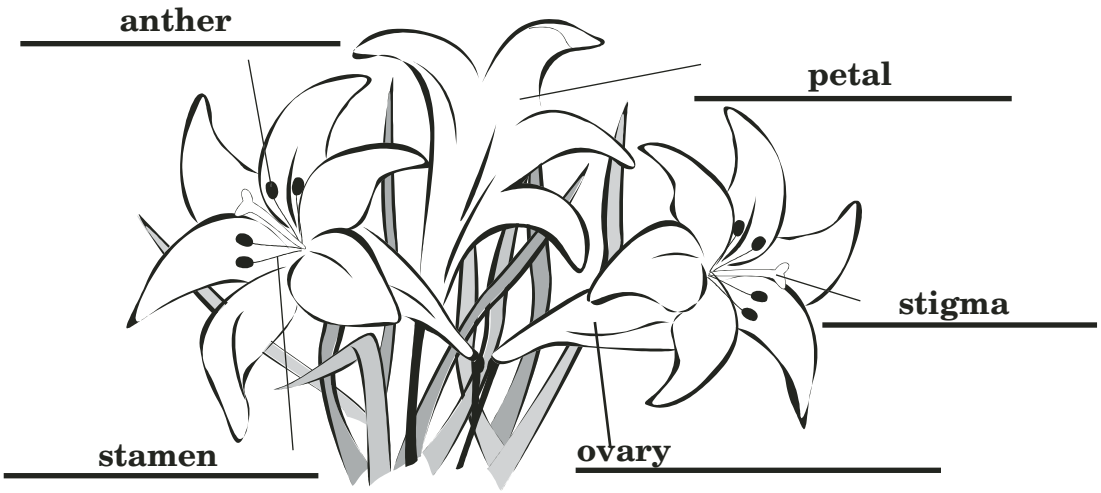
8. Pollen has various ways of moving from the male to female parts of flowers. Some pollen is moved by wind. What are some other ways that this can happen?

   Insect, bats, humans, birds, etc.

9. What are organisms that move pollen from one flower to another called?

   pollinators

10. Label the diagram below with the following terms: ovary, stigma, stamen, anther, petal.



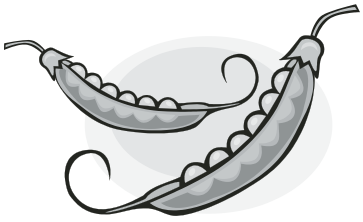
11. In recent years, a parasitic mite has devastated honeybee populations in North America. What implications could this have for food production if the problem is not solved?

Food production will be cut if pollination is not continued at present levels.

Selective Breeding

New types of plants develop in nature, but humans can also cause this. Read page 156 of *Science in Action 7*. The process is called selective breeding or artificial selection. When doing this, people decide on the trait or traits they want in a sexually reproducing plant. Then they choose the specific plants that will be crossed to produce the next generation. The plants chosen have traits as close as possible to those desired. From that generation, the individuals closest to the goal are chosen as parents for the following generation, and so on.

12. You have two types of edible-pod peas. One is free of a "string" down the pod, but it has poor taste. The other tastes great, but it has a "string" down the pod that makes eating it difficult. Explain the process you would use over 3 generations to get a pea pod that tastes great and is free of the pod string.



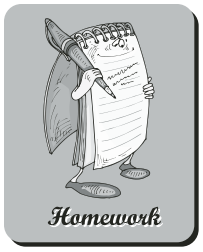
Choose one parent from each type of pea. Cross them. From their offspring, choose plants that have peas closer to what is wanted. Grow plants from their seeds and cross them. Repeat.

13. Name 3 varieties of apples that were developed through artificial selection.

Answers will vary, for example, Granny Smith, Macs, Delicious, Gala

14. Name a food plant that you think could be improved by selective breeding. State the characteristic you would like changed, and how you would like it changed.

Answers will vary. eg. Broccoli–change the odor to a sweeter smell.



Homework

15. Find information about a plant variety that has been produced by selective breeding. Name or describe it. Include why you think it was developed. Be prepared to tell your classmates about it tomorrow.

Almost any domestic plant can be used. (Eg., Wheat - for specific growing conditions and uses such as bread vs. pasta production.)

16. Talk to someone about their experiences starting a plant by a form of vegetative reproduction. Describe what was done, and the success of the project. You may want to try to start a plant yourself using a vegetative process. This will take some time.