

From Seed to Plant

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About **From Seed to Plant**

DeltaScienceModules, THIRD EDITION

Students explore *From Seed to Plant* with fourteen hands-on activities and the Delta Science Reader. They are introduced to ten different types of plants, and they turn your classroom green as they explore how plants grow. Working with both collective and individual planters, students observe the parts of a seed and, in time, the parts of a plant. As their vegetables, beans, grasses, and flowers develop shoots and roots, then stems and leaves, students discover the link between structure and function. They learn what plants need to grow and, as pods and seeds appear, how the life cycle continues.

The Delta Science Reader *From Seed to Plant* introduces students to the life cycle of a plant. Students read about the parts of seeds and how seeds develop into plants. They explore the functions of different plant parts and see what a plant needs to grow. Students find out about gardeners and why the plants they grow are important. They also discover the fascinating ways seeds travel from place to place.

Overview Chart for Hands-on Activities

Hands-on Activity	Student Objectives
1 What Is a Seed? <i>page 15</i>	<ul style="list-style-type: none"> • examine and describe a variety of small objects and then decide how to sort them into several groups • fill in a chart with descriptions of the objects' characteristics • divide the objects into two categories—those they think are seeds and those they think are not
2 Planting Day <i>page 21</i>	<ul style="list-style-type: none"> • plant a selection of objects from Activity 1 in a class garden • plant four kinds of seeds in individual planter cups • observe the garden and planter cups over several weeks • conclude that the objects that sprout are seeds • examine and compare the leaves of the various sprouts
3 Inside a Seed <i>page 33</i>	<ul style="list-style-type: none"> • examine dry pinto beans and peas and learn how the seed coat protects the new plant inside • dissect a softened seed and identify its parts • learn the functions of each seed part
4 Growing Underground <i>page 39</i>	<ul style="list-style-type: none"> • guess what the seeds have been doing underground • examine seeds dug up from the garden • observe how the roots and shoots are developing
5 Watching Them Sprout <i>page 45</i>	<ul style="list-style-type: none"> • sprout several kinds of seeds without soil • observe and compare the seeds as they sprout over the next 7 to 10 days • identify the roots and shoots on their sprouted seeds
6 Which Way Do They Grow? <i>page 53</i>	<ul style="list-style-type: none"> • examine the roots of their sprouts to determine in which direction they are growing • determine whether roots are able to grow upward instead of downward • discuss how the downward growth of roots helps a plant survive
7 How Big Are They? <i>page 59</i>	<ul style="list-style-type: none"> • measure the growth of a plant over time • learn to organize their data in a useful manner • discuss how their plants have grown
8 How Much Water? <i>page 67</i>	<ul style="list-style-type: none"> • water their plants according to three different watering schedules • compare their plants' responses to the different watering schedules • draw conclusions about how much water plants need
9 What Is a Stem For? <i>page 73</i>	<ul style="list-style-type: none"> • guess what jobs stems do for plants • observe that colored water travels up plant stems • conclude that plant stems carry water up to the leaves of the plant
10 Looking at Leaves <i>page 79</i>	<ul style="list-style-type: none"> • play a game with a variety of leaves they have brought to class • examine several leaves and draw pictures of them • learn the functions of a leaf
11 Plants and Sun <i>page 85</i>	<ul style="list-style-type: none"> • place plants in a box so that they receive sunlight from only one direction • observe the response of the plants and conclude that plants turn toward light • review why plants need sunlight
12 Roots Underground <i>page 91</i>	<ul style="list-style-type: none"> • predict what the roots of larger plants will look like • examine the exposed roots of several plants • discuss how roots differ from the upper parts of a plant
13 The Life Cycle of Plants <i>page 97</i>	<ul style="list-style-type: none"> • identify the first four stages in the life cycle of a pea plant • observe flowers and seed pods on pea plants • diagram the complete life cycle of a pea plant
14 Caring for Plants <i>page 105</i>	<ul style="list-style-type: none"> • discuss what plants need in order to grow • make a class chart illustrating the proper care of plants • plant marigold seeds to take home
Assessment <i>page 111</i>	<ul style="list-style-type: none"> • See page 111.

Process Skills	Vocabulary	Delta Science Reader
compare, classify, make and use models	seed	pages 2–3
make and use models, observe, infer, compare	garden, plant, soil	pages 12–13
observe, experiment	new plant, seed coat, seed food	page 3
hypothesize, compare, classify, observe	root, shoot, sprout	pages 4–6
experiment, make and use models, observe, classify		pages 4–5
observe, identify and control variables, communicate		pages 4–7
measure; collect, record, display, or interpret data; communicate	leaf (leaves), stem	pages 7–8
make and use models, compare, infer		page 12
hypothesize, observe, infer		page 7
collect, record, display, or interpret data; observe; infer	veins	page 8
make and use models, observe, communicate		pages 5, 8, 12
predict, observe, communicate		page 6
identify and control variables; observe; collect, record, display, or interpret data	life cycle, mature plant, seed pod	pages 9–11
communicate, make and use models		pages 12–13

See the following page for the Delta Science Reader Overview Chart.

Overview Chart for Delta Science Reader

From Seed to Plant

Selections	Vocabulary	Related Activity
Think About...		
What Is a Seed? <i>pages 2–3</i>	new plant, seed, seed coat, seed food	activities 1, 3
How Do Seeds Grow? <i>pages 4–5</i>	roots, seedling, shoot, sprout	activities 4, 5, 6, 11
What Are the Parts of a Plant? <i>pages 6–9</i>	flower, leaves, stem	activities 4, 6, 7, 9, 10, 11, 12, 13
What Is a Plant Life Cycle? <i>pages 10–11</i>	life cycle	activity 13
What Do Plants Need to Grow? <i>page 12</i>		activities 2, 8, 11, 14
People in Science		
Gardeners <i>page 13</i>	fruit	activities 2, 14
Did You Know?		
How Seeds Travel <i>pages 14–15</i>		

See pages 119–126 for teaching suggestions for the Delta Science Reader.

MATERIALS LIST

From Seed to Plant

Quantity	Description	Quantity	Description
33.....	bags, plastic, reclosable, 15 cm × 15 cm*	16.....	trays, plastic
1.....	box, garden†	1.....	vermiculite, 1 qt†
1.....	chart, Garden Map*	8.....	water sprinklers
1.....	chart, How Much Water?*	1.....	Teacher's Guide
1.....	chart, Life Cycle of the Pea Plant	8.....	Delta Science Readers
1.....	chart, Plant Care*	TEACHER-PROVIDED ITEMS	
1.....	chart, Plant Parts	–.....	bleach, household*
1.....	chart, Things We Notice*	1.....	box, cardboard, large
1.....	copper pellets, 4 oz	1.....	celery, head, with leaves*
32.....	cups, paper, 9-oz*	3.....	containers, 4-qt
44.....	cups, planter	–.....	crayons
16.....	cups, plastic, 1-oz	–.....	goggles, safety
16.....	cups, plastic, 9-oz	1.....	knife, sharp
1.....	food coloring, red*	32.....	leaves, assorted
1.....	fork, plastic	–.....	marker, felt-tip
2.....	glue, white, 4-oz*	1.....	overhead projector
1.....	gravel, 2 lb†	33.....	paper, plain*
8.....	jars, clear glass	–.....	paper towels*
16.....	magnifiers	11.....	paste, jars
6.....	paper, construction, 30 cm × 45 cm, p/6*	16.....	pea pods, fresh*
1.....	pictures, Pea Plant Life Cycle	1.....	plant
32.....	push pins	33.....	scissors
4.....	seeds, corn, p/100*	8.....	spoons, plastic
2.....	seeds, marigold, p/150*	1.....	stapler
1.....	seeds, morning glory, p/150*	1.....	teaspoon, measuring
4.....	seeds, mung bean, p/100*	–.....	water, tap*
2.....	seeds, nasturtium, p/30*		
4.....	seeds, pea, p/100*		
2.....	seeds, pinto bean, p/750*		
1.....	seeds, radish, p/300*		
1.....	seeds, rye grass, p/125,000*		
3.....	seeds, sunflower, p/125*		
3.....	sheets, plastic†		
10.....	soil, potting, 4 qt*†		
8.....	sponges		
1.....	tape, masking*		
1.....	tape, transparent*		
15.....	tongue depressors		
1.....	transparency, Inside a Seed		
1.....	transparency, A Sprouted Seed		
32.....	trays, planter (fluted)		

* = consumable item

† = in separate box

ACTIVITY SUMMARY

This Delta Science Module introduces students to seeds and the plants into which they grow.

ACTIVITY 1 Students are asked the question, What is a seed? With magnifiers, they closely examine a variety of small objects—some of which are seeds and some of which are not—and sort them according to their properties. They also try to decide which of the objects might be seeds.

ACTIVITY 2 Students plant a selection of objects to see whether they will grow or not. They plant the smaller objects in a class garden and plant corn, beans, and peas in individual planter cups. Then they watch the plants grow and decide which of the objects were definitely seeds.

ACTIVITY 3 Students compare dry seeds to seeds that have been soaked overnight in water. They find that they can easily open the soaked seeds, and when they look inside, they discover the plant embryo and the seed food that will nourish it.

ACTIVITY 4 Students dig up some of the seeds from the class garden to see if they have changed. They find that the seeds have sprouted, and that the young plants' first roots and shoots are emerging.

ACTIVITY 5 Students set up two types of sprouting containers that make the process of sprouting visible. Students are thus able to observe closely the roots of the growing plants.

ACTIVITY 6 Students are asked to try to change the direction in which the roots of their sprouted seeds are growing. They eventually find that no matter how often they turn a seed so that its root points upward, the root will soon change direction and grow downward again.

ACTIVITY 7 Students begin to measure the plants they have grown from seeds. Each student measures the length of one plant and begins to make a histogram showing its growth. Students discuss and compare the rates of growth of their plants.

ACTIVITY 8 Students begin an experiment to see how their plants respond to varying amounts of water. In the end, they decide that both too little and too much water adversely affect a plant's health.

ACTIVITIES 9 and 10 Students learn about the structure and function of two more parts of a plant—the stem and the leaf. First, they set up an experiment to show that a stem transports water up into the leaves of a plant. Next, they play a “Leaf Game” that requires them to observe various kinds of leaves closely and to note their different characteristics.

ACTIVITY 11 Students learn about a plant's need for sunlight. They place plants in directional sunlight and observe how the plants respond. They discover that plants always turn their leaves and bend their stems toward the light.

ACTIVITY 12 Students examine the network of roots that have grown on the more mature plants in the classroom. They contrast the roots with the stem and leaves and learn more about the job that roots do for a plant.

ACTIVITY 13 Students examine the flowers, pods, and seeds that some of the pea plants have produced. They review the life cycle of a pea plant and arrange pictures of all its stages in order on a chart.

ACTIVITY 14 Students review what they have learned about how to care for plants properly. Finally, they plant marigold seeds to take home and care for.