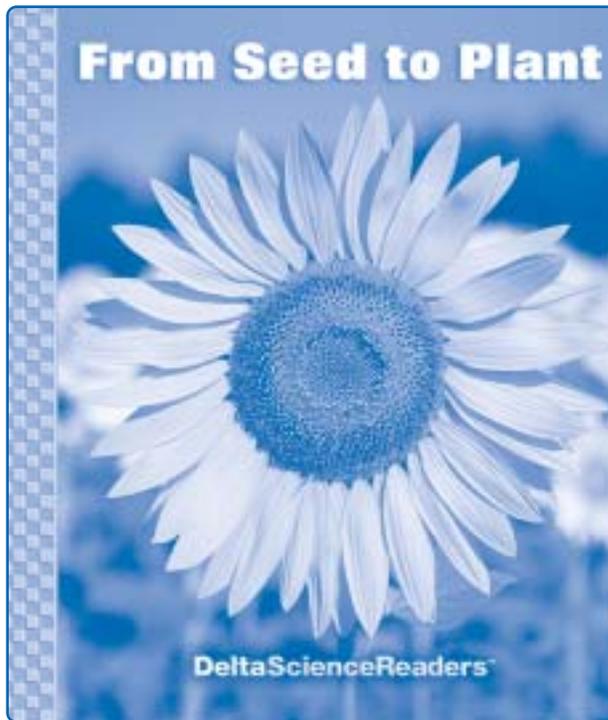


From Seed to Plant



Delta Science Readers are nonfiction student books that provide science background and support the experiences of hands-on activities. Every **Delta Science Reader** has three main sections: *Think About . . .*, *People in Science*, and *Did You Know?*

Be sure to preview the reader Overview Chart on page 4, the reader itself, and the teaching suggestions on the following pages. This information will help you determine how to plan your schedule for reader selections and activity sessions.

Reading for information is a key literacy skill. Use the following ideas as appropriate for your teaching style and the needs of your students. The After Reading section includes an assessment and writing links.

OVERVIEW

The Delta Science Reader *From Seed to Plant* introduces students to the life cycle of a plant. Students read about the different 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.

Students will

- ▶ compare characteristics of seeds
- ▶ discuss the different parts of seeds and plants
- ▶ find out what plants need to grow
- ▶ identify the stages in the life cycle of a plant
- ▶ interpret photographs and diagrams
- ▶ recognize parts of a book
- ▶ discuss the functions of a table of contents, headings, and a glossary
- ▶ organize information

READING IN THE CONTENT AREA SKILLS

- Recognize cause-effect relationships
- Compare and contrast the different functions of plant parts
- Draw conclusions about what plants need to grow
- Ask questions to improve comprehension
- Complete a two-column chart
- Demonstrate critical thinking
- Summarize information

NONFICTION TEXT ELEMENTS

From Seed to Plant includes a table of contents, headings, photographs, diagrams, labels, boldfaced terms, and a glossary.

CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *flower, fruit, leaves, life cycle, new plant, roots, seed, seed coat, seed food, seedling, shoot, sprout, stem.*

BEFORE READING

Build Background

Access students' prior knowledge by discussing seeds that students are familiar with, such as apple seeds, sunflower seeds, acorns, beans, and so on. Ask, *Where might you find seeds?* (in the grocery store, inside some foods, on the ground)

To stimulate additional discussion, ask questions such as these: *Have you ever planted a seed? What happened?*

Ask, *Have you ever wondered what makes a plant grow? What else have you wondered about plants or seeds?* On the

board or chart paper, draw a two-column chart labeled *Questions* and *Answers*. As students raise questions about the subject, write them in the column labeled *Questions*. Tell students that the book they are about to read will probably answer some of their questions. Tell them, *As we read, raise your hand if you hear the answer to one of these questions or if you think of a new question you would like to add to our chart.*

?	!
Questions	Answers

Preview the Book

Ask students to look at the picture on the front cover of the book. Ask, *What do you see in this picture?* Point to the word *Seed* in the book's title. Ask, *What letter does this word start with? What sound does that letter make? What word have we been talking about that starts with the /s/ sound?* Do the same for the word *Plant*, and then read the book title aloud. Ask, *What do you think this book will be about?* (how a seed grows into a plant)

Flip through the book and briefly discuss the photographs. Ask, *Have any of these pictures made you think of any other questions we could add to our chart?* Record any additional questions on the chart.

Have students turn to the table of contents. Explain that the table of contents is a list that tells what is written in the book. Ask, *What do you notice about this page?* Give students a few minutes to share their observations. Point to the first three headings in boldface type and explain that the book is divided into three parts: Think About . . . , People in Science, and Did You Know? Read aloud the headings listed in the Think About . . . section and note that they are in the form of questions. Ask,

Where do you think you might find the answers to these questions? Point to the page numbers listed after each heading. Explain that each number tells the page on which they will find information about each question.

Point to the word *Glossary* at the bottom of the page and read it aloud. Tell students that a glossary is a list of words and their meanings. Have students turn to the glossary at the back of the book. Explain that the words in the glossary are important words that they will need to learn in order to understand the information in the book. Tell them, *In the book, these words are printed in dark print. The dark print tells you that you can find out what the word means by looking in the glossary.* Suggest that students look for these words as they read the book *From Seed to Plant*.

Preview the Vocabulary

You may wish to preview specific vocabulary words before reading rather than waiting to introduce them in the context of the book. To discover students' prior knowledge of these vocabulary words, read aloud each word and ask, *What does this word make you think of?* Briefly discuss the connections that students make. You may also need to point out that some words, such as *shoot*, have more than one meaning. Explain that students will learn more about each word as they read the book.

Other possibilities for previewing vocabulary include creating a word wall, vocabulary or picture cards, sentence strips, or a concept web.

For example, you might encourage students to cut pictures from seed catalogs or magazines to illustrate their own sets of word cards. They can use their cards to quiz each other on the word meanings or to play sorting or matching games.

Set a Purpose

Tell students to think about what they have seen and talked about as they have previewed the book's cover, pictures, table of contents, and vocabulary words. Ask, *What kinds of things do you think you will learn about as you read this book?* Use students' predictions to set an overall purpose for reading.

GUIDE THE READING

Preview the book yourself to determine the amount of guidance you will need to give for each section. Depending on your schedule and the needs of your class, you may wish to consider the following options:

- **Whole Group Reading** Read the book aloud with a group or the whole class. Encourage students to ask questions and make comments. Pause as necessary to clarify and assess understanding. Encourage students to find the answers to the questions on the two-column chart and to add new questions as they arise.
- **Shared Reading** Pair readers with nonreaders and have them read the book together. Ask students to pause after each text section. Clarify the text as needed. Discuss any questions that arise or have been answered.
- **Independent Reading** Some students may be ready to read independently. Instruct them to pause at designated stopping points, and have them rejoin the class for discussion. Check understanding by asking students to explain in their own words what they read.

Tips for Reading

- If you spread out the reading over several days, begin each session by reviewing the previous day's reading and previewing what will be read in the upcoming session.
- Begin each text section by reading aloud the heading. Discuss what students expect

to learn, based on the heading. Briefly discuss the photographs and diagrams in the section, and read aloud the labels.

- Help students use context and picture clues to figure out the meanings of words in boldface type. Demonstrate how to look up the words in the glossary and help students read their meanings.
- As appropriate, model reading strategies students may find helpful for nonfiction: making personal connections, asking questions, visualizing, making inferences, self-correcting.

Think About . . . (pages 2–12)

Pages 2, 3 *What Is a Seed?*

- Have students look at the photographs on page 2. Point to the photograph of the trees and ask, *What are these?* (trees; if necessary, point out that a tree is a very large plant) Do the same for the photograph of the acorns. Ask, *Why do you think there is a picture of acorns next to the picture of the trees?* (Students may suggest that the trees grew from acorns.) Follow the same procedure for the photographs of dandelions and their seeds.
- Read aloud the heading. Ask, *Who knows what a seed is?* (Accept all reasonable ideas.) Tell students to listen to find out if their ideas are right.
- Read aloud the text on page 2. Tell students that the acorns and the dandelion seeds are different kinds of seeds. Ask, *Is an acorn the same size as a dandelion seed? Is it the same shape or color?* (Encourage students to share all their observations from the photographs and personal experience.) Briefly discuss other seeds that have different sizes, shapes, or colors.
- Tell students that they will find out more about seeds as they keep reading. Read aloud page 3.

- Point to the words *seed coat* and read the words aloud. Ask, *Where else on this page do you see these words?* Have a volunteer point to the label on the diagram. Ask, *What does the seed coat do?* (keeps the seed safe) *Do you wear a coat in the wintertime? Why?* (Students may suggest that their coats keep them warm and dry.) *How do you think your coat is like the seed coat?* (Accept all answers.)
- Point to the words *new plant* and read the words aloud. Ask, *Do you see these words somewhere else on the page?* Have a volunteer point to the label. Ask, *What do you think the new plant will do?* (grow into a large plant)
- Point to the label *seed food*. Ask, *Do you recognize either of these words?* Encourage students to read the words aloud. Ask, *What do you think the seed food does?* If necessary, explain that all living things need food in order to grow. The new plant will live on the seed food until it grows big enough to make its own food.
- Point out that the words *seed*, *seed coat*, *new plant*, and *seed food* are printed in dark print. Ask, *Do you remember what is special about the words that are printed in dark print?* Have students turn to the glossary and find the words. Read aloud the meaning for each term.
- Review the questions you listed on the two-column chart before reading. Ask, *Think about what we have read so far. Can you answer any of these questions now? Do you have any new questions?* Record students' responses in the chart.

Pages 4, 5 *How Do Seeds Grow?*

- Direct students' attention to the first photograph on page 4. Ask, *What do you think this is?* (a seed) Ask, *What do you think this seed will grow into?* (a plant)

- Have students look at the four pictures on pages 4 and 5. Ask, *What is happening in these pictures?* (A seed is changing into a small plant.) *When a seed starts to grow into a plant, we say that it sprouts.*
- Point out that the *root* is the part of the plant that grows underground and the *shoot* is the part that grows above ground. *Look at the pictures. Who can find the root? Who can find the shoot?* Have a volunteer point out each part.
- Confirm students' guesses by having them listen as you read pages 4 and 5 aloud.
- Ask, *Why do you think the roots grow downward? Why do you think the shoots grow upward?* Tell students that they will find out the answers to these questions as they read ahead.
- Add answers and new questions to the two-column chart on the board, as appropriate.

Pages 6, 7 What Are the Parts of a Plant?

- Ask, *Have you ever seen the roots of a plant? When?* Briefly discuss students' experiences.
- Looking at page 6, ask, *What are the people in this picture holding?* (a plant with roots) Help students identify the roots in the root ball. Ask, *Why do you think that plants have roots?* Tell students that they will find out as you read the page.
- Ask, *What do you think will happen to these roots as the plant grows bigger?* (They will grow, too.) Point out that the larger a plant grows, the more roots it needs to take in water and help it stand up.
- Help students identify the pictures on page 7. Point out that each picture shows the stem of a different plant. Ask, *What do you think the stem does for a plant?* Then read aloud page 7.

Pages 8, 9

- Have students look at pages 8 and 9. Have a volunteer point to the words in dark print. (*leaves* and *flowers*) Ask, *What do you remember about words that are in dark print?* (They are listed with their meanings in the glossary.) Remind students that the words in the glossary are important words that students need to know to understand the information in the book. Ask, *Why do you think leaves and flowers are important?* Briefly discuss students' ideas.
- Read page 8. Ask, *What job do leaves do for a plant?* (make food) *What do leaves need to make food?* (sunlight) You may wish to explain that leaves also need water and food from the soil to make food for the plant.

(Leaves contain a green substance called chlorophyll. Chlorophyll absorbs sunlight. Plants use energy from sunlight to combine water and carbon dioxide to make food for the plant. The plant gives off oxygen. This process is called photosynthesis.)

- Read page 9. Ask, *What do flowers do?* (Flowers help plants by making seeds.)
(Fruits and seed pods can also grow from flowers. Seed pods are actually hollow fruits, or seed cases, that contain seeds. A plant's seeds can be contained in flowers, fruits, or seed pods. The seeds of evergreen trees are found in cones.)
- Point out that seeds grow in different forms on different plants. List several familiar plants, such as apple trees, pea plants, corn, dandelions, and sunflowers. Ask, for example, *Where do you think the seeds grow on an apple tree?* (inside the apples) *Where do you think the seeds grow on a corn plant?* (on the ear of corn) *Where do you think the seeds grow on a sunflower plant?* (in the middle of the flower) For sunflower seeds, you may wish to direct students to the photograph on the cover of the book.

- Review the questions you listed on the two-column chart before reading. Ask, *Think about what we have read so far. Can you answer any of these questions now? Do you have any new questions?* Record students' responses in the chart.

Pages 10, 11 *What Is a Plant Life Cycle?*

- Read aloud page 10 and have students look at the diagram on pages 10 and 11. Ask students why they think there are arrows connecting the pictures. (Students may know that the arrows show the order in which things happen.) Have them trace the direction of the arrows around the circle of pictures.
- Have students put their fingers on the picture of the seed, and read aloud the label. Then have them follow the arrow to the next picture. Ask, *What is happening to the seed in this picture?* Read aloud the picture label. Follow the same procedure for each picture in the cycle diagram. If necessary remind students of the meanings of the terms *root, shoot, sprout, stem, leaves*, and so on. They may use these and other vocabulary words to describe the pictures.
- Tell students that the diagram shows the life cycle of a plant. Point to the picture showing the plant with seeds. Ask, *Where are the seeds on this plant?* (inside the seed pods) *If this was an apple tree, where do you think the seeds would be?* (inside the apples)

Page 12 *What Do Plants Need to Grow?*

- Before turning to page 12, ask, *Have any of you ever grown a plant in a flower pot or a garden?* Briefly discuss students' prior knowledge about growing plants.

- On the board or chart paper, draw a simple flower in a flower pot. Ask, *What do you think plants need to grow?* Write students' suggestions around the picture of the plant.
- Read aloud page 12. Ask, *What does a plant need to grow?* Revise or add to the list on the board as necessary. Students should understand that plants need sunlight, soil, and water in order to grow. (In addition, plants need food, or nutrients, from the soil. They also need some of the gases in air.)

People in Science

Page 13 *Gardeners*

- Direct students' attention to the photograph on page 13. Ask, *What is this boy doing?* (watering a garden)
- Read aloud page 13. Ask, *Have you ever worked in a garden like this? What did you do? What kinds of plants did you grow?* Allow ample opportunity for students to share their experiences.
- Ask, *What kinds of plants grow in gardens?* (flowers, fruits, vegetables) Invite students to tell about their favorite kinds of flowers, fruits, and vegetables. Ask, *Why are the plants that grow in gardens important?* (Accept all reasonable ideas. The food from garden plants is good to eat. Fruits and vegetables help you grow strong and healthy. Flowers are pretty to look at.) Students may also know that trees provide wood for buildings and furniture, and that paper is made from wood.
- Ask, *What jobs does a gardener need to do?* (Students' suggestions might include preparing the soil, planting the seeds, watering, weeding, harvesting, and so on.) *What is the boy in the photograph using to water his garden?* (a hose) *What other kinds of tools might a gardener need?* (From

personal experience, students may suggest a shovel, a hoe, a rake, a trowel, a watering can, and so on.)

Did You Know?

Pages 14, 15 *How Seeds Travel*

- Refer students back to the photograph of the garden on page 13. Ask, *How did the plant seeds get into this garden?* (The boy or someone else planted them there.) Point out that not all seeds are planted by people.
- Help students identify the photographs on pages 14 and 15. (dandelion seeds, a coconut floating in the water, a squirrel eating an acorn, a bird eating a berry) Point out that the pictures show different ways that seeds travel to the places where they will grow into plants.
- Read the title and first sentence (*Some fly in the air.*). Ask, *What is attached to these seeds?* (fluff) Explain that the fluff acts like little parachutes that help the seeds float in the wind.
- Read the second sentence. Point out that the coconut is one of the largest seeds on Earth. Explain that seeds that fall into lakes, rivers, or the ocean can travel far distances before reaching the land (soil) in which they will grow.
- Read aloud the third sentence and discuss the photograph. Ask, *Have you ever seen a squirrel eating, burying, or digging up a nut?* Have students look at the fourth picture. Ask, *What other animals might spread seeds?* (Accept all reasonable ideas. Students may suggest that birds or larger animals like raccoons or deer sometimes spread the seeds.)
(Some of these animals eat fruits and pass the seeds in their waste.)
- Tell students that people, too, help seeds travel from one place to another. Ask, *What kinds of seeds are in foods that*

you eat? Have you ever thrown away the core of an apple or the seeds of an orange? What do you think happens to those seeds? Point out that people can spread seeds by carrying fruits and vegetables from one place to another.

- You might also wish to point out that some seeds, such as burrs, have tiny hooks on them that cling to animals' fur and people's clothing. Ask, *Have you ever found a seed stuck to your sock or pant leg?*
- Invite students to think of other ways that a seed might travel from the plant where it was made to the place where it will grow into another plant.

AFTER READING

Summarize

Read aloud any unanswered questions on the two-column chart you began before reading. Ask students to think about what they have read and answer the questions if they can. Ask, *Has reading this book made you think of other questions?* Record additional questions on the chart. Then ask, *Where do you think we might find the answers to the questions that we still haven't answered?* (Students may suggest books, magazines, the computer, or people who know about seeds and plants.)

Flip through the book one more time. Use the graphics on pages 3, 4–5, and 10–11 to help students summarize the information in each section.

Review/Assess

Use the questions that follow as the basis for a discussion of the book or for an oral assessment.

1. What is a seed? (what grows into a plant) If you split open a seed, what would you find inside? (seed food and a new plant)
2. When a seed begins to grow, we say that it sprouts. What happens when a seed

sprouts? (Roots grow down into the soil and a shoot grows up toward the sunlight.)

3. What do the roots of a plant do? (take in water and help the plant stand up) What does the stem do? (brings water up from the roots to the leaves) What do the leaves do? (make food for the plant) What do the flowers do? (help the plant grow new seeds)
4. What does a plant need to grow? (A plant needs soil, sunlight, and water. Some students may also mention food and air.)

Writing Links/Critical Thinking

Assign the following as writing assignments. Provide help as necessary.

1. Write the following words on the board: *roots, stem, leaves, flower*. Have students draw their favorite flower or other plant, including each part that is listed on the board. Help students label the parts on their drawings.
2. Bring in several seed packets, and discuss the information given on the envelope. Give students blank envelopes (8 in. × 10 in. or larger, if possible), and let them create their own seed packets. On the front of the envelope, have them draw a picture of the full-grown plant. On the back, help them draw and label pictures showing the seed, how to plant it, and what the plant will need in order to grow.

Science Journals: You may wish to have students keep the writing activities related to the reader in their science journals.

References and Resources

For trade book suggestions and Internet sites, see the References and Resources section of this teacher's guide.