

## Lesson 3: How are plants classified?

### How Plants Transport Water and Nutrients

One way biologists classify plants is by how they move food and water. For example, bamboo is a very tall plant. How do the cells at the top of this plant get food and water from the soil? Bamboo has tissues that make a system of tubes. Food and water move up and down these tubes. The tubes feed all the plant's organs—its leaves, stems, and roots. Plants that move food and water through tubes are called vascular plants. Grass, celery, and trees are all vascular.

Vascular tissue also supports a plant's stem and leaves. This helps vascular plants to grow larger.

### More Down-to-Earth Plants

Plants that do not move food and water through tubes are called nonvascular plants. These plants don't have real roots, stems, or leaves. They can only pass food and water from one cell to another. The food and water do not travel very far or quickly. Nonvascular plants are usually small. They can grow so close together that they look like one plant. Most live in moist places.

Mosses are nonvascular plants. They look like a green mat. They can live in cold places. Mosses do not have true stems or leaves. They can make their own food.

Hornworts are another kind of nonvascular plant. Like mosses, they don't have true stems or leaves. They live in warm places.

The liverwort is a nonvascular plant. It grows on rocks or near streams.

### How Plants Make New Plants

Another way biologists classify plants is by how they make new plants. Plants that have flowers make seeds. A seed has many cells. A young plant sits inside the seed. The seed protects this plant. A cactus, fruit tree, and a poppy are all flowering plants.

Some plants make seeds but do not have flowers. These plants are called conifers. Conifers grow cones that have seeds in them. Most conifers are evergreen plants, like pine trees. They keep their leaves, or needles, all year long.

Plants like ferns and mosses do not make seeds. They make tiny cells that can grow into new plants. The cells are called spores. They are different sizes and shapes. Each spore is made of one cell that has a cell wall. A spore gets its food in wet and shady places. Ferns produce spore sacs on the underside of its leaves. These sacs look like brown dots. In mosses, spores are in cases. Each spore case has hundreds of spores.

Both seeds and spores can grow into new plants. Both seeds and spores can be many different sizes and shapes. But a seed has many cells, while a spore is one cell. A spore needs to get nutrients to grow. A seed has a young plant and stored food inside its cover.

# Lesson 3 Checkpoint

1. What are some examples of vascular plants?

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2. What are conifers?


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3. Name one way of classifying plants into two groups.

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4.  **Compare and Contrast** How are seeds and spores alike? How are they different?

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