Chestnut Word Bank

Check the box when you find a word in the reading. Tags show where to look: **[2016]** Part 1 **[2026]** Part 2 **[BOTH]** either

Name: _____ Date: _____ Class: _____

The tree and its forest

- ☐ **Deciduous** [2016] A tree that drops all its leaves each autumn and grows new ones in spring. A deciduous forest is made mostly of these trees.
- ☐ **Diameter** [2016] The distance straight across a circle, passing through its center. For a tree, it is the width of the trunk.
- ☐ **Hardwood** [2016] Wood from broadleaf trees such as chestnut, oak, and maple. The name describes the kind of tree, not always how hard the wood is.
- ☐ **Canopy** [BOTH] The top layer of a forest, made by the leaves and branches of the tallest trees.
- ☐ **Keystone species** [2016] A species that many other living things in an ecosystem depend on. When it disappears, the whole community changes.
- ☐ **Mast crop** [2016] The nuts and seeds that trees produce in large amounts, which wildlife rely on for food.
- ☐ **Carbon sequestration** [2016] Pulling carbon dioxide out of the air and storing the carbon, for example in wood and roots. Fast-growing trees with long-lasting wood can store a lot.
- ☐ **Pollen** [2026] The tiny grains made by flowers that carry the male cells needed to make seeds. Wind and insects move pollen from tree to tree.

The problem

- ☐ **Blight** [BOTH] A plant disease that kills tissue and can destroy whole trees. Chestnut blight is caused by a fungus.
- ☐ **Fungus** [BOTH] A living thing that is neither plant nor animal. Many fungi are harmless or helpful, but some cause plant diseases.
- ☐ **Pathogen** [BOTH] Anything that causes disease, such as a fungus, virus, or bacterium.
- ☐ **Canker** [2016] A dead, sunken patch on bark or a stem where a fungus has killed the tissue.
- ☐ **Exotic (introduced) species** [BOTH] A species that has arrived in a place where it did not evolve, usually carried there by people. It may meet no natural enemies in its new home.
- ☐ **Bio-control** [2016] Using one living thing to hold another in check. In the 2016 article, it means a virus that slows the growth of the blight fungus.

Genetics

- ☐ **Gene** [BOTH] A segment of DNA that carries instructions for building something an organism needs, such as a protein.
- ☐ **Genome** [BOTH] An organism's complete set of DNA, including all of its genes.
- ☐ **Gene expression** [2026] How and when a gene's instructions are actually used by a cell. A gene can be present but switched off.
- ☐ **mRNA transcript** [2026] A working copy of a gene's instructions, made so the cell can build a protein from them.
- ☐ **Heritable** [2026] Able to be passed from parents to offspring. A trait that is heritable can be bred into the next generation.
- ☐ **Progeny** [2026] Offspring. The young plants or animals that come from a cross.
- ☐ **Wild-type** [2016] The natural, unmodified form of an organism, used as a comparison for modified versions.
- ☐ **Mutation** [2016] A random change in an organism's DNA. Some mutations do nothing, some cause harm, and a few turn out to help.
- ☐ **Genetic diversity** [2016] The variety of genes within a species. More variety gives a species more ways to cope with disease and changing conditions.
- ☐ **Natural selection** [2016] The process in which individuals with helpful traits survive and have more offspring, so those traits become more common over time.
- ☐ **Horizontal gene transfer** [2016] The movement of genes between different species, instead of from parent to offspring. The 2016 article says it happens in nature.

Chestnut Word Bank (continued)

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Name: _____ Date: _____ Class: _____

Methods

- ☐ **Hybridization [BOTH]** Crossing two related species or varieties to produce offspring that combine traits from both parents.
- ☐ **Backcross [BOTH]** Crossing a hybrid back to one of its parent types, again and again, so the offspring look more like that parent while keeping a useful trait. *The 2026 article describes this step as "recross."*
- ☐ **Genetic engineering and genetic transformation [BOTH]** Using laboratory methods to move a gene into an organism or to change one of its genes.
- ☐ **Transgenic [2016]** Containing a gene that came from a different species.
- ☐ **Gene editing and CRISPR [2026]** Tools that change specific pieces of an organism's own DNA, like finding and correcting a word in a very long book.
- ☐ **Genome-guided breeding [2026]** Using DNA information to predict which young trees will resist disease, so breeders do not have to wait years to see the results.
- ☐ **Omics [2026]** Studying all of an organism's genes, transcripts, and proteins together, instead of one at a time.
- ☐ **Gene stacking [2016]** Putting several different resistance genes into one tree so that, if the disease overcomes one, others still protect it.
- ☐ **Tissue culture [2026]** Growing plant cells or shoots in a lab, in clear tubes with nutrients, so scientists can work with them.

The OXO story

- ☐ **Enzyme [2016]** A protein that speeds up a chemical reaction without being used up.
- ☐ **Oxalic acid and oxalate [BOTH]** A chemical the blight fungus produces and uses as a weapon to break down and kill the tree's tissue.
- ☐ **Oxalate oxidase (OXO) [BOTH]** An enzyme from wheat that breaks down oxalic acid. Scientists added its gene to chestnut trees to defuse the fungus's weapon.
- ☐ **Gall [2026]** An abnormal lump or swelling that grows on a plant.

Testing and rules

- ☐ **Field trial [2026]** Testing plants outdoors, under real conditions, instead of in a lab or greenhouse.
- ☐ **Containment [2026]** Keeping modified plants, including their pollen and seeds, from spreading beyond a study site.
- ☐ **Regulatory review [BOTH]** When government agencies study a new product or organism and decide whether it is safe to release.
- ☐ **Certification [2026]** A label, such as the Forest Stewardship Council's, telling buyers that wood was produced under a certain set of rules.
- ☐ **Unintended consequences [2016]** Side effects that nobody planned for or expected. Good scientists look for them on purpose.

My word hunt

I found _____ of 43 words in the reading.

Words I want to ask about or look up:

Write Your Own Sentences

Name: _____ Date: _____ Class: _____

Choose 8 words from the Word Bank. Pick at least one tagged **[2016]** and at least one tagged **[2026]**. Write a sentence for each word that **shows what it means**. A definition by itself does not count.

A model sentence

The deciduous trees in our neighborhood are bare by December.

Stuck? Try a starter

I know this is ___ because... Without ___, researchers would... A ___ is different from a ___ because...

1. **Word:** _____ _____

2. **Word:** _____ _____

3. **Word:** _____ _____

4. **Word:** _____ _____

5. **Word:** _____ _____

6. **Word:** _____ _____

7. **Word:** _____ _____

8. **Word:** _____ _____

Challenge (optional)

Write two or three sentences about the chestnut story that use at least three of your words. Underline each one.

_____

_____

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