



Our planet is four thousand miles deep. The soil on top of our planet can be just a few feet or a few inches deep. But all life on land depends on that thin skin of soil. Plants take root and grow in soil, and plants feed all life. Some animals only eat plants. Other animals eat animals that eat plants.

It's no wonder that our whole planet takes its name from the soil, otherwise known as *earth*. Let's just be grateful that we don't live on the planet Dirt.

Learn more about the soil in this quiz, in which you unearth the meanings of a few words by looking at their common roots.

P	D	E	I	O	M	I	C	R	O	B	E
D	I	I	O	N	I	I	A	U	A	L	D
U	U	N	R	E	C	L	I	N	E	Q	E
R	C	R	C	R	R	L	T	R	R	L	C
A	O	L	A	R	O	I	I	A	O	O	O
B	Y	I	M	T	B	S	T	N	M	B	M
L	H	N	M	I	I	I	C	M	E	E	P
E	O	A	O	O	O	O	O	O	R	T	O
S	N	T	N	N	L	N	N	F	P	L	S
E	I	C	O	M	O	E	W	K	U	E	E
C	B	O	S	L	G	L	C	L	L	E	L
L	S	N	E	L	Y	L	V	K	L	L	L

Find these ten words. They go across, down, or diagonally. Some are spelled backwards. Helpful tip: Look first for common roots.

durable, duration, common, decompose, microbe, microbiology, antibiotic, biofuel, incline, recline

ROOT WORDS

Scientists use the word *dirt* for the mineral part of soil—crumbled rocks. By *soil*, they mean a mixture of minerals, air, water, rotting plants and roots, and billions of living things. Dirt is sometimes lifeless. Soil is always alive.

Strangely, *soil* got its name from only one living thing. In the Old French language, a *soil* was a wallow for pigs—the place where they went to cool down.



There's a new exhibition on soil at the Smithsonian's National Museum of Natural History in Washington, D.C. It's called **Dig It! The Secrets of Soil**. An online version is at forces.si.edu/soils.

1. One ingredient of soil is rock, crumbled into tiny pieces. Rock is the most **DURABLE** stuff in the natural world. So what causes it to crumble? Weather, for one thing—wind, rain, changes of temperature. The breakdown doesn't happen overnight, but over a **DURATION** of thousands of years.

the root **DUR** means
a. to crumble
b. to break
c. to last

2. Soil is also **COMPOSED** of living things, and living things that have died. Living and dead work in **COMMON** cause. Living things **DECOMPOSE** dead plants and animals by feeding on them. This puts nutrition into the soil so that new plants can grow.

the root **COM** means
a. together
b. apart
c. alive

3. There are more living things in one spoonful of soil than there are people in the world. Most of those living things are **MICROBES**, such as bacteria, which can only be seen with a **MICROSCOPE**.

the root **MICRO** means
a. living in soil
b. very large
c. very small

4. A **MICROBIOLOGIST** can find amazing **BIOGRAPHIES** in that spoonful of soil. Some soil microbes can produce **ANTIBIOTICS**, medicines that kill harmful germs. Some can produce ethanol, a **BIOFUEL**.

the root **BIO** means
a. science
b. life
c. health

5. Of course, pigs are not the only ones **INCLINED** to **RECLINE** in the soil.

the root **CLIN** means
a. lean toward
b. stand up
c. flee from



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Answers: Visit SmithsonianEducation.org/Root