

INVESTIGATION:
**“The Nation that Destroys its Soil...”
a Letter from the President**

Time: 5 minutes reading, 25 minute video or 5-10 minute slideshow on the Dust Bowl. 10-20 minutes writing and/or small-group discussion, 15-30 minutes class discussion

Grade Levels: 4th through Adult

Summary: In 1937, Franklin D. Roosevelt (FDR) used the phrase “The Nation that destroys its soil destroys itself.” This quote has become a powerful reminder that the lowly soil carbon sponge is literally holding society together and making life possible on land.

FDR wrote this phrase in a letter about soil conservation districts being set up in response to catastrophic flooding and dust storms. This soil conservation effort has had both successes and failures, but today’s soil health movement, and the soil health principles, are descendants of the soil conservation movement that began in 1937.

Participants read FDR’s letter and watch a video or slideshow history of the Dust Bowl. Then—either in writing or in small groups—they share their ideas on FDR’s quote, causes of the Dust Bowl, and the societal importance of soil aggregate structure, before engaging in a large group discussion.

Materials:

- ✓ Worksheet: “*The Nation that Destroys its Soil...*” *A Letter from the President* (Original available online at <http://www.presidency.ucsb.edu/ws/?pid=15373>.)
- ✓ Pencils
- ✓ Paper or notebooks
- ✓ Projector
- ✓ Slides of Dust Bowl (If you do an image search for “Dust Bowl” and for “flooding during the Dust Bowl” on Google you will find lots of images.)
- ✓ Video (optional for class, but I suggest that the facilitator watch it): *The Plow that Broke the Plains*. View online at <https://archive.org/details/gov.fdr.352.2a.1> or purchase (with soundtrack) at <https://www.amazon.com/Broke-Plains-Gil-Ordonez-Post-Classical-Ensemble/dp/B000L42J5E/>



Goals: Participants will be able to:

- Reflect on the essential role of soil aggregates and the soil carbon sponge for humans and other living things
- Have a visual image of flooding and dust storms in the 1930s
- Connect flooding and dust storms of the 1930s to the destruction of soil aggregate structure

Assessment: Completion of worksheet questions, with answers that show participant’s understanding and thinking process.

Additional Resources

Books/Articles

Children of the Dust Bowl: The True Story of the School at Weedpatch Camp by Jerry Stanley

Out of the Dust (Newbury Award Winner) poems by Karen Hesse

The Dust Bowl book of photos and primary source materials by Ken Burns (accompanies the video), available on Amazon

Conquest of the Land Through 7000 Years, a 28-page report by W.C. Lowdermilk, about parallels between failed civilizations and destruction of topsoil. PDF available online at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1043789.pdf

Videos:

The Plow that Broke the Plains (26 min) View online at <https://archive.org/details/gov.fdr.352.2a.1> or purchase (with soundtrack) at <https://www.amazon.com/Broke-Plains-Gil-Ordenez-Post-Classical-Ensemble/dp/B000L42J5E/>

The Dust Bowl, multi-part PBS documentary video (and book) by Ken Burns, available on Amazon

Websites:

“30 Facts about the Dust Bowl for Kids” <http://www.american-historama.org/1929-1945-depression-ww2-era/dust-bowl.htm>

PBS’s Dust Bowl interactive website with photos, interactive videos, and more. <http://www.pbs.org/kenburns/dustbowl/>

“Dust Storms” Wikipedia page for general and more current information on dust storms. https://en.wikipedia.org/wiki/Dust_storm

Additional Curricula:

<http://www.pbs.org/kenburns/dustbowl/educators/overview/>



EDUCATIONAL STANDARDS

Next Generation Science Standards

Science and Engineering Practices:

Engaging in Arguments from Evidence

Disciplinary Core Ideas:

LS2.C Ecosystem Dynamics, Functioning, and Resilience

ESS2.A Earth Materials and Systems; **ESS2.E** Biogeology; **ESS3.C** Human Impacts on Earth Systems

Crosscutting Concepts:

Structure and function, Stability and change, Influence of Engineering, Technology, and Science on Society and the Natural World

Common Core State Standards

SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

RI 9-10.9 Analyze seminal U.S. documents of historical and literary significance.

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

L.9-10.5 and L.11-12.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

RI.11-12.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.



Activity

Dust Bowl history slideshow or video (two options)

Slideshow: Bring up a few images of dust storms and flooding from the 1930s on a projector. If you are not planning on showing the video, give a short history of the transition from native prairies to an agricultural system based on tillage.

Video (26 minutes): Watch *The Plow that Broke the Plains*. View online at <https://archive.org/details/gov.fdr.352.2a.1>

Reading

Ask participants to read the letter from Franklin D. Roosevelt on the worksheet: *“The Nation that Destroys its Soil...” a Letter from the President.*

Reflection (writing assignment and/or small group processing)

Participants take 15-30 minutes to reflect on the questions attached to the worksheet. You can have them do this in writing, and/or ask them to take turns thinking out loud in small groups (using a timer or a talking stick to take turns). The worksheet questions are:

1. *At the time that this letter was written, what do you think the structure of the soil was like in the areas that were suffering from dust storms and flooding—more like bread or flour? Were the soils well-aggregated or poorly aggregated?*

⇒ Answer: the soil was more like flour—poorly aggregated.

2. *President Roosevelt seems to be implying that humans created this situation, and that humans can improve it. Many of the problematic areas used to be native grasslands (prairies, plains) that were plowed up and turned into farmland. What do you think that did to the structure of the soil, and to the living ecology of the soil, and how do you think it contributed to these events?*

⇒ Answers could include (but are not limited to):

- broke apart the soil aggregates
- exposed microorganisms to high temperatures which killed them off
- compacted the soil and created a plow pan so rain couldn't enter
- compacted the soil so oxygen wasn't available to underground life
- took living roots out of the soil so there was nothing to feed the mycorrhizal fungi that help to create soil aggregate structure
- removed the plants that shielded the soil surface from the impact of raindrops and therefore sealed it off from further rain entering,
- removed plants that were providing shade for the soil, destroyed the deep root structure that was holding the soil in place



3. *Can you name at least one place where dust storms still happen these days?*
 ⇨ Answers could include: Oklahoma, Colorado, Kansas, Arizona, New Mexico, Texas, the Sahara Desert, the Gobi Desert, the planet Mars (!), and many other places...
4. *What sorts of problems are recent dust storms causing?*
 ⇨ Answers could include: loss of topsoil on farms leading to decreased productivity; dust settles on snow which then melts earlier due to loss of albedo effect, (reducing water availability in spring and summer in certain areas that depend on glacial melt); eye and lung problems; accidents from poor visibility when driving; spread of disease from airborne organisms (for example antibiotic resistant bacteria from feed lots are being inhaled by humans and animals downwind), and other issues.
5. *What do you think FDR meant when he said “The Nation that destroys its soils destroys itself?”*
 ⇨ Answers will vary. The basic idea is that healthy topsoil is at the center of civilization: we depend on it for food, fiber, fuel, clean abundant water, human health, thriving economies, and stable infrastructure.
6. *Why is healthy, living, well-aggregated soil (the soil carbon sponge) so important?*
 ⇨ Answers will vary. Participants should name at least two benefits of healthy soils, which might include things like: absorption and filtration of water, food production, soil’s role as a carbon sink, resilience against flooding, drought, runoff, wildfires, and dust storms.

Large group discussion

Go through the questions again as a large group. You may need to remind them what “well aggregated” means. Help direct participants to think back on the flour-versus-bread exercise, asking questions such as:

- › *Which kind of soil would be more likely to blow away in a dust storm—the soil that is like bread, or like flour?*
- › *Which kind of soil would be more likely to have flooding—the soil that is like bread or like flour?*

Brainstorm

Have participants brainstorm all the things that healthy soil can do for a society and for other living things.

A scribe should write all the answers on the board.



Depending on participants’ previous knowledge, answers may include: grow more food, fiber and fuel; absorb water; filter water; store carbon; create stability for infrastructure (houses, roads, bridges, pipelines, etc.); grow food with increased nutrient-density; create habitat for burrowing animals, birds, and insects, as well as liveable habitat for humans, plants, fungi, and microorganisms.

Wrap up

Have participants share the following:

- › *What did you learn and how do you feel about it?*
- › *What new questions did this leave you with?*

Ask them to write their questions on a sticky note or index card and give them to you. Use those questions to help guide your approach to the rest of the unit.