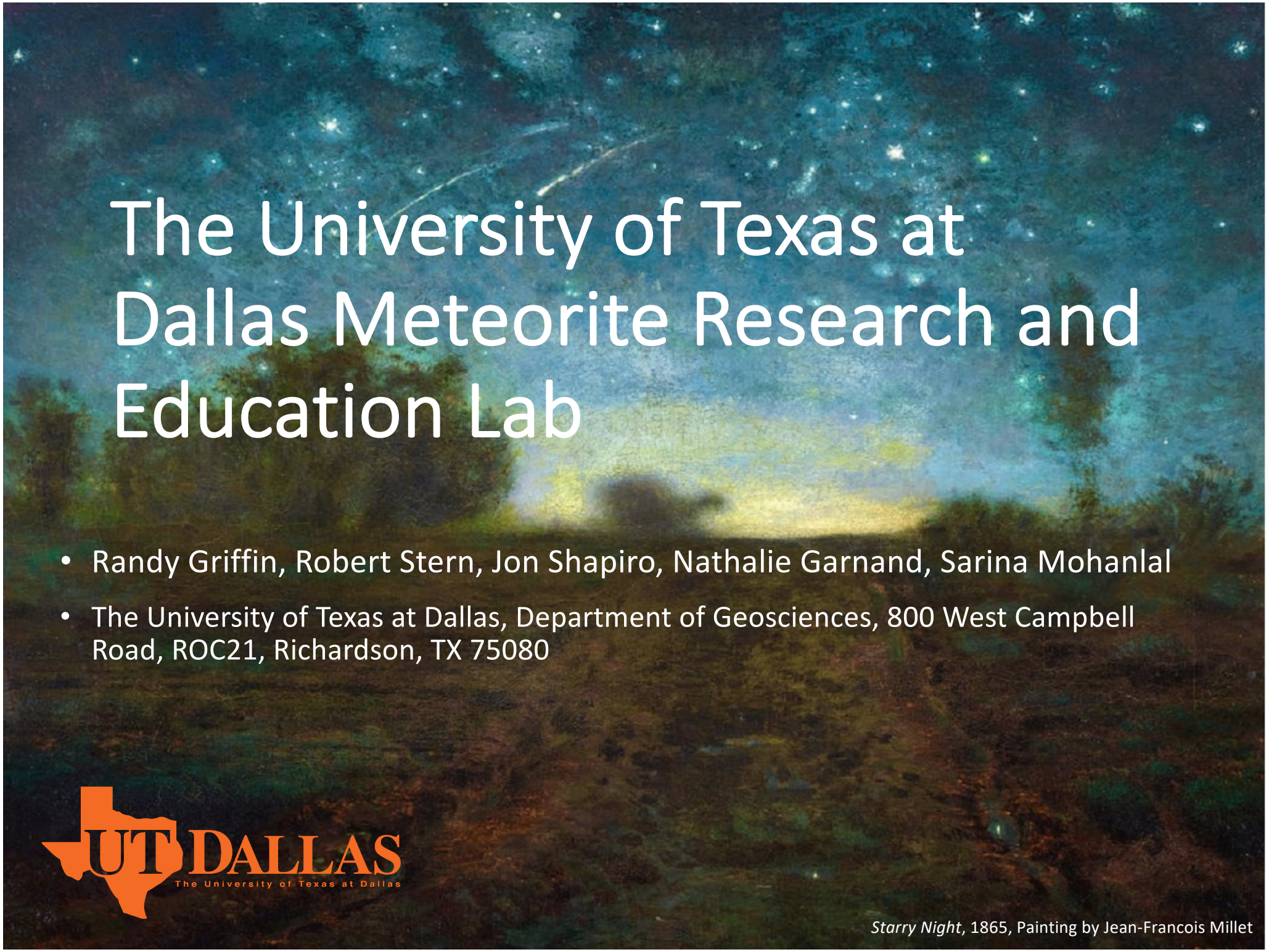
Griffin Projects

- The UTD Meteorite Research & Education Lab
  - Project well under way, been meeting in lab for a few months
  - GSA presentation South Central Section meeting in March introducing ourselves to the community
  - New Honors College class for Fall 2022 in development with Bob Stern
- Soil Science, a new class in development



The University of Texas at Dallas Meteorite Research and Education Lab

- Randy Griffin, Robert Stern, Jon Shapiro, Nathalie Garnand, Sarina Mohanlal
- The University of Texas at Dallas, Department of Geosciences, 800 West Campbell Road, ROC21, Richardson, TX 75080

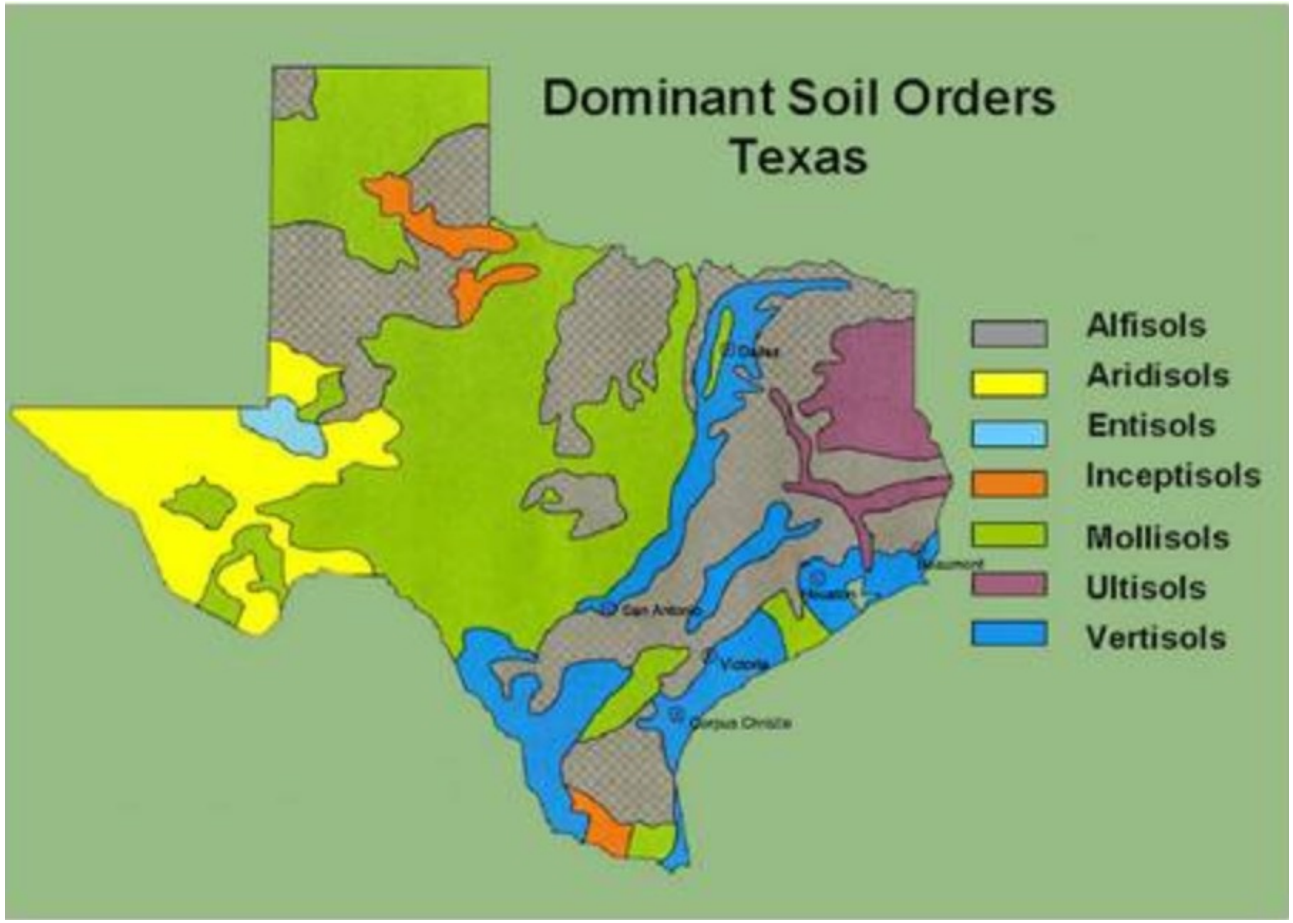
UT DALLAS
The University of Texas at Dallas

Starry Night, 1865, Painting by Jean-Francois Millet

Sustainable Earth: The Nature & Properties of Soils

A New Class

Randy Griffin

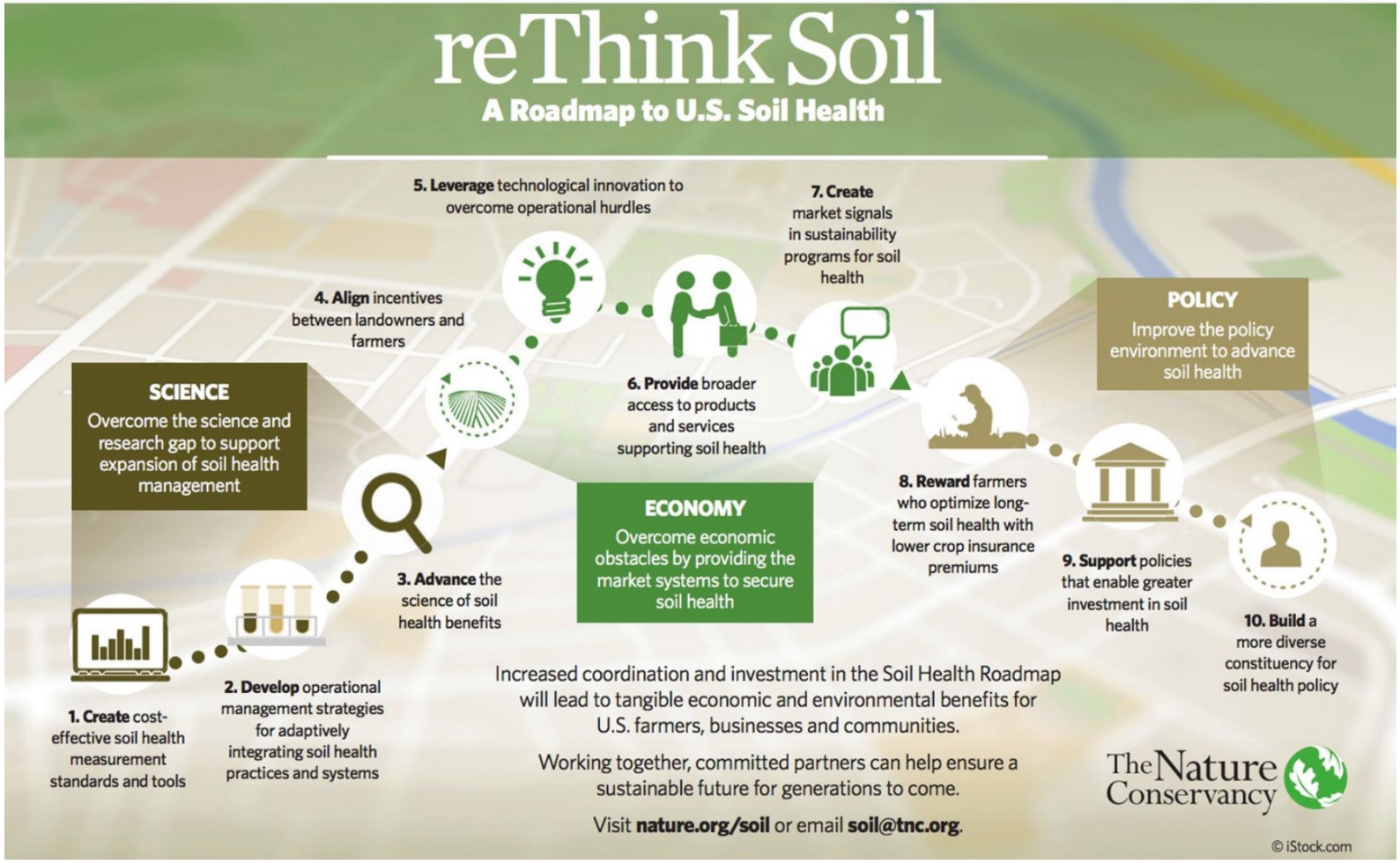


The Obvious Importance of Soils

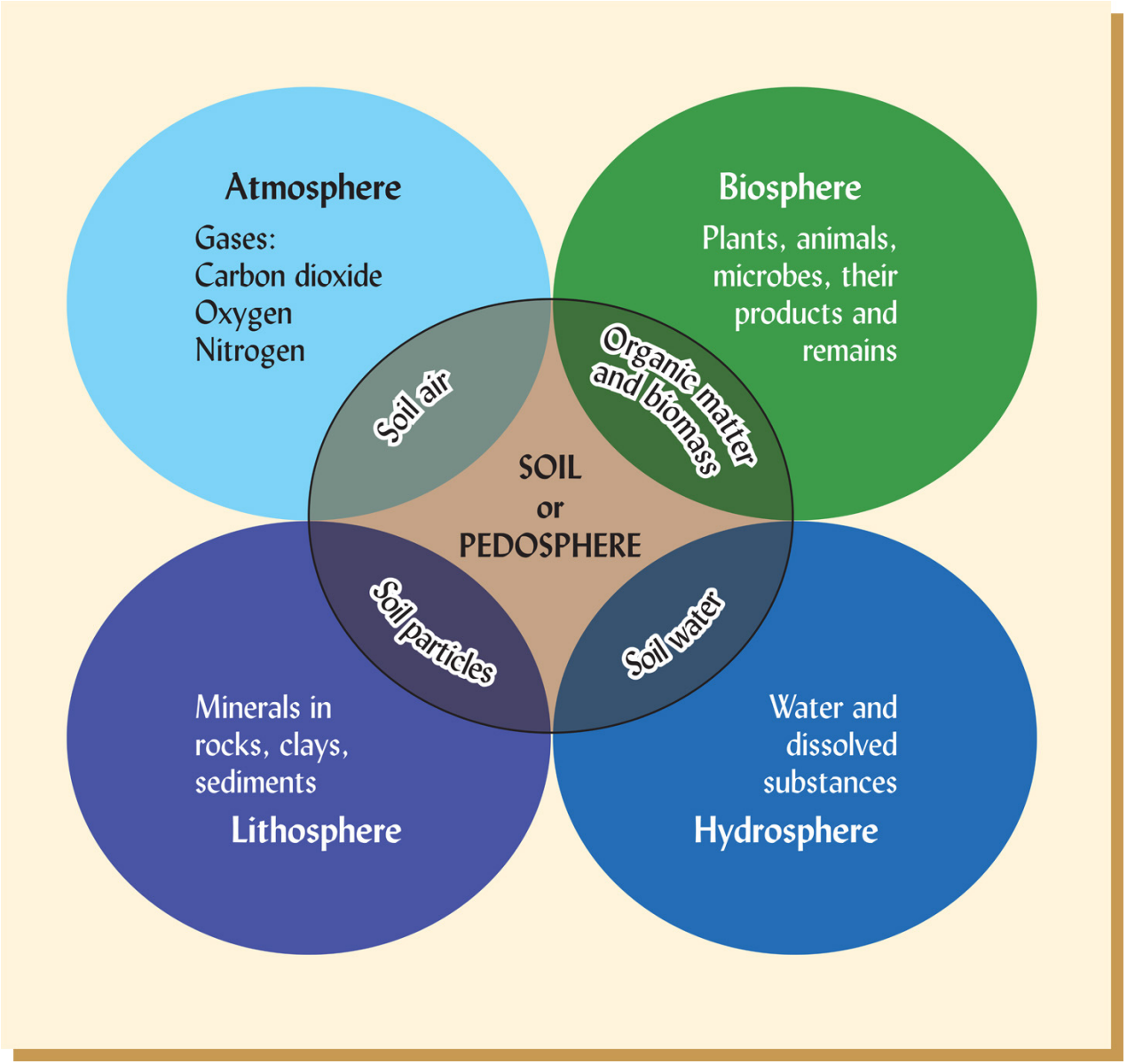
Farmers are among our greatest conservation allies. They **produce the crops that feed, fuel and clothe a growing world**, while caring for the lands and waters on which their livelihoods depend. As the **global population continues to grow**, farmers will be under increasing pressure to **produce even more crops without sacrificing the environment.**

By adopting **conservation practices**, farmers can build rich, fertile soils that will grow robust crops while **protecting water sources, storing carbon, reducing greenhouse gas emissions and creating fields that are more resilient to extreme weather events.**

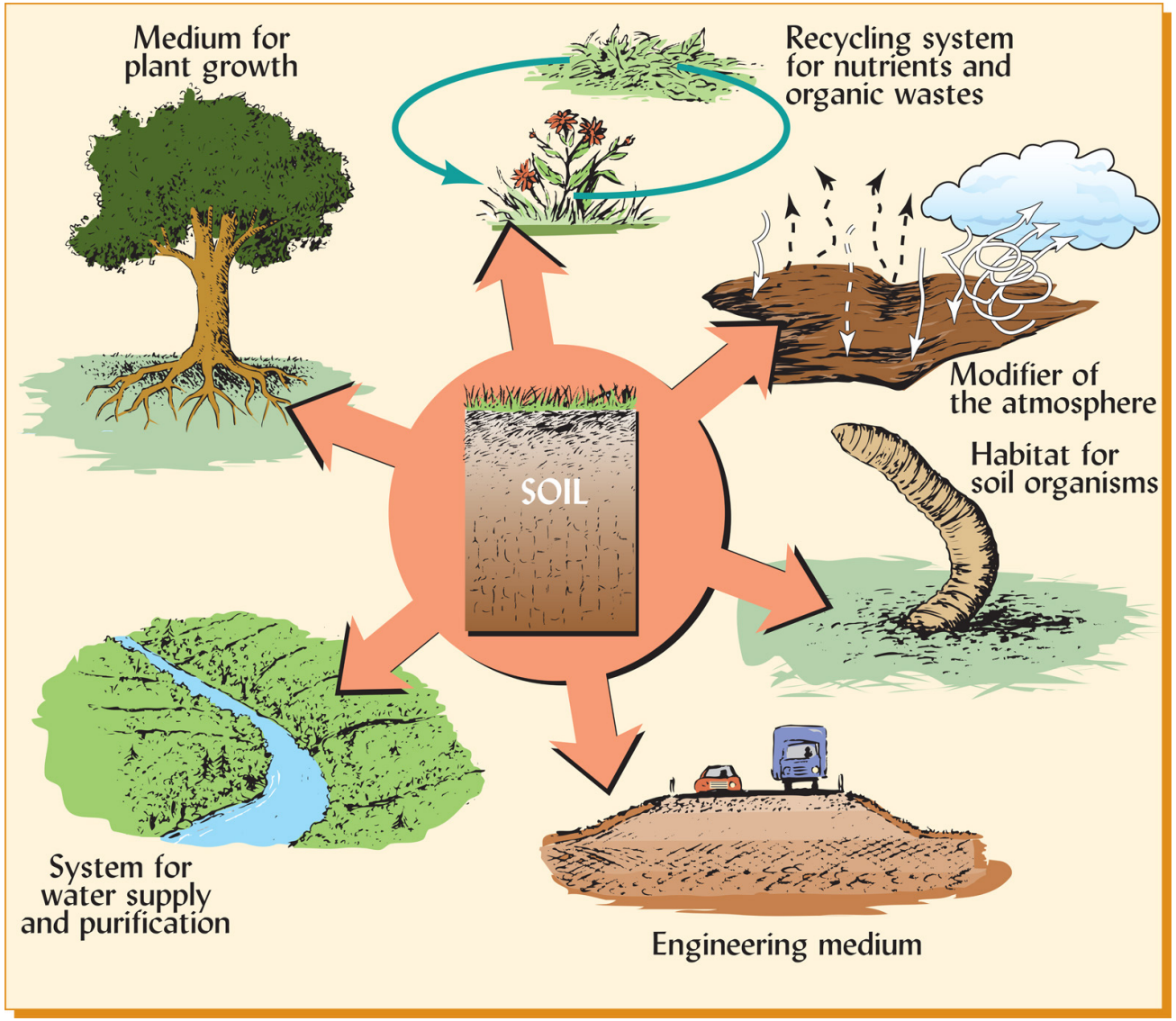
The Less Obvious Relationships Between Science, Economics, & Policy in Sustaining Soil as a Resource



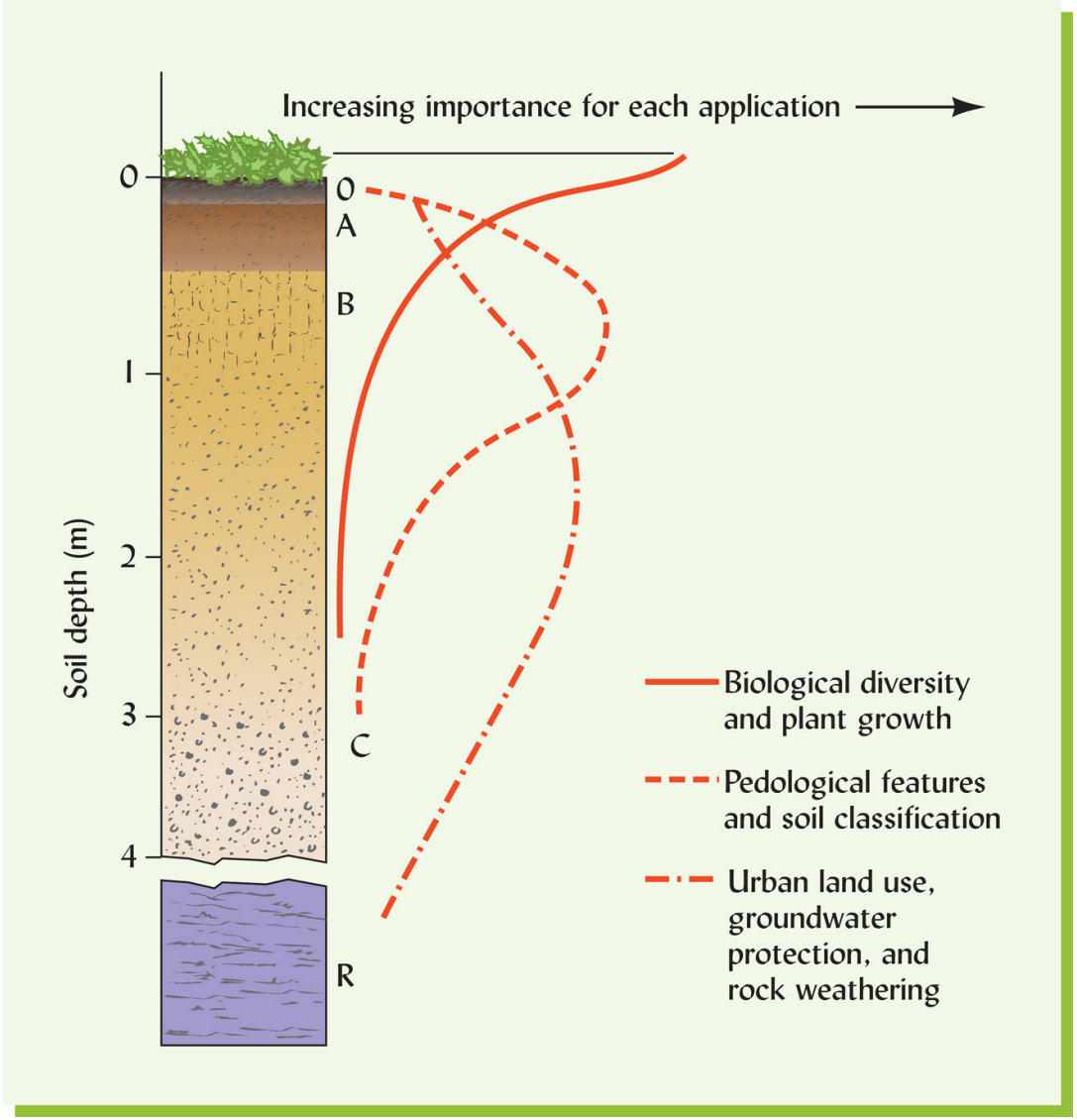
How Soils Relate to Geosciences



The Essential Ecological Roles of Soil



Little Discussion of Soils in Stratigraphy/Sedimentology, Primarily Related to Paleosols



Future Sustainability of the Earth

Table 1.4
GRAND SOIL SCIENCE CHALLENGES FOR 2050

No.	Topic Area	Grand Challenge
1	Food	How can we feed 2 billion *more* people than today without harming our soils or the broader environment?
2	Nutrients	How do we preserve and enhance the fertility of our soils, conserve scarce nutrient resources and also export nutrients from farms to cities in ever bigger harvests?
3	Fresh water	How can we manage our soils to use dwindling water supplies more efficiently and wisely while managing soils to protect our waters from pollution?
4	Energy	How can we sustainably manage our lands to contribute to energy supplies by integrating biochar use and producing biofuel feedstocks?
5	Climate change	How can we manage soils to mitigate climate change by reducing greenhouse gases while also adapting to climate change by protecting soil productivity and resilience?
6	Biodiversity	How can we better understand and enhance the biotic communities within and on the soil to create more resilient and productive ecosystems and utilize the diverse gene pool?
7	Recycling "wastes"	How can we better use soils as biogeochemical reactors to avoid contamination, detoxify contaminants, and maintain soil productivity?
8	Global perspective	How can we develop a global perspective that still permits us to optimize management of local places, wherever they may be?

Modified from Janzen et al. (2011)