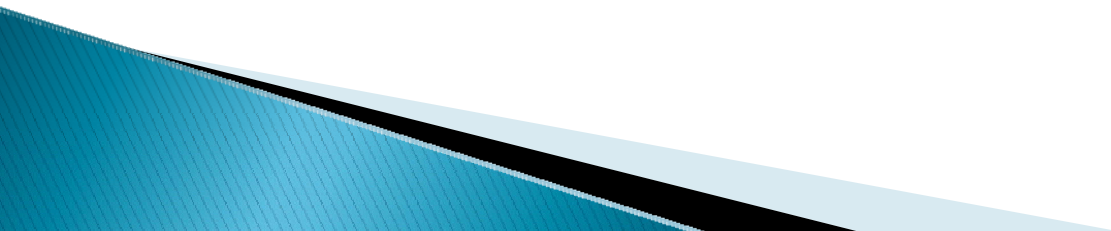


Issues, Visions, and Commitments for Education in Soil Science

Mary E. Collins
Soil and Water Science
University of Florida

What has been Happening in Soil Science Education?

- ▶ National Academy of Sciences – National Committee for Soil Science (NCSS)
 - ▶ Why are graduate students not as well prepared?
 - ▶ Why don't we have students interested in soil science?
 - ▶ NCSS formed a subcommittee – National Trends in Undergraduate Soil Science Education”.
- 

Preparedness of Soil Science Graduate Students

- ▶ Graduate students are coming from other disciplines as undergraduates.
- ▶ Lack extensive and intensive undergraduate coursework in soil science
- ▶ Combined undergraduate & graduate courses



Perception of the Major

- ▶ Not on today's high school and college-age students' radar screens nor their parents
- ▶ The major is associated with "agriculture"
- ▶ What clientele do we serve?
- ▶ Even departments are split between agricultural and environmental research.
- ▶ Names of departments and majors/concentration/specialization/track across the country may be confusing.




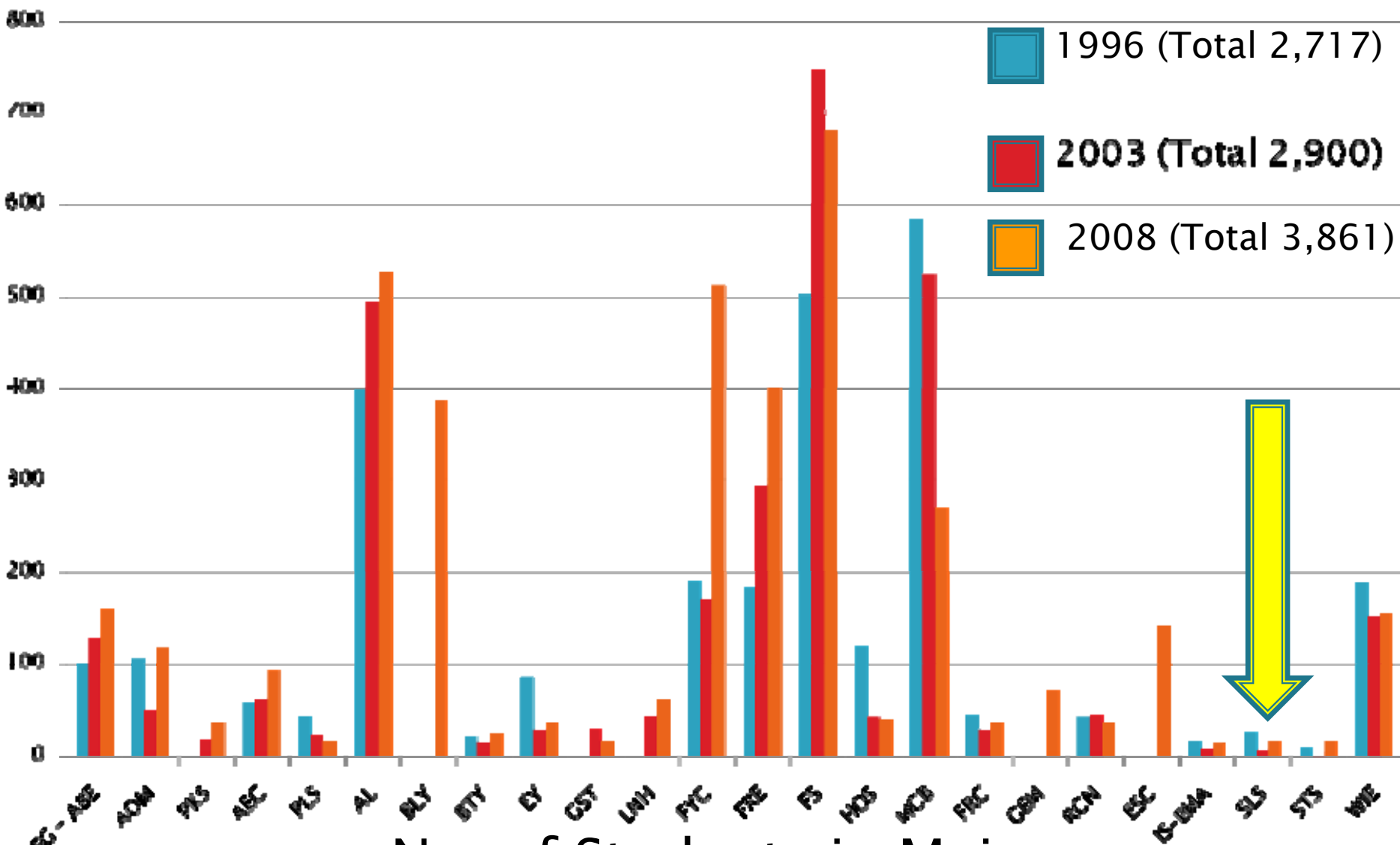
Six-year-old James,
Carroll County, Virginia,
helps clear a route
for National Trails Day.

Departments/Schools with “Soil”

University	Department/School
Maryland	Environmental Science and Technology
UC Davis	Land, Air, and Water Resources
New Mexico State U	Plant and Environmental Sciences
Ohio State U	Environmental and Natural Resources
Illinois	Natural Resources and Environmental Sciences
Iowa State U	Agronomy
Wisconsin	Soil Science
Florida	Soil and Water Science

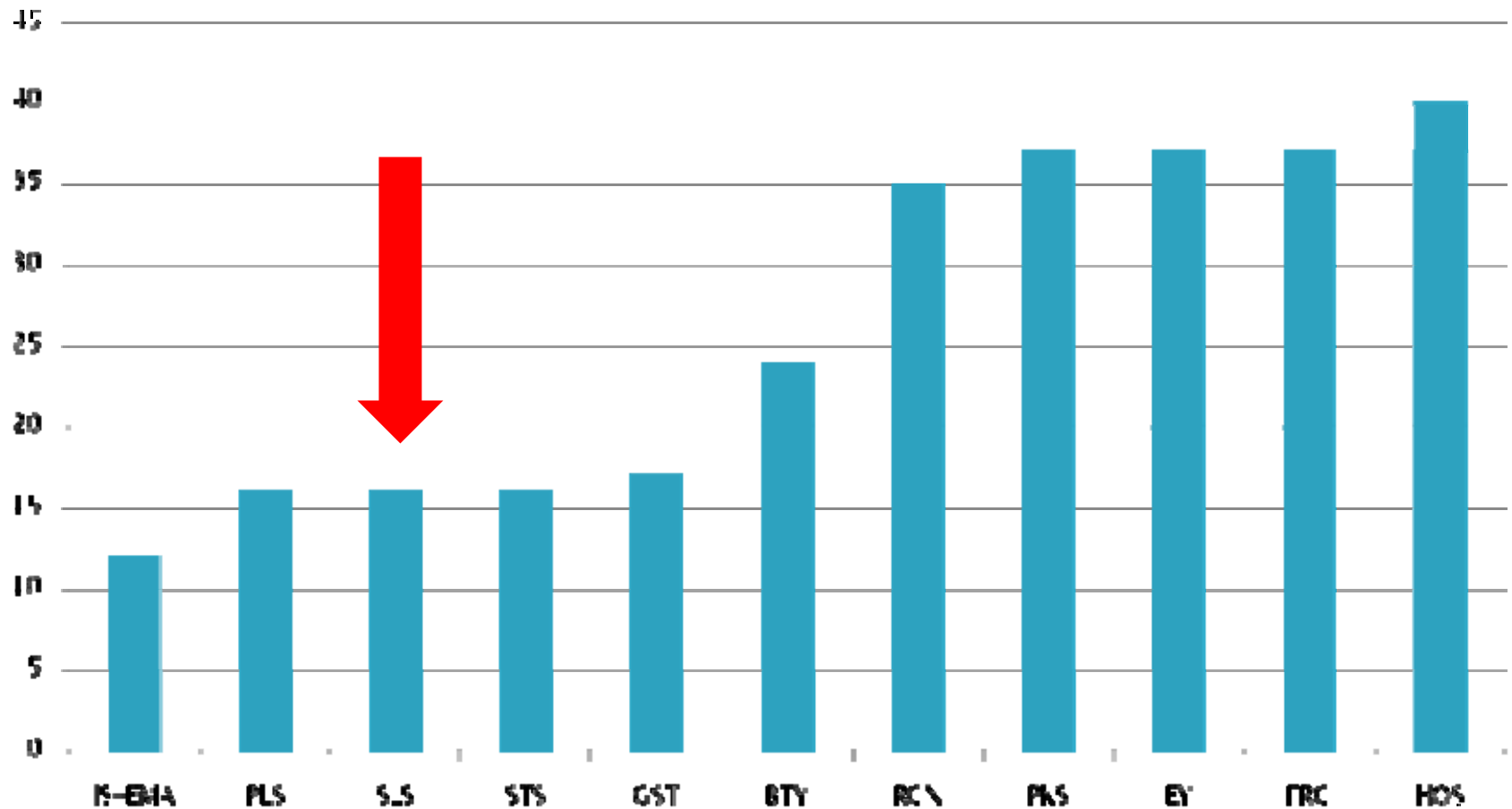
Potential to Increase Numbers

- ▶ Taskey (1994) at Cal Poly – San Luis Obispo first discussed the need to increase the number of students studying soil because of possible elimination of undergraduate program (department?).
 - ▶ High school students
 - ▶ Transfer students
 - ▶ On-campus “undecided” students
 - ▶ Introductory course(s) in department
 - ▶ Need to change, update the courses, names and/or curriculum
- 

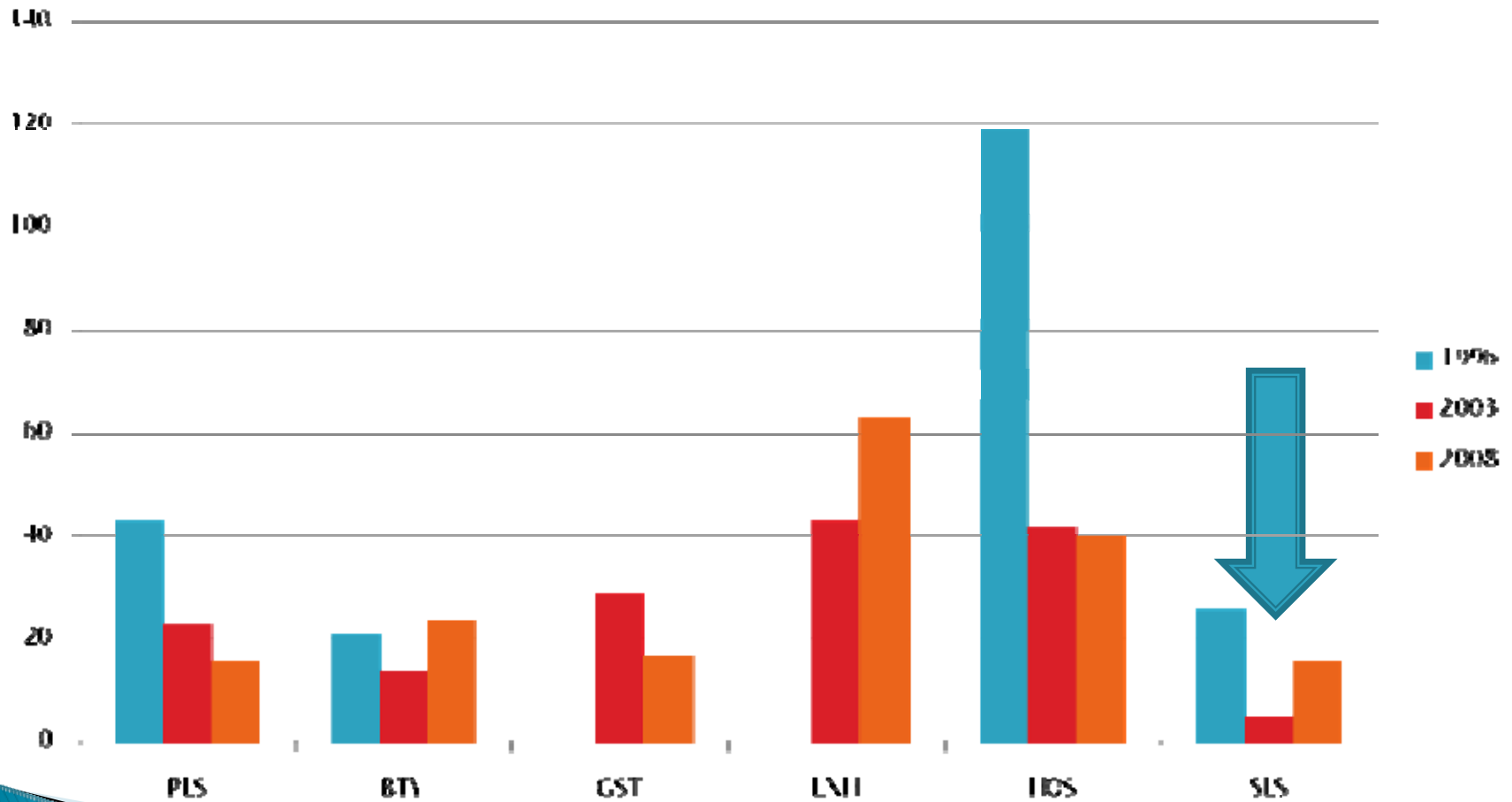


No. of Students in Majors –
 College of Agricultural and Life Sciences

Fall, 2008 Majors with < 50 students



Number of Students in “Plant” Majors



What are some of our constraints to increase our numbers?

- ▶ Students don't know about the majors until it is too late to switch majors.
- ▶ Our science is not taught in high schools
- ▶ Parents have never heard of our major
- ▶ Competing against pre-professional majors





How do we overcome these limitations?

- ▶ Advertise the introductory course and have the best (special) instructor teach it
- ▶ Website needs to advertise the opportunities
- ▶ Courses as General Education
- ▶ Administrators need to support the major



What is the Future of Major

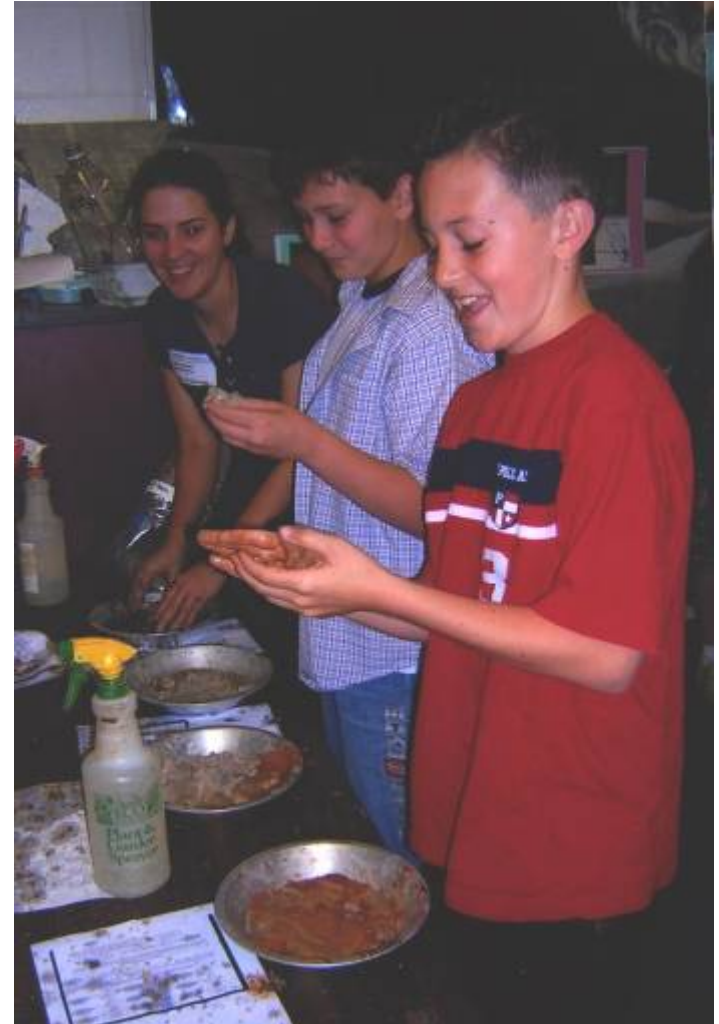
- ▶ Soil scientists are “mature” nationally and internationally.
- ▶ “...soil science is slated for slow but sure extinction.” Lal (2007)
- ▶ SSSA K–12 Education Committee
- ▶ Employment Opportunities



Importance of K-12



Teaching about soil at
Hidden Oak Middle School





What is our Vision?



Vision and Visibility

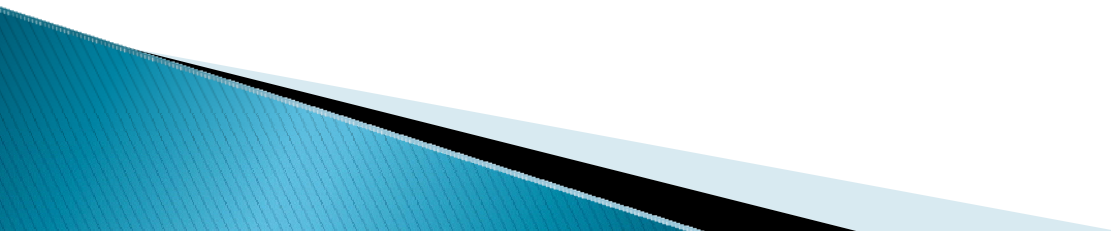


Commitment

S121E06583

Energy, Imagination

Conclusions

- ▶ There are 3,861 undergraduates in UF-CALS, only 16 SWS majors, 176 “plant” majors
 - ▶ Summer–Fall, 2008 UF Soil and Water Science Department was on the list for possible merger.
 - ▶ Spring, 2009 UF College of Agricultural and Life Sciences – Plant Science Task Force – discussion on Soil and Water Science major *potentially* being part of new Plant Science mega–major.
 - ▶ Fall 2009 major will split into a “Soil Science Specialization” and a “Water Science Specialization”.
- 

Smithsonian Museum of Natural History

DIG IT! *The Secrets of Soil*

2ND FLOOR

DIRECTORY

- Rest Rooms
- Elevators
- Museum Shop



On First Floor:

- IMAX Theater
- Information
- Cash Return

2ND FLOOR

- ↑ Hope Diamond
- ↑ Bones
- ↑ Reggies
- ↑ Insect Zoo
- ↑ Butterflies & Plants

→ Karna Gallery

- Western Cultures
- Rest Rooms
- Special Exhibit Gallery
- Museum Store
- IMAX Theater

FOSSIL Coffee Bar
located in the Food Plaza Exhibit



TO FARM—more with less



Efficient farming means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Efficient farming means getting the most out of every acre of land. It means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Efficient farming means getting the most out of every acre of land.

Smart farming means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Smart farming means getting the most out of every acre of land. It means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Smart farming means getting the most out of every acre of land.

Conservation farming means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Conservation farming means getting the most out of every acre of land. It means using the right amount of water, fertilizer, and pesticides. It also means using the right amount of land. Conservation farming means getting the most out of every acre of land.

Soil sense FOR THE PLANET

Only a small bit of the Earth's surface is farmable.



Approximately 10 percent of the Earth's surface is farmable.

Each year there are 40 million new people to feed.

WE ARE SOIL. Our bodies are built from elements that plants move from lakes and pastures. Every plant we harvest takes nitrogen, phosphorus, potassium, and other nutrients from soil. We can add back the nutrients that crops extract, and we can limit the loss of soil nutrients to erosion and runoff. But to grow abundant crops for years to come—to avoid starvation—we must keep soils healthy and safeguard soil fertility.

FARMS MUST PROTECT THE ENVIRONMENT. Water in wetlands, fields, and underground water reservoirs seeps. Many fertilizers, pesticides, and herbicides wash into groundwater, lakes, rivers, and oceans or enter the atmosphere. These toxins from soil affect water quality, aquatic habitats, and climate. We choose to protect environmental risks. Many growers are making them.



Small farms are making the most of their land.

TO FERTILIZE—more with less



Smart farmers and soil scientists use soil testing to guide fertilizer use.



Small farms are making the most of their land.

SMART FERTILIZING BENEFITS FARMING AND THE ENVIRONMENT. The more people we feed, the more nutrients are in our food. Over time, we deplete the soil of nutrients and reduce crop yields. Farmers who refuse to be lazy by plowing, tilling, and adding compost or manure are smart farmers, making the most of their land. They are making the most of their land.

NEW TECHNOLOGIES HELP MANAGE SOIL FERTILITY. Smart farmers use soil testing to guide fertilizer use. They use soil testing to guide fertilizer use. They use soil testing to guide fertilizer use. They use soil testing to guide fertilizer use. They use soil testing to guide fertilizer use.

FARMS FACE MANY CHALLENGES TODAY, AS THEY DID IN THE 1970S AND 1980S. Farmers are the backbone of our food system. They are the backbone of our food system. They are the backbone of our food system. They are the backbone of our food system. They are the backbone of our food system.

ALL-AMERICAN SOILS

Find your home earth

Rhode Island	New York	New Jersey	Virginia	North Carolina	South Carolina	Georgia	Connecticut	Tennessee	Alabama	Mississippi	Florida

O
A
E
B
C

0-10 bottom
to 1000

Soil horizons are layers of soil that have formed in a predictable sequence. The O horizon is the top layer, followed by A, E, B, and C. Each horizon has specific characteristics that determine its soil type.

Soil Horizons

Soil horizons are layers of soil that have formed in a predictable sequence. The O horizon is the top layer, followed by A, E, B, and C. Each horizon has specific characteristics that determine its soil type.



Thank You