

GROWING CLIMATE SOLUTIONS
WITH WORKING LANDS

GROUND CONTROL

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SUMMARY

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Improving soil health in the Hudson Valley offers a powerful climate solution

The SCIENCE shows that crop management practices have great potential to mitigate climate change

The ECONOMICS of agriculture in the Hudson Valley means that new practices/techniques are challenging for farmers to adopt

Emerging PUBLIC POLICY initiatives have the potential to create sufficient incentives for farmers to embrace climate-friendly cropland management practices

COMMUNITY members can persuade lawmakers to advance policies and promote viability of regenerative agriculture

What everyone knows about climate change

- our planet is getting warmer with potentially devastating impacts
 - more extreme weather
 - rising sea-levels
 - mass migration
- “greenhouse gas” emissions are a leading cause of climate change
- carbon dioxide (CO₂) is the the most common greenhouse gas
- nitrogen dioxide (N₂O) and methane are other major contributors to global warming on farms



What everyone knows about carbon/CO₂

- burning fossil fuels has loaded our atmosphere with CO₂
- reducing emissions is urgent and critical
- removing excess carbon from the atmosphere and “sequestering” it is equally essential



Less well-known: agriculture, soil and climate

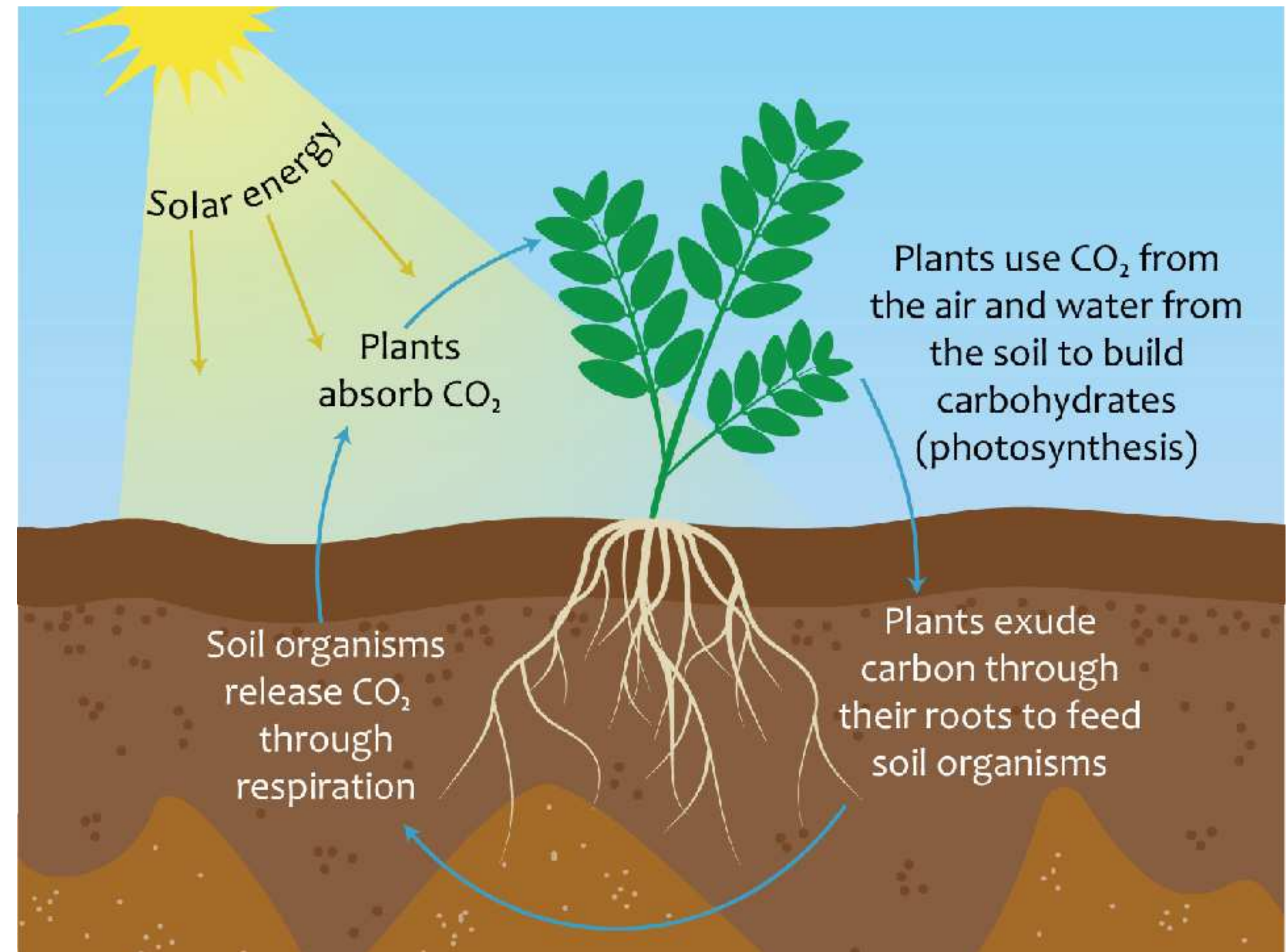
- croplands and pastures cover 35–40% of Earth's ice-free land area
- ag accounts for 23% of greenhouse gas emissions
- cropping systems account for 8–12% of greenhouse gas emissions
- since the 1970s, we have lost 1/3 of our topsoils

(Source: International Panel on Climate Change)



Soil and the carbon cycle

- ▶ CO₂ from the atmosphere enters the soil through decomposing plant matter, roots and soil organisms
- ▶ managing croplands for soil health can take carbon out of the atmosphere and store it safely in the soil
- ▶ a shift in agriculture practices can reduce carbon levels in the upper atmosphere and mitigate climate change
- ▶ healthy soils help plant roots take up nitrogen, limiting N₂O production



Managing Natural and Working Lands for Carbon Sequestration

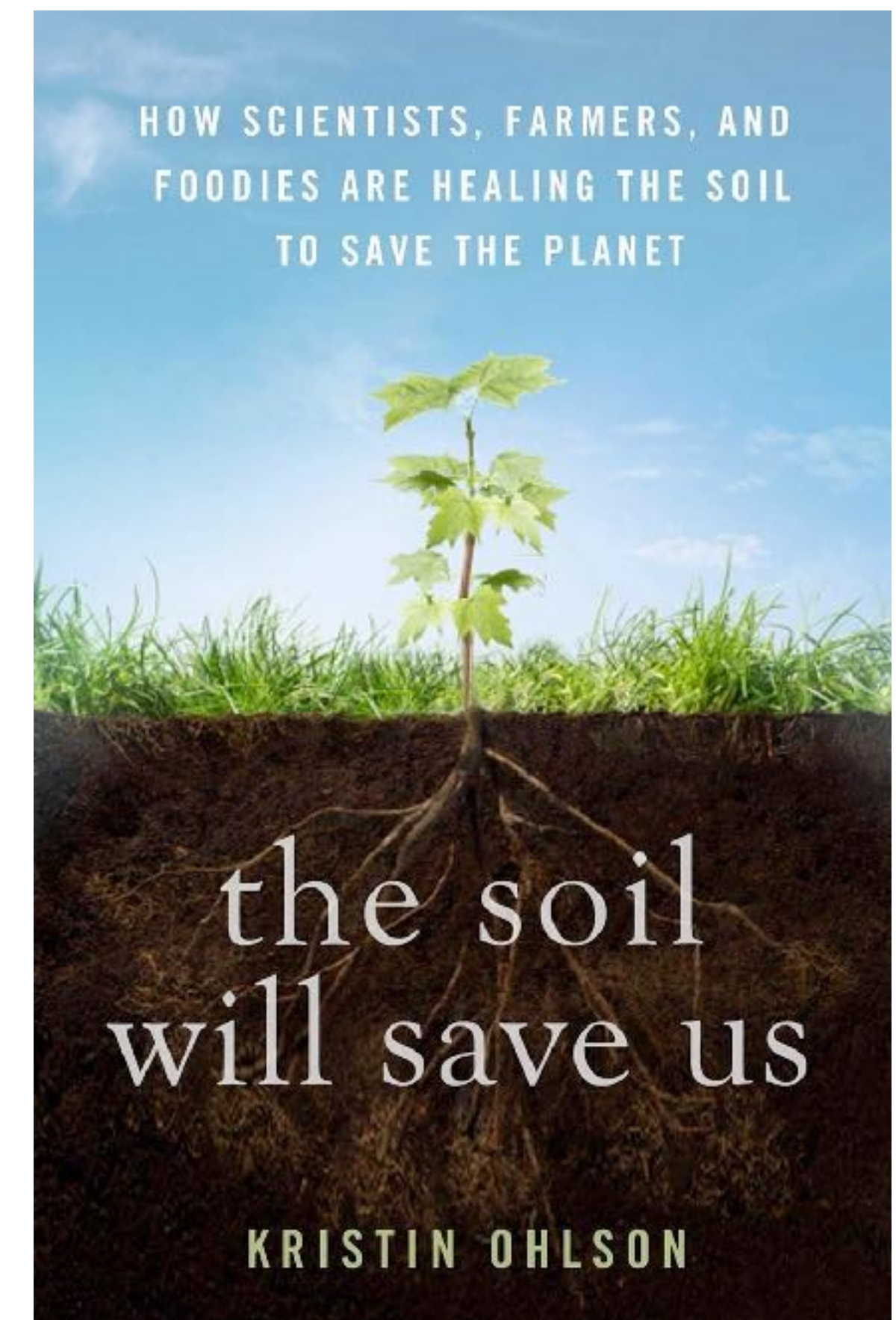
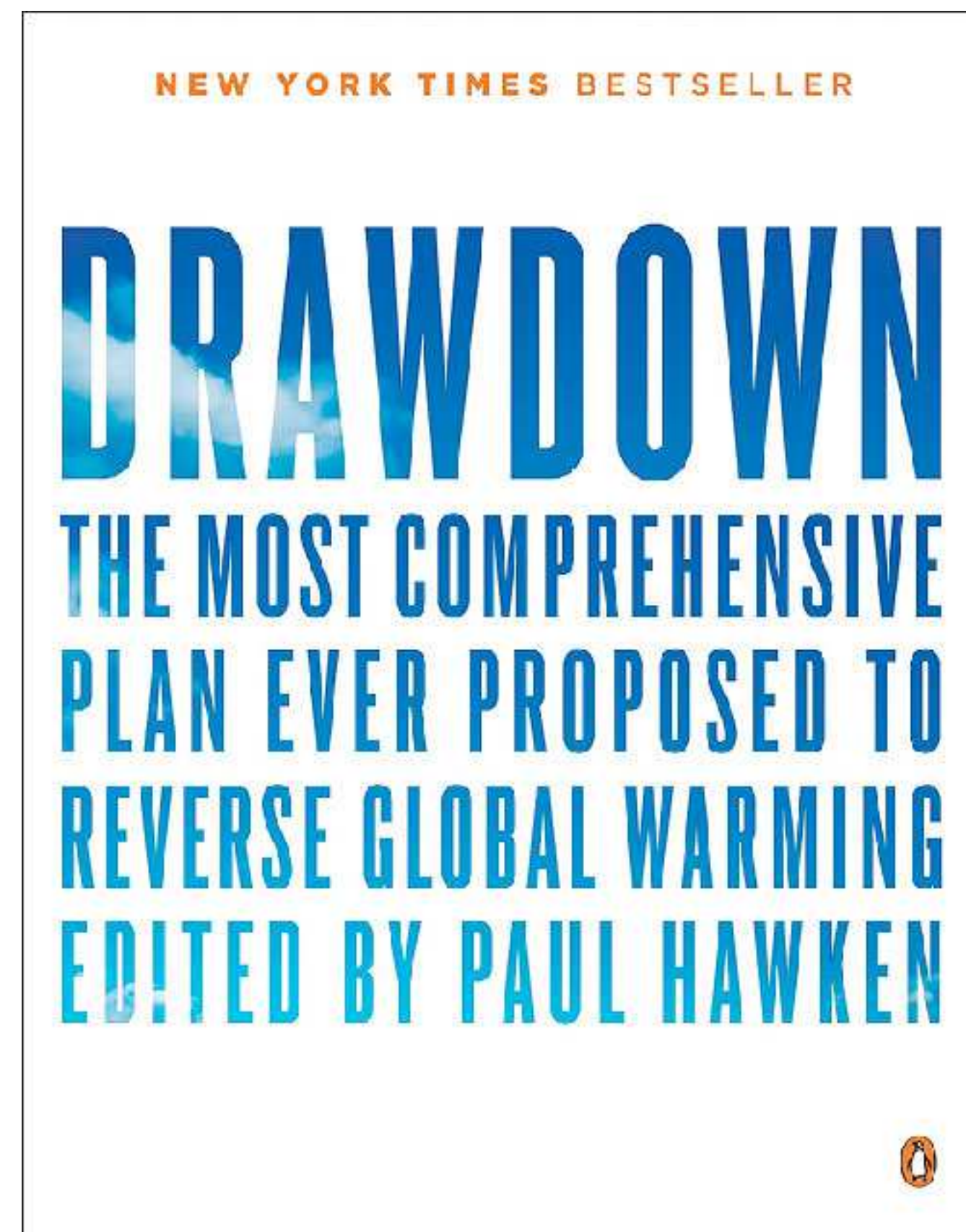
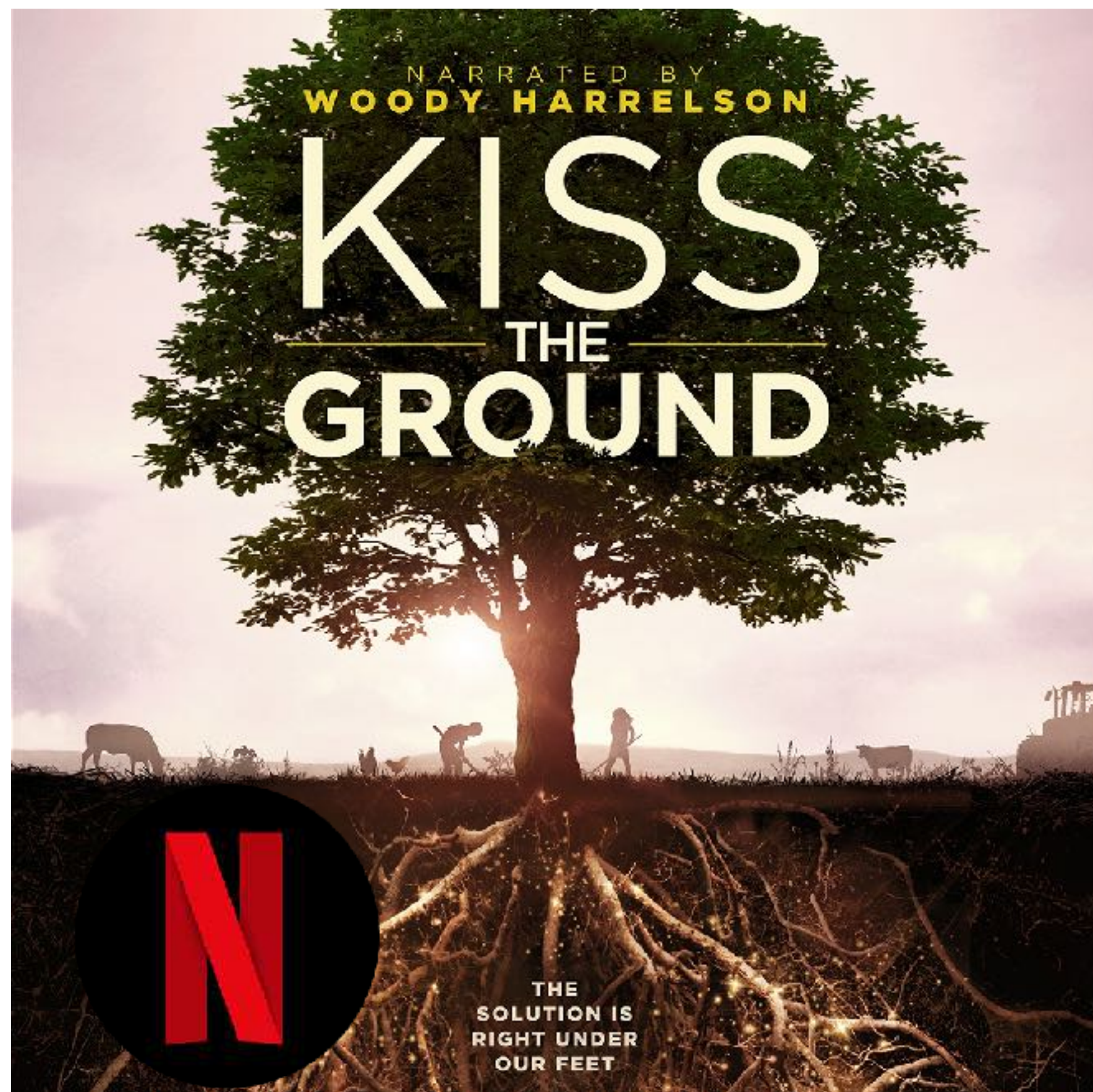
- embrace soil health in cropland management
- avoid converting natural lands and agriculture lands
- add new forests or replace former ones
- improve forest management
- harvest wood products for long term carbon storage



SCIENCE

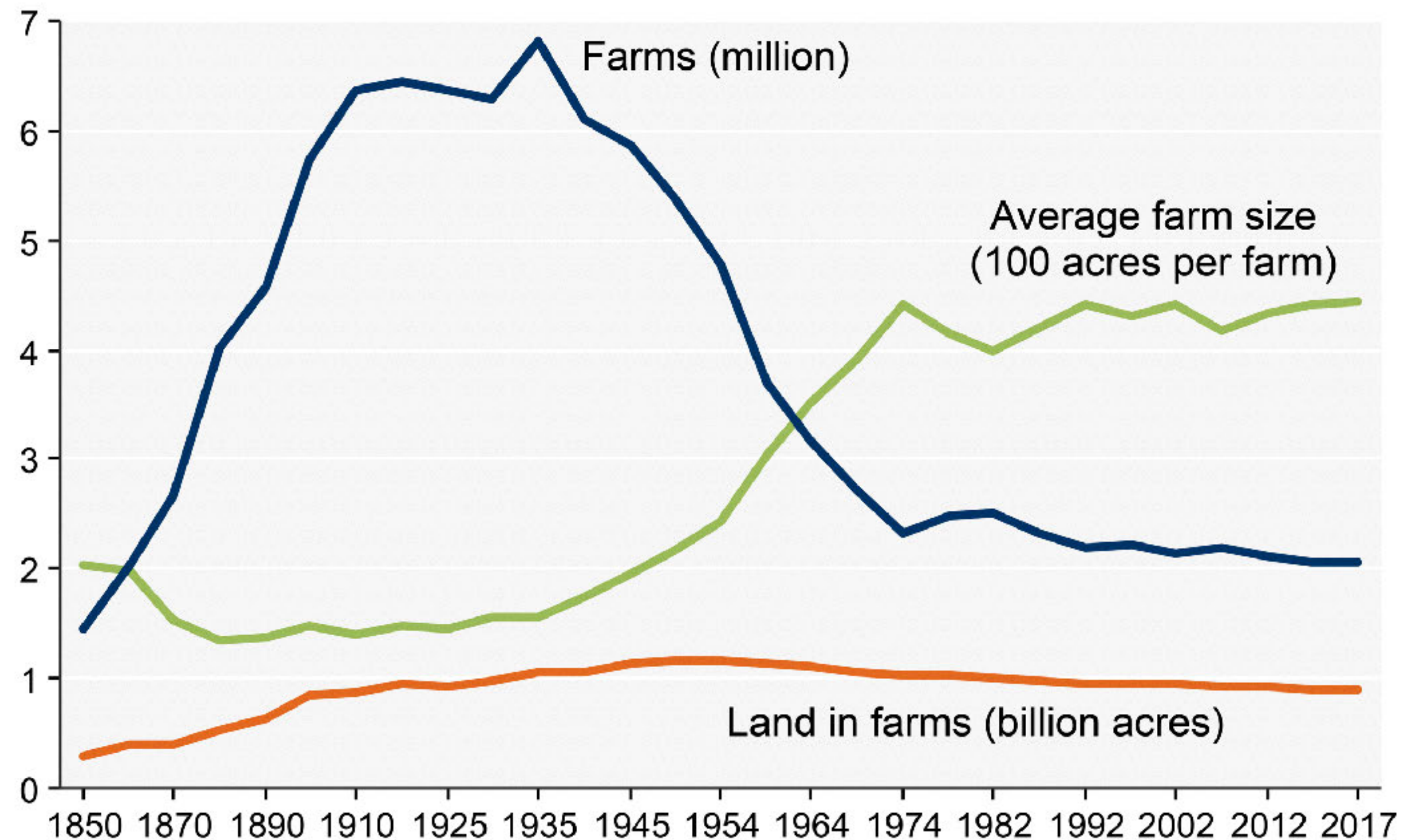
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More About Soil Health and Climate



Contemporary Farming Practices

- post-WWII Green Revolution favored chemical application and mechanization
- perceived as economically necessary, but can have drawbacks:
 - increased erosion
 - reduced nutrients
 - compacted soils
 - increased need for water



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture (through 2012) and *Farms and Land in Farms: 2017 Summary*.

Healthy Soil Systems

- **low-till crop management with cover crops**
 - vastly improved soil health
 - less erosion
 - more nutrient retention
 - less need for water
- **long-term benefits**
 - more resilient to climate change
 - may require fewer inputs
 - predictable, sustainable profit margins
 - sequesters atmospheric carbon to help mitigate climate change

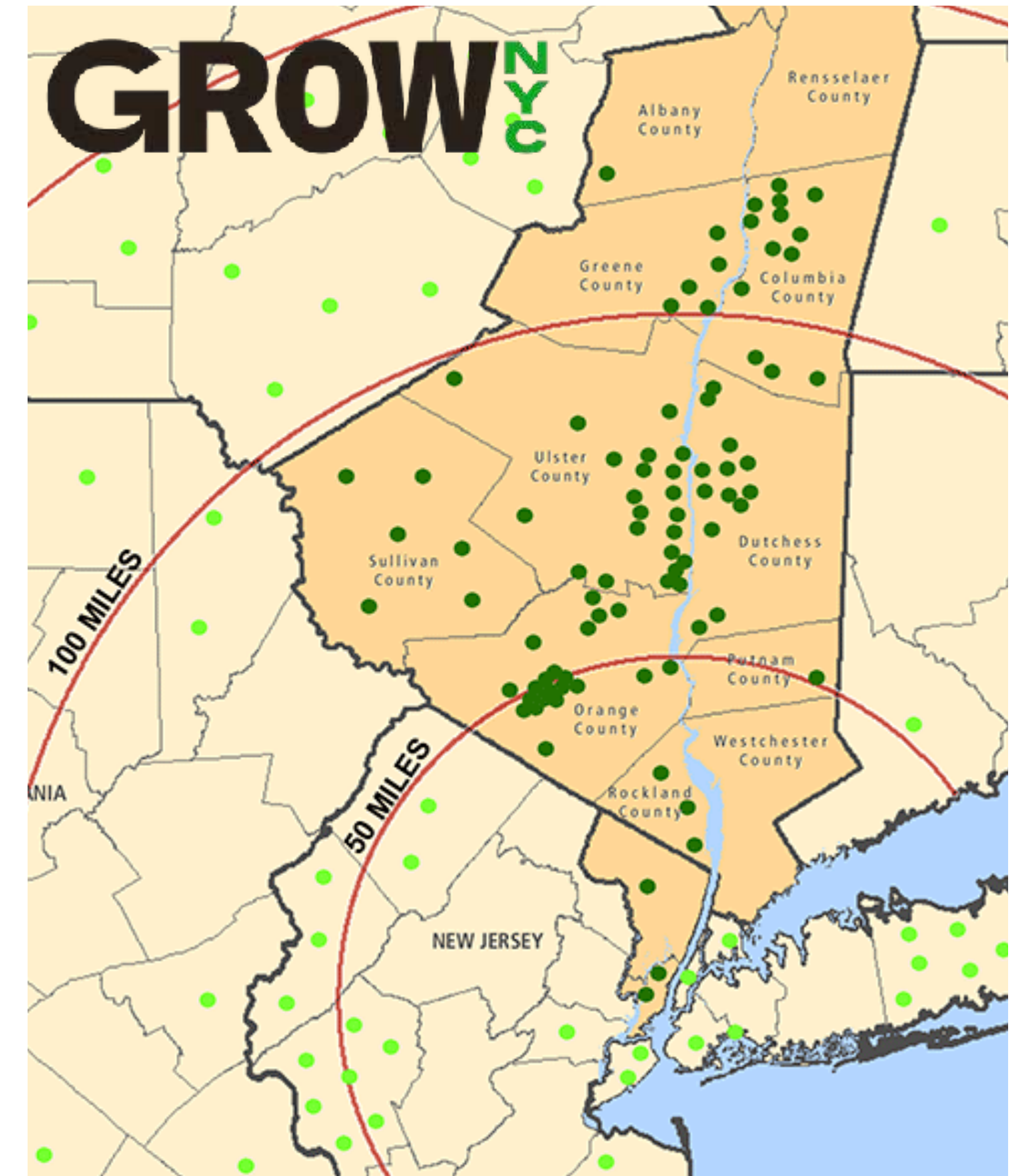


ECONOMICS

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Our Unique Region and Market

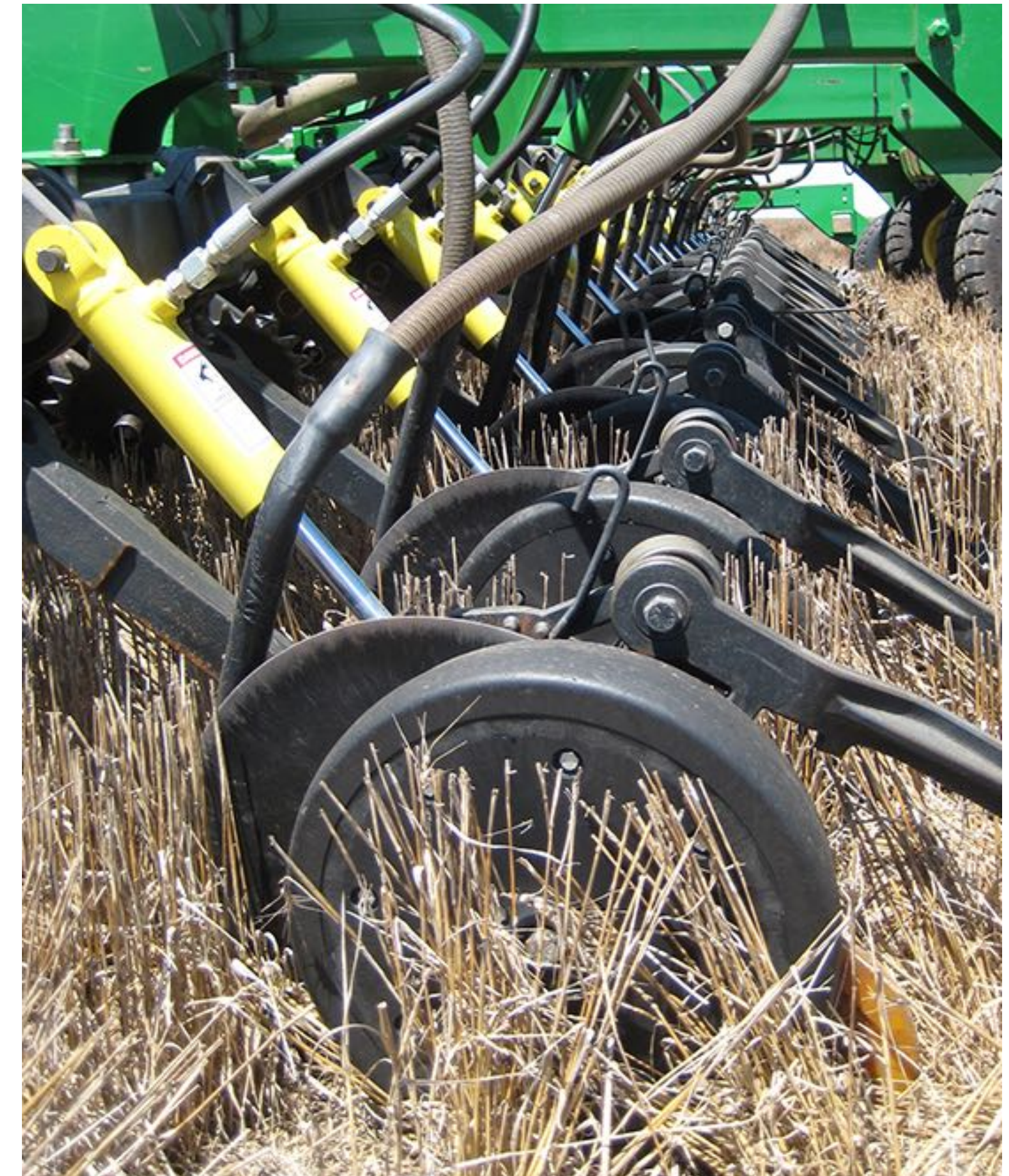
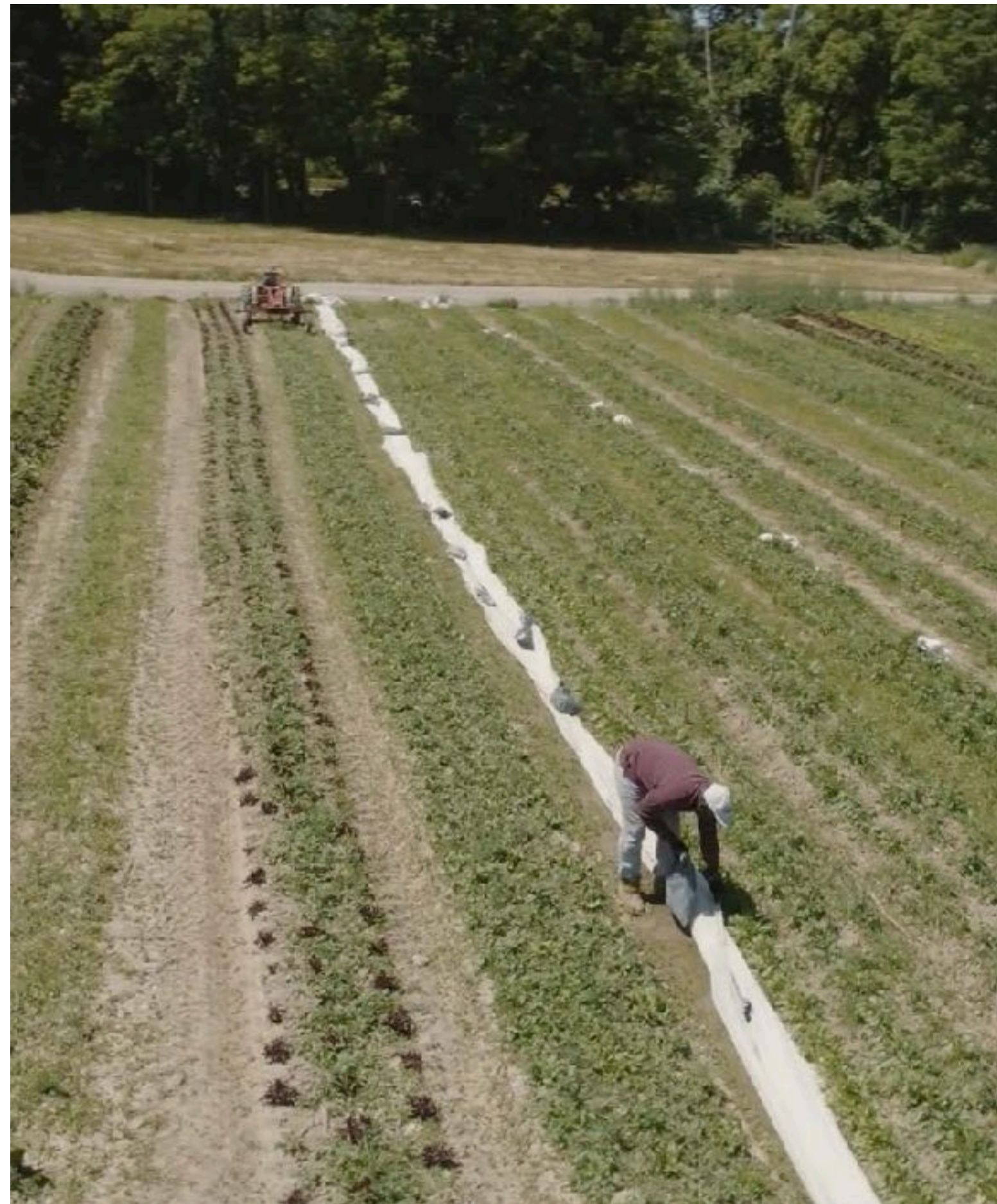
- integral to NYC “foodshed”
- highly diverse soils/landscapes
- broad range of products
- hotbed of new ideas/innovations
- strong education/support networks
- well-organized young farmers movement
- strong legacy of conservation



Making the Case with Our Farmers

VOLUNTARY INCENTIVES FOR SOIL HEALTH PRACTICES

- **first it has to make sense**
 - increase technical education
 - emphasize co-benefits
 - convincing evidence of ROI
 - farmer-to-farmer outreach
- **then it has to be easy**
 - supportive policy framework
 - collaborative research
 - significant financial incentives



Lawmakers Have a Critical Role to Play

Current policy support for adopting soil health practices

- ambitious CLCPA carbon targets
- support for climate-resilient farming grants
- Ned Sullivan on Agriculture and Forestry Advisory Panel of New York State's Climate Action Council
- Assemblywoman Barrett-secured "Carbon Farming Pilot" on 20 Mid-Hudson farms

Lawmakers Have a Critical Role to Play

**Soil Health and Climate Resiliency Act
working its way through NYS Legislature**

- includes first-ever definition of Soil Health and Soil Health Practices in law
- establishes new Soil Health Initiative
- creates a soil health standard
- codifies a Climate Resiliency Farming Initiative
- directs SWCDs to address soil health and climate issues

COMMUNITY

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HOW YOU CAN HELP

1. Learn the science and help explain it to others
2. Buy products from farms that have embraced regenerative agriculture and encourage others to do so
3. Ask your NYS Assembly member and NYS Senator to support The Soil Health and Climate Resiliency Act (A5386A/S4722A)

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