The use of Hybrid Indicators in the Assessment of the Impacts of Technology on Forest and Agriculture Sustainability

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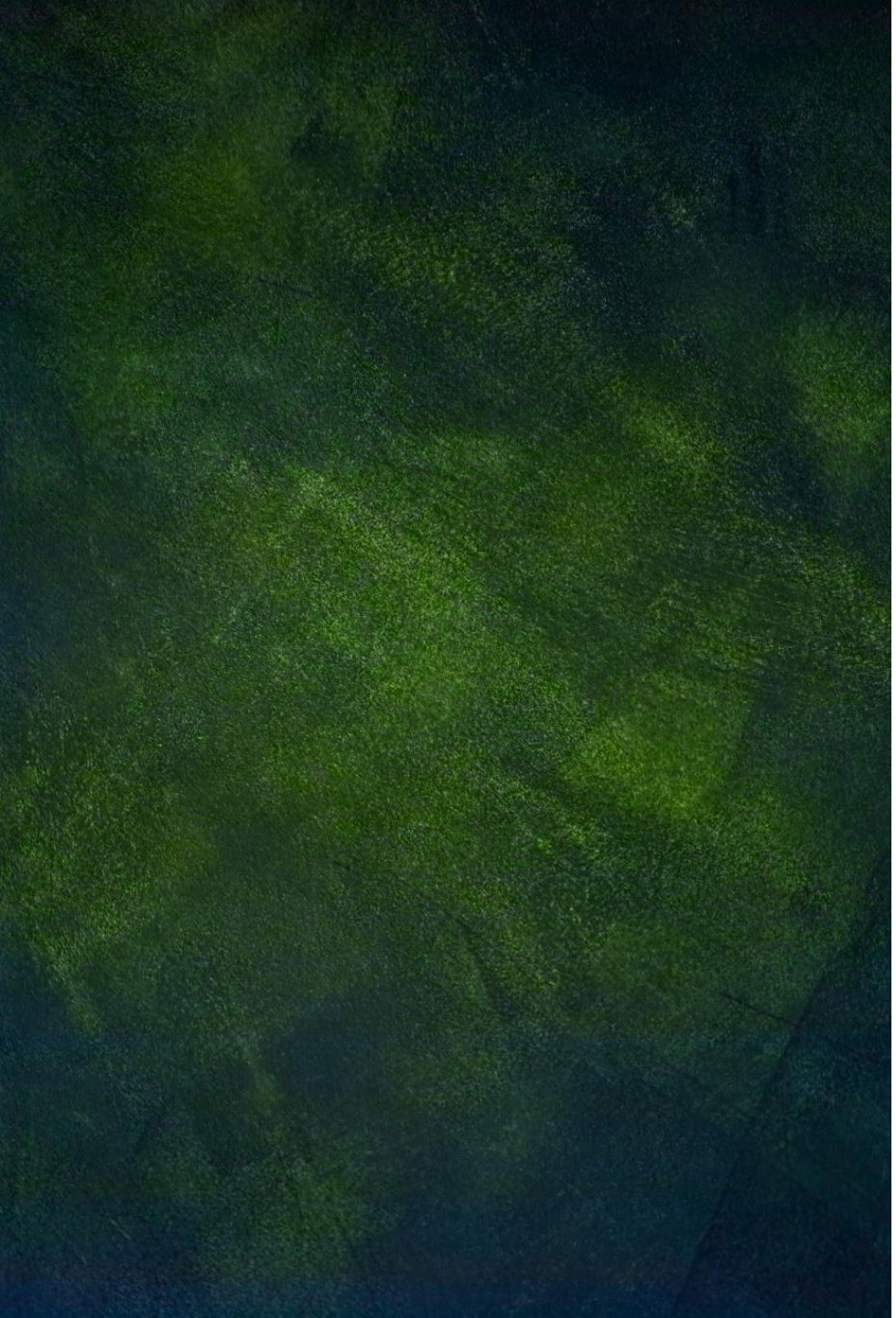


What are Hybrid Indicators?

Connecting two seemingly unrelated indicators → technology to sustainability

We have been looking at existing technology and sustainability indicators → to measure inputs - outputs impacts.

A proposed (hybrid) solution may be land based indicator to help us better understand this connection.

Why is this important?

The Large-scale Impacts of Biotechnology

The Unites States plants approx. 192 million acres of corn, soybeans and cotton.

This area is equivalent to:

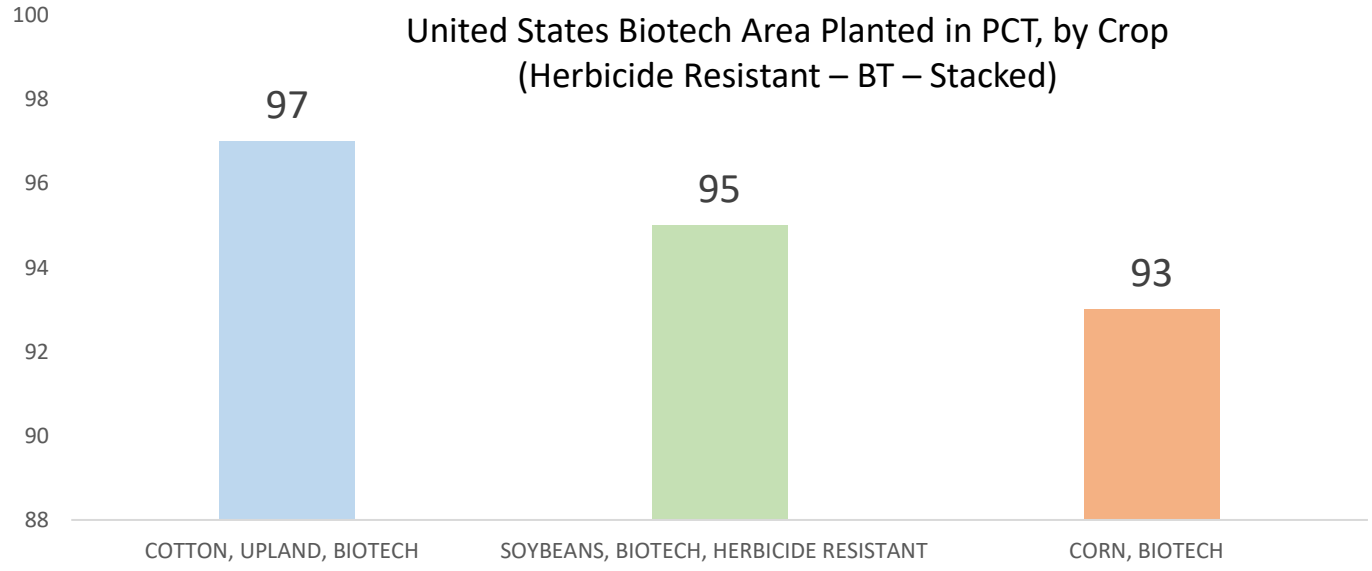
- US: Texas and SC
- World: France and Switzerland

USDA 2021

U.S. farmers have planted an estimated **11.2 million acres** of cotton in 2021, production is up 27% from 2020, but acres are only up by 3%.

U.S. farmers have planted an estimated **87.2 million acres** of soybeans in 2021, production is expected to be up 6% from 2020 and acres are up 5% from 2020.

U.S. farmers have planted an estimated **93.3 million acres** of corn in 2021, production is up 1.7 bushels per acre and acres are up 3% from 2020.



Data extracted from NASS 2021

Relevant Indicators and datasets

- Biotechnology indicators (OECD)
- Agricultural indicators (OECD-FAO-World Bank)
- Environmental indicators
- Agri-Environmental indicators
- Environmental technology diffusion indicators
- Patent indicators
- Approved GMOs per development trait (indicators)
- Agriculture policy Indicators
- Sustainable Development Goals indicators

What did we do to address this goal?

- Literature review
- Met with national and global leaders
- Looked at existing indicators
- Mined and analyzed datasets
- Identified challenges and opportunities
- Proposed a hybrid indicator that integrates existing technology and sustainability under a land-based indicator.

Key Findings

- Existing indicators are broader than Sustainability impacts.
- Existing technologies categorizations are broader than biotechnology.
- More data insights can be integrated in existing indicators, to help us better understand the impacts of biotechnology innovations on agriculture and forest sustainability.

Thank you for your attention!

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