5 Pillars of a Sponge-Like Agriculture

By Bob Watson & Larry Stone

PowerPoint Developed by Dick Janson
in consultation with Bob Watson

5 Pillars

We have a choice

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continue with this particular, recent, post WWII, soil losing, nutrient polluting, flood enhancing, hydrologically short circuiting, human health harming, petro/chemical/industrial, CAFO, Green Revolution, row crop model of agriculture.

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Or

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switch to a non-polluting biologically benign and beneficial, soil building, sponge-like agriculture.

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What this non-polluting sponge-like agriculture might look like;

The pillars of our model are:

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Historically, Iowa was covered by deep-rooted forests, prairies, savannahs, and wetlands.

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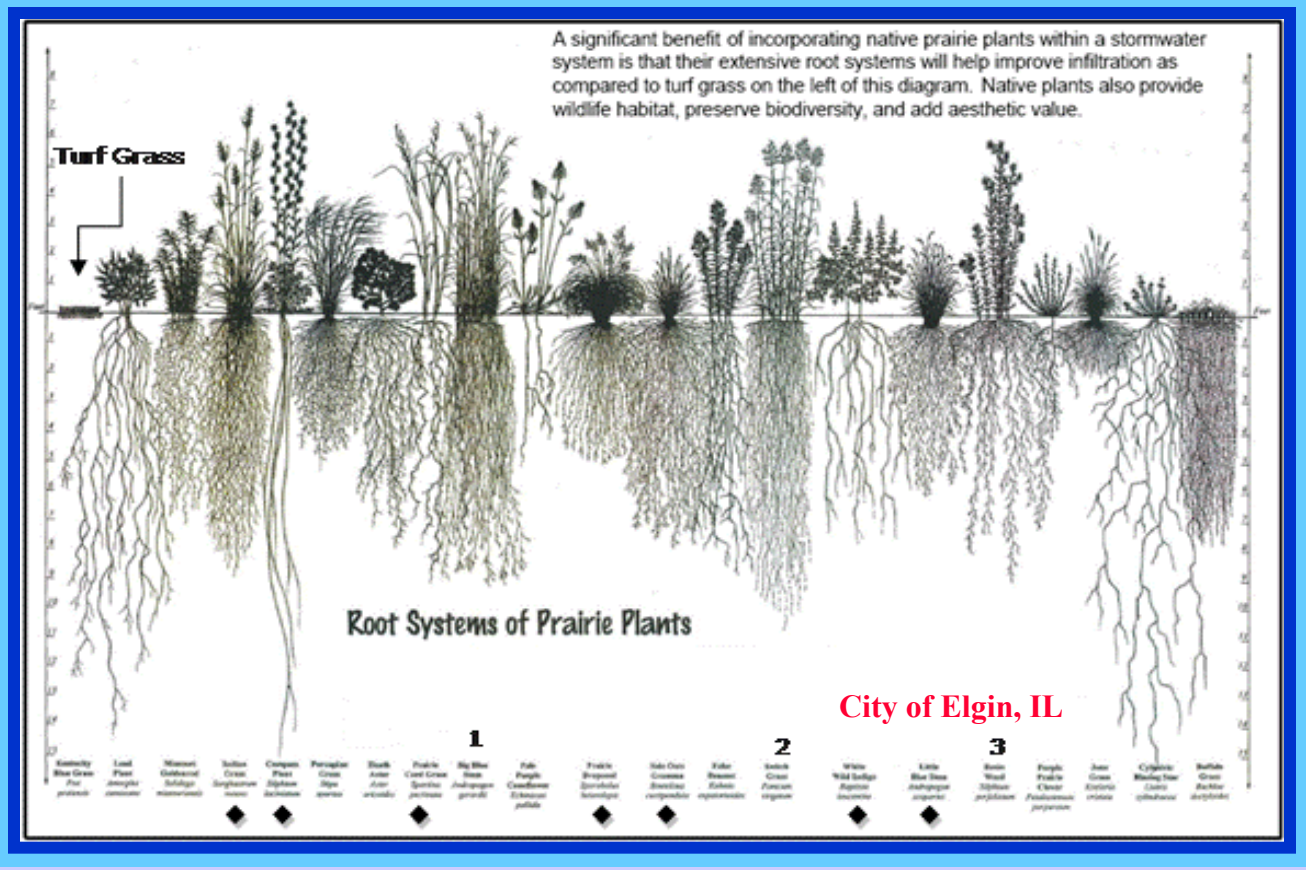

This flora/hydrological system created a vast sponge ranging some 15 to 30 feet in depth both below and above the surface.

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Photo: The Land Institute

Roots of Big Blue Stem

Hanging from barn rafter

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This sponge …

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allowed rainwater to infiltrate at 7 to 14 inches per hour, while purifying and slowly releasing the stored water for plant uptake and recharging groundwater and aquifers.

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Today's intensive, row-crop agriculture has virtually destroyed that sponge.

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Modern floods, although made worse by climate change's extreme rain events,

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are mostly caused because industrial agriculture has turned the historic landscape on its head and put bare soil at the surface.

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With this unprotected soil reaching saturation after as little as one inch of rainfall,

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rainwater and soil simply sluice off the surface…

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on its way into our surface and groundwater systems.

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Innovative, alternative agricultural systems – which are available now –

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would allow us to re-perennialize agriculture and rebuild the topsoil “sponge,” with its flood and pollution mitigating capabilities.

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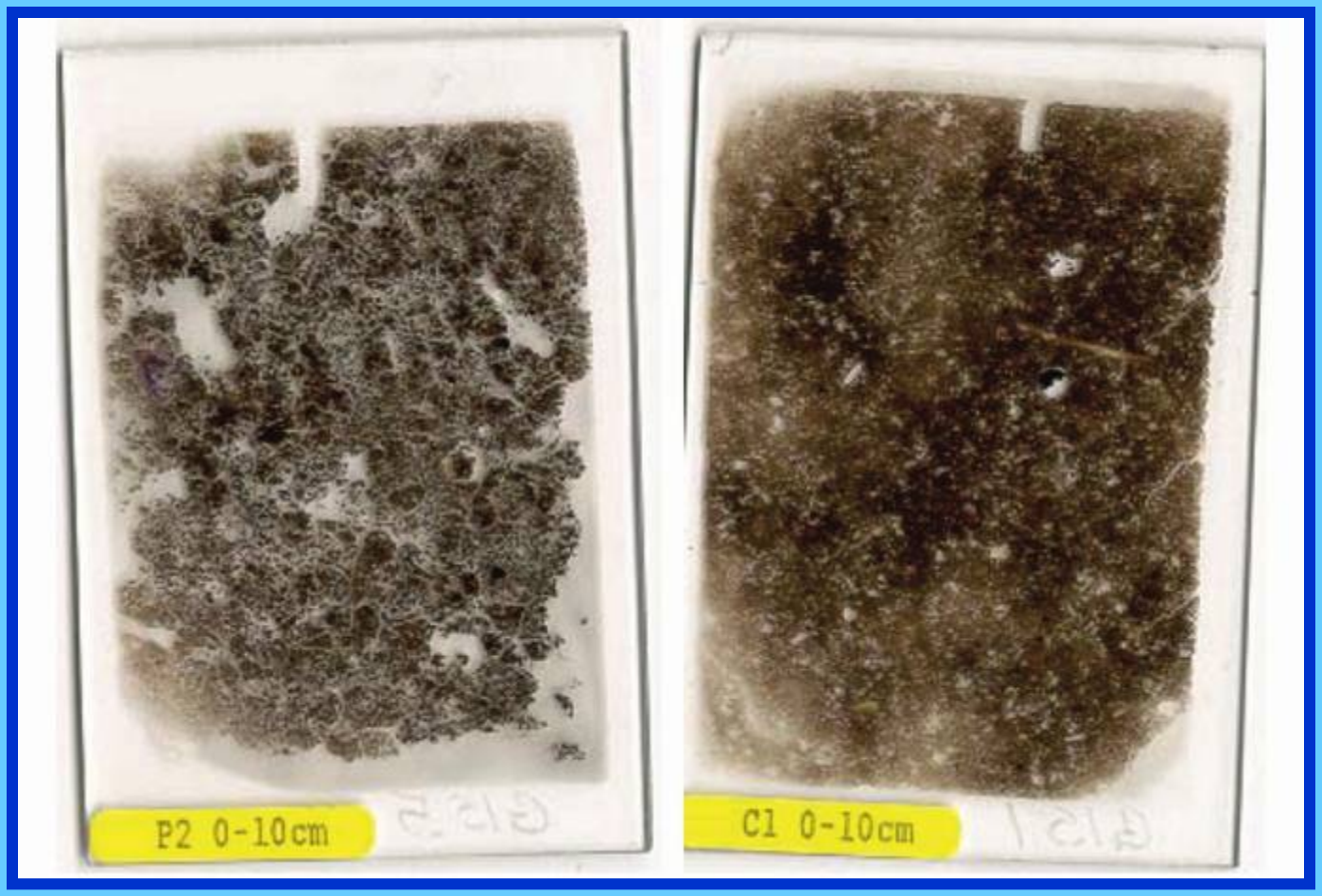

Soil Porosity Comparison

Never-plowed prairie soil & No-till conventional crop soil

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1. edible perennial prairie grains for humans and animals - no chemicals, no runoff, no erosion, no yearly tillage, builds soil, provides habitat, exists today - scaled up for sale to farmers by 2020;

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The Land Institute is breeding prairie plants to have large seed heads for human and animal consumption.

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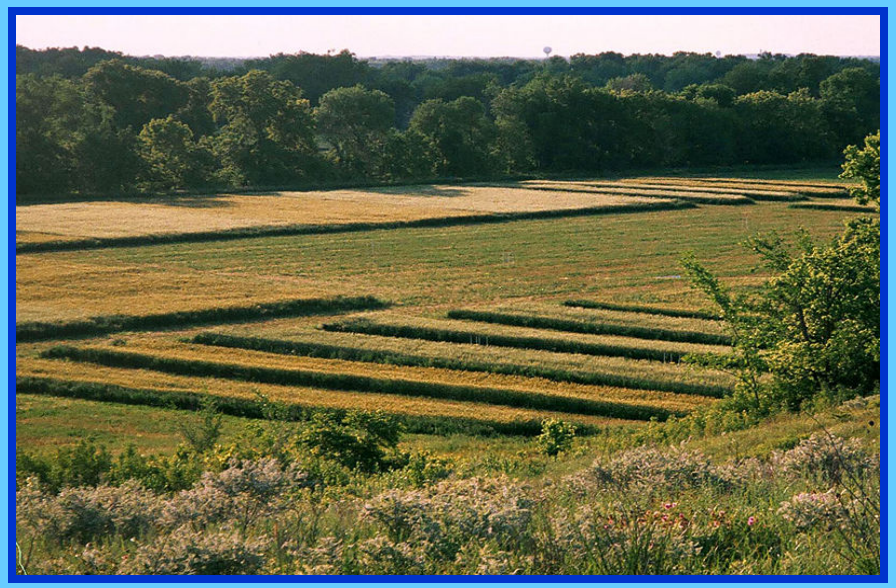

The first of these should be ready for sale to farmers by 2020.

Photo Credits: The Land Institute

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We will be able to eat the prairie,

Photos: Julie Dennis Brothers, FarmForkLife.com

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and these crops would help rebuild Iowa's historic sponge.

Photo: Jodi Torpey, WesternGardener.com

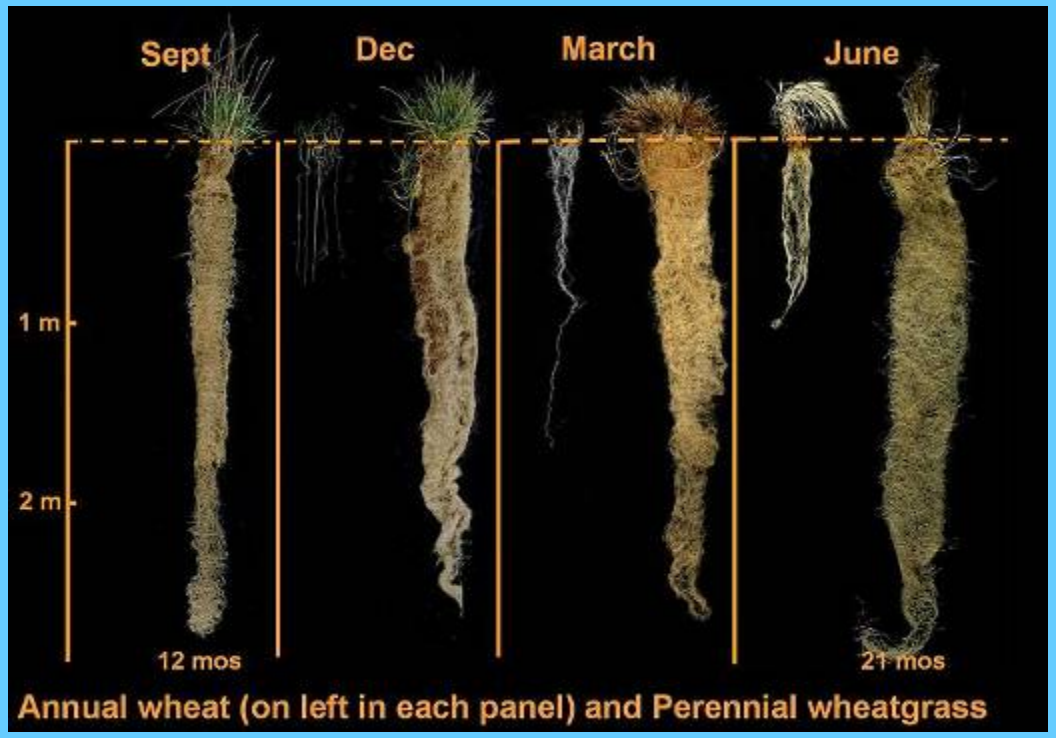

Photo: *The Land Institute*

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2. strips of perennial native prairie in all annual fields - 10% in strips stops 95% of soil erosion, builds soil, provides habitat;

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An Iowa State University study has shown that interspersing annual crop fields with strips of native prairie,

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100% Perennial

Prairie Strips in Ag Crops

100% Agricultural w/No-Till

which can soak up 7 to 13 inches of rain per hour, can eliminate up to 95% of erosion.

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3. prairie and grass-based animal farming - no chemicals, no runoff, no erosion, builds soil, provides habitat;

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If we put animals on the land, fields now used for row crops could be converted to pasture. Utilizing intensive rotational grazing, that pastureland could store up to 7 inches of rain per hour.

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4. industrial hemp - cover crop, no chemicals if used in crop rotations, used with strips, provides habitat, provides food and fiber, replaces many oil-based manufactured products, revitalizes rural America with factories and processing plants, 350-year history as a crop in North America;

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Another important part of a rotational cropping system could be industrial hemp, which needs little or no commercial fertilizers, herbicides or pesticides.

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Hemp was important for food and fiber in early America, but its cultivation now is prohibited in the United States. (We are the only developed country to ban hemp.)

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Yet hemp ranks second only to soybeans in its protein content, and it can be used to produce food, fiber, textiles, paper, essential fatty acids, and other products. These hemp products are legally bought and sold in the US. We just can't grow the hemp that they are made from.

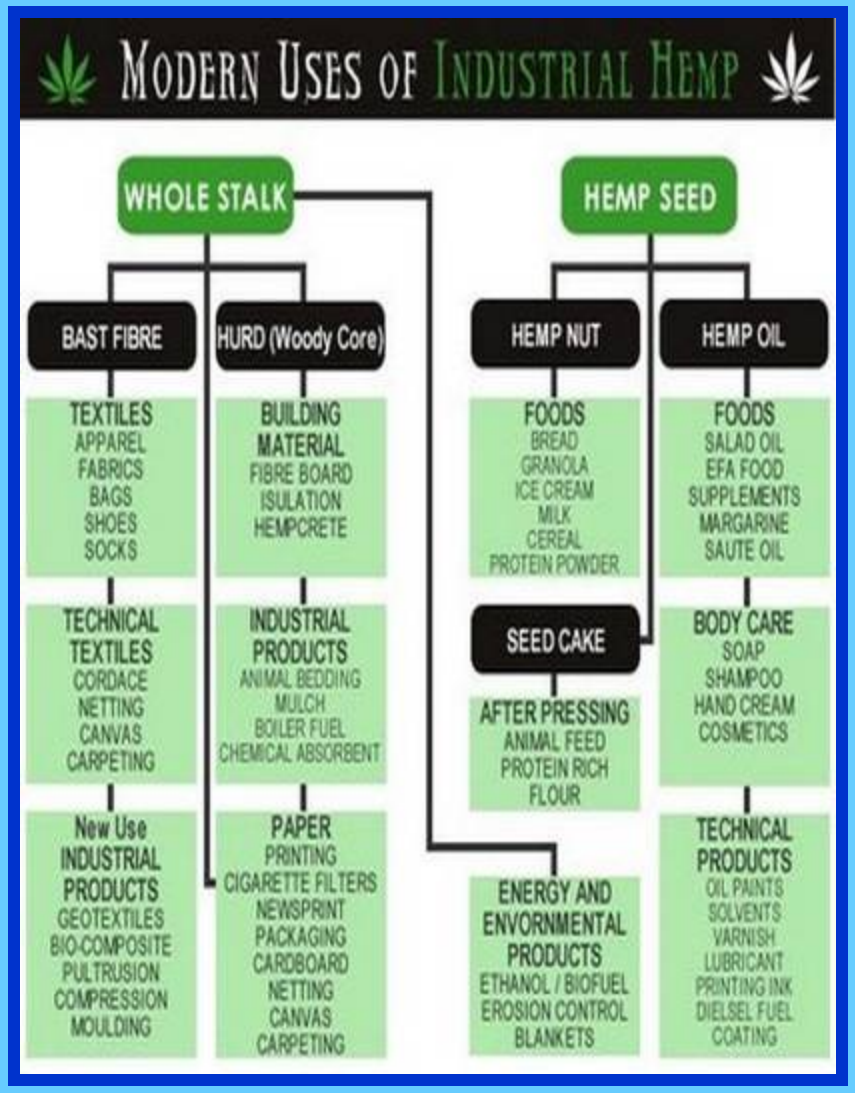

Photo Credit: Apparently Apparel.com

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5. small grains, hays, fruits, and vegetables - used with strips, provides habitat, builds soil.

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As part of a rotational cropping system, crops which would feed people and animals could include small grains, hays, vegetables, and fruits.

Orchard Photo Credits: Seed Savers Exchange

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The declining supply of petroleum eventually will require a change from petro/chemical-dependent industrial/row crop agriculture

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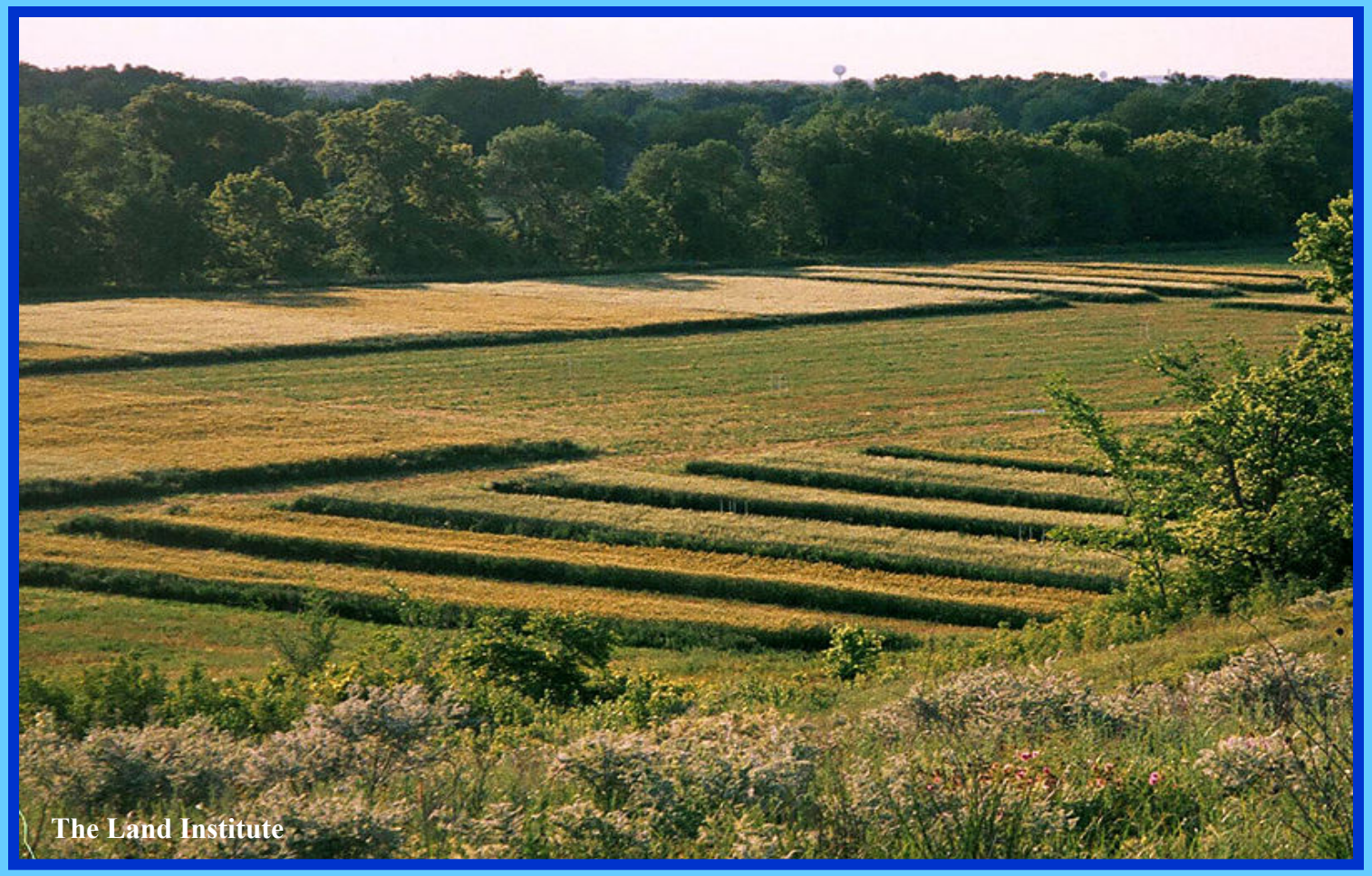

to more sustainable crop rotations.

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That could mean the need for 40 to 60 million smaller, sustainable farmers.

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And that could revitalize our rural communities.

Photo Credits: Larry Stone

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A more diverse, sustainable sponge agriculture…

Photo Credits: Janson

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would go a long way toward reducing future flooding and pollution along Iowa's waterways.

THANK YOU!

QUESTIONS?

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