A Watershed Approach to Reducing Floods

By Larry Stone & Bob Watson

PowerPoint Developed by Dick Janson
in consultation with Larry Stone & Bob Watson;
Based Upon Their Op-Ed in the January 22, 2012 issue of
The *Cedar Rapids Gazette*

May 7, 2012

A Watershed Approach to Flood Control

This presentation serves two functions; it informs and it requests.

Research tells us that prior to sod-busting in the 1830's, rain and snow stayed on the land where it fell because of the sponge-like landscape of prairies, savannahs, forests, and wetlands.

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There was a spring melt consisting of 10% of the year's total rain and snow amount. But that happened over days and/or weeks. The melt's volume was 3 to 4 inches of the annual rainfall of approximately 36 inches, and instead of flooding, the spring melt gently raised river volumes for a short time.

This presentation is about adopting crops and cropping systems that exist today that will, to the extent possible, recreate that sponge landscape without sacrificing our ability to feed ourselves.

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We originally prepared this presentation with the floods of 2008 in mind. But, because of the crops and cropping systems we discuss, it's become obvious that these ideas inform us about and speak to several other agricultural issues besides flooding. We hope you'll see the implications relating to the drought, pollution and the "Iowa Nutrient Reduction Strategy," the link between food and fracking, and the revitalization of rural America.

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The request is that you work to change the farm bill.

Most farmers have to farm the farm bill in order to make money.

Change the farm bill and you will change agriculture.

Change agriculture and you will change flooding.

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Following the 2008 floods, the Army Corps of Engineers' estimate of levee and pumping structures to "protect" Cedar Rapids from floods was $1 billion. More recent estimates for smaller systems have been substantially less, but still in the hundreds of millions.

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These efforts would protect only parts of Cedar Rapids, while creating worse conditions for other residents of the watershed. Also, these so-called “protective” systems would do nothing to alleviate the causes of floods.

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A parallel course of action would be for the people of Cedar Rapids and other flood-prone cities to focus on improvements in watershed practices to reduce flooding.

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Senator Tom Harkin - Meeting with Cedar Rapids Residents

This can be accomplished through this body and others spending political capital advocating a new farm bill, rather than only spending monetary capital on levees.

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

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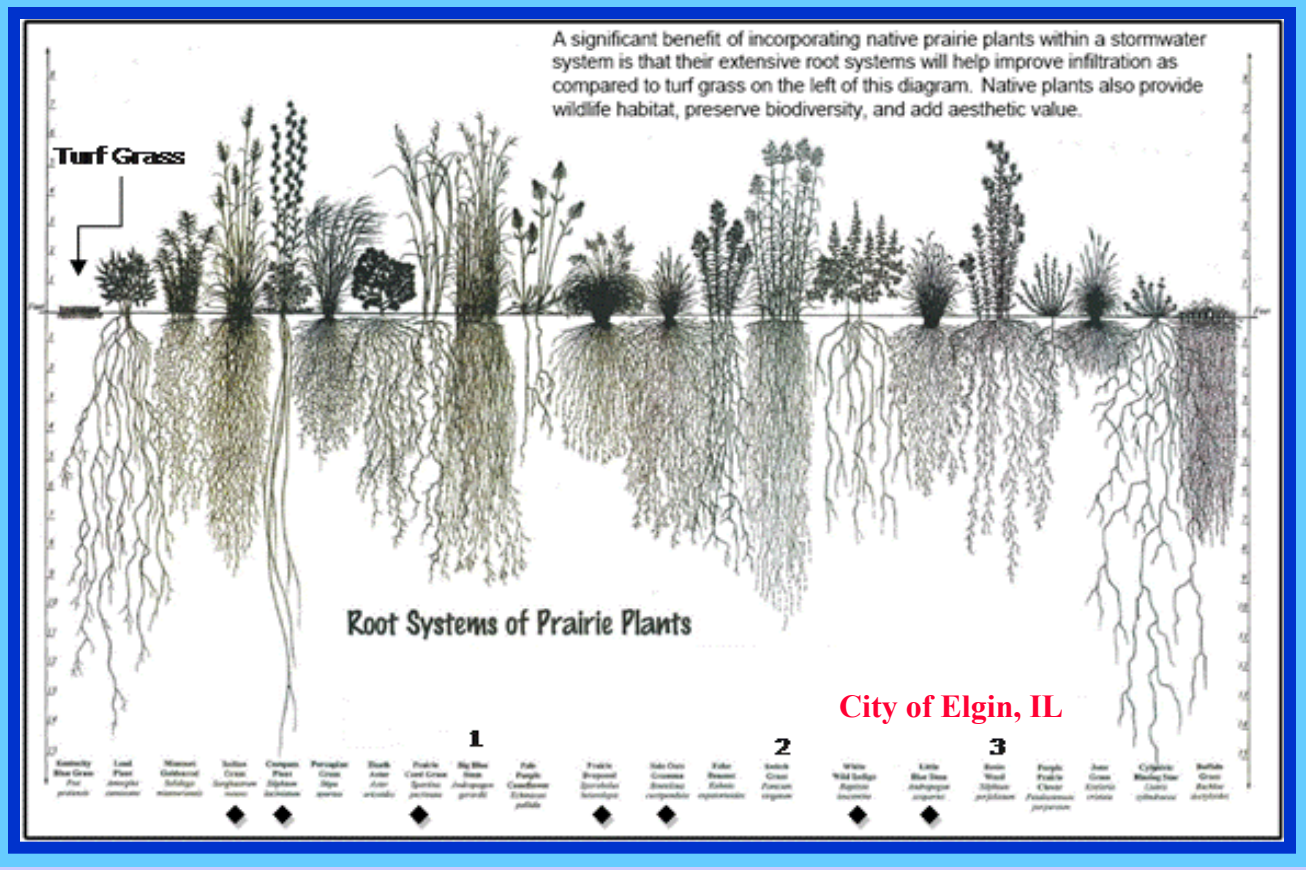

This flora/hydrological system created a vast sponge ranging some 15 to 30 feet in depth both below and above the surface.

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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 simply sluices off the surface…

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on its way into our waterways.

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But other 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 mitigating capabilities.

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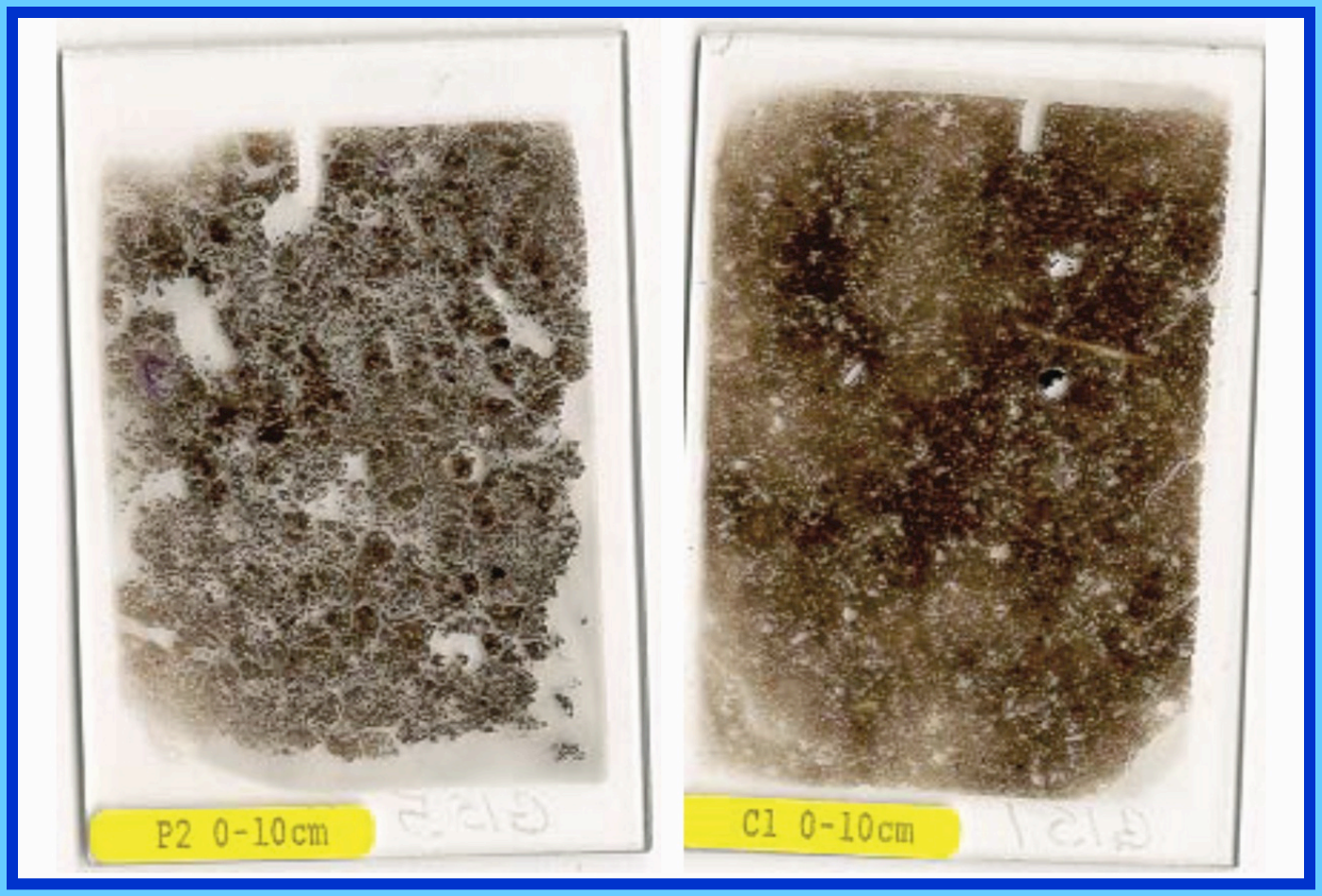

Soil Porosity Comparison

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

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

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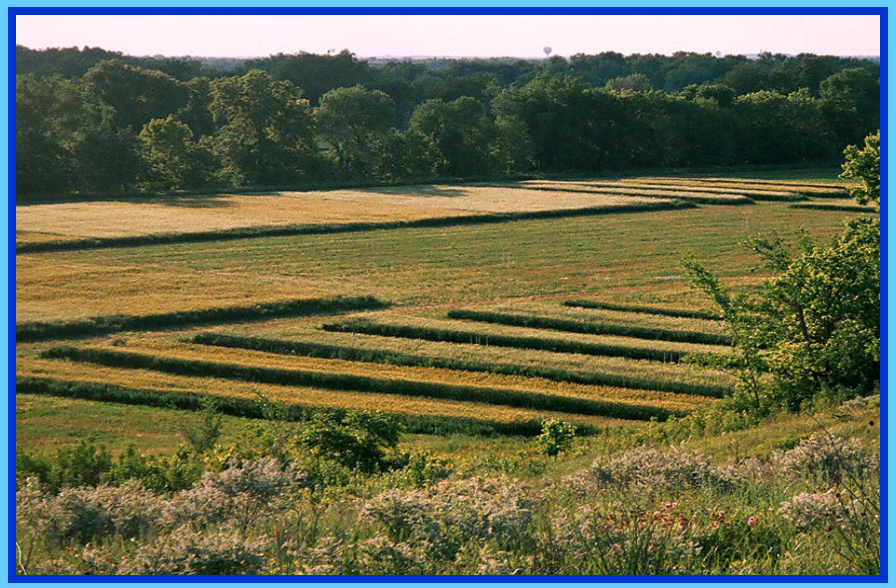

The first of these should be ready for sale to farmers by 2020.

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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Kernza Rhubarb Pie

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

Photo: Jodi Torpey, WesternGardener.com

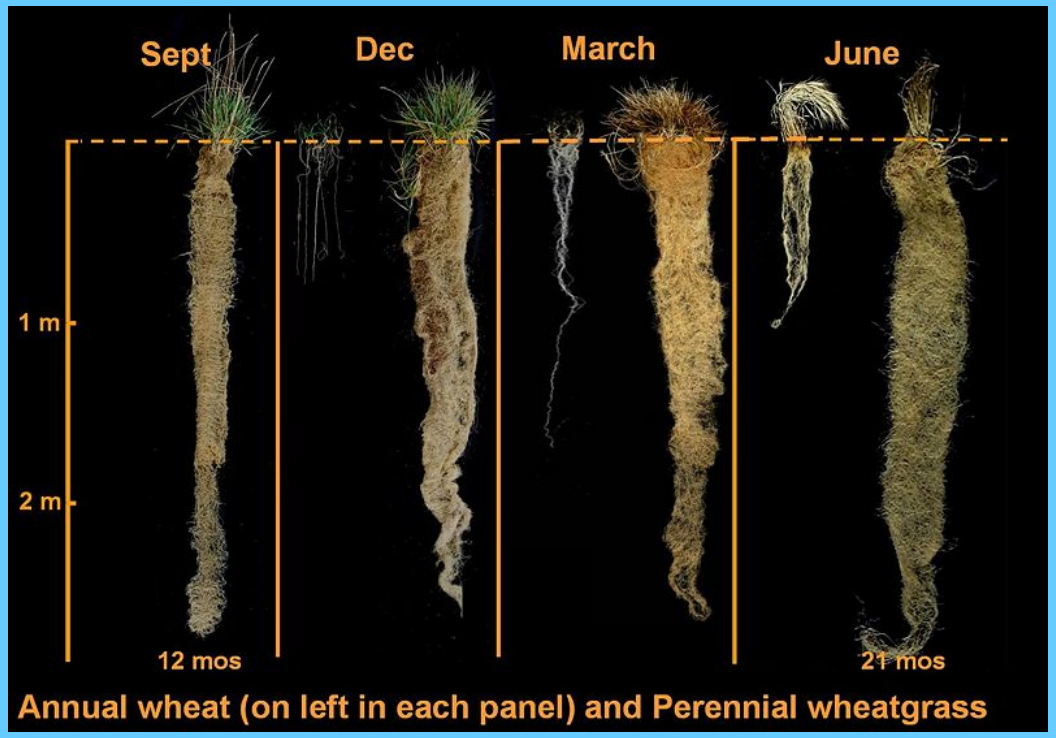

Photo: *The Land Institute*

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We also should take livestock out of confinement buildings,

Photo Credits: Janson

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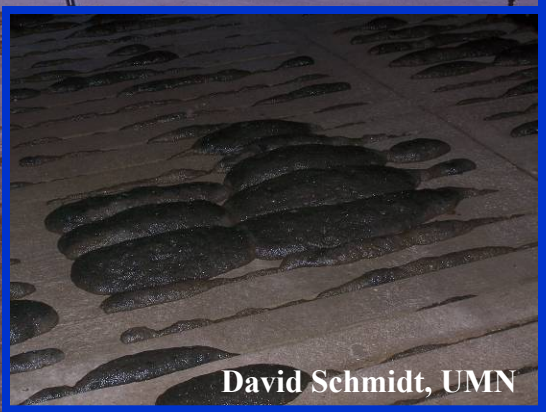

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which are really dangerous sewage collection facilities.

CAFO Lockout Tag

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	Treated Human Waste	Raw Human Waste	Confinement Waste
CBOD	25	200	1000
TSS	30	200	1000+
Ammonia/Nitrogen	1-5	15-20	300-400

Confinements create:

- **untreated sewage,**
- **hydrogen-sulfide,**
- **ammonia,**
- **methane, and**

particulates that damage human health…

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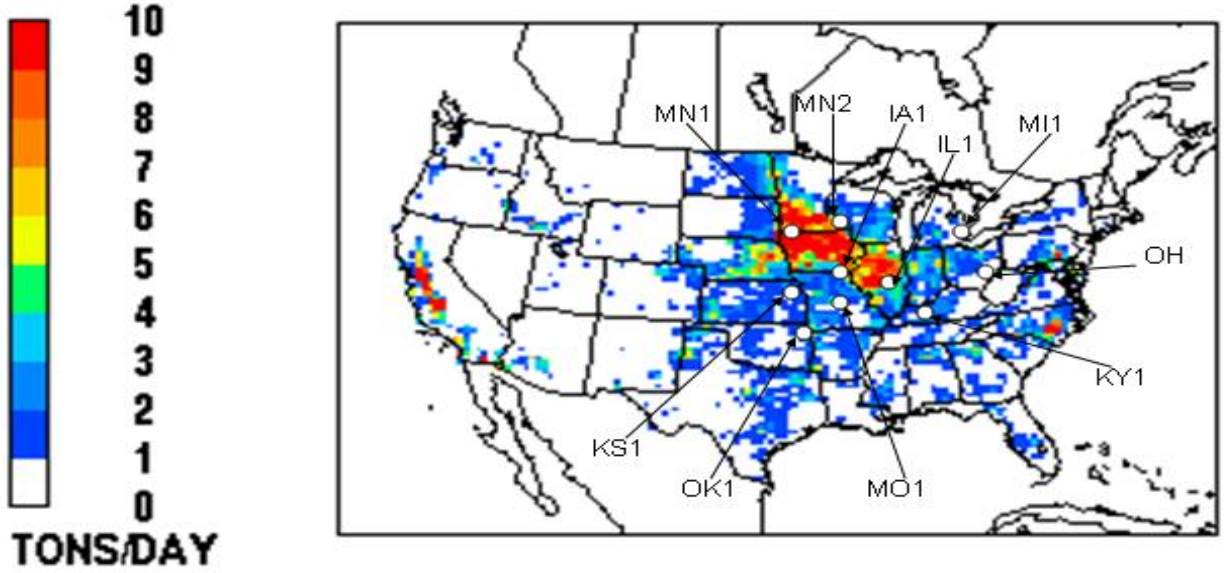

MIDWEST WIDE AMMONIA CLOUD
Courtesy of Donna Kenski, Ph.D.
Lake Michigan Air Directors Consortium, Des Plaines, IL

and pollute the environment.

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And we should remove livestock from feedlots, which often are little more than open sewers.

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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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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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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.

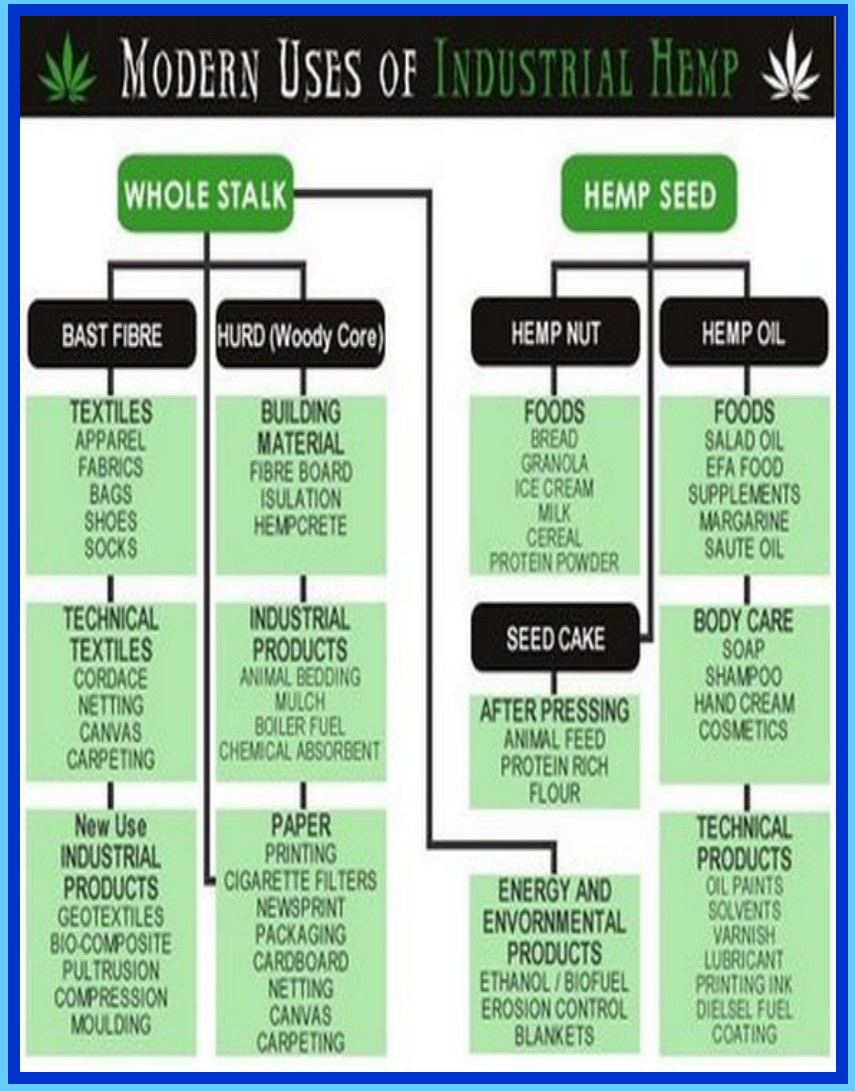

Photo Credit: Apparently Apparel.com

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

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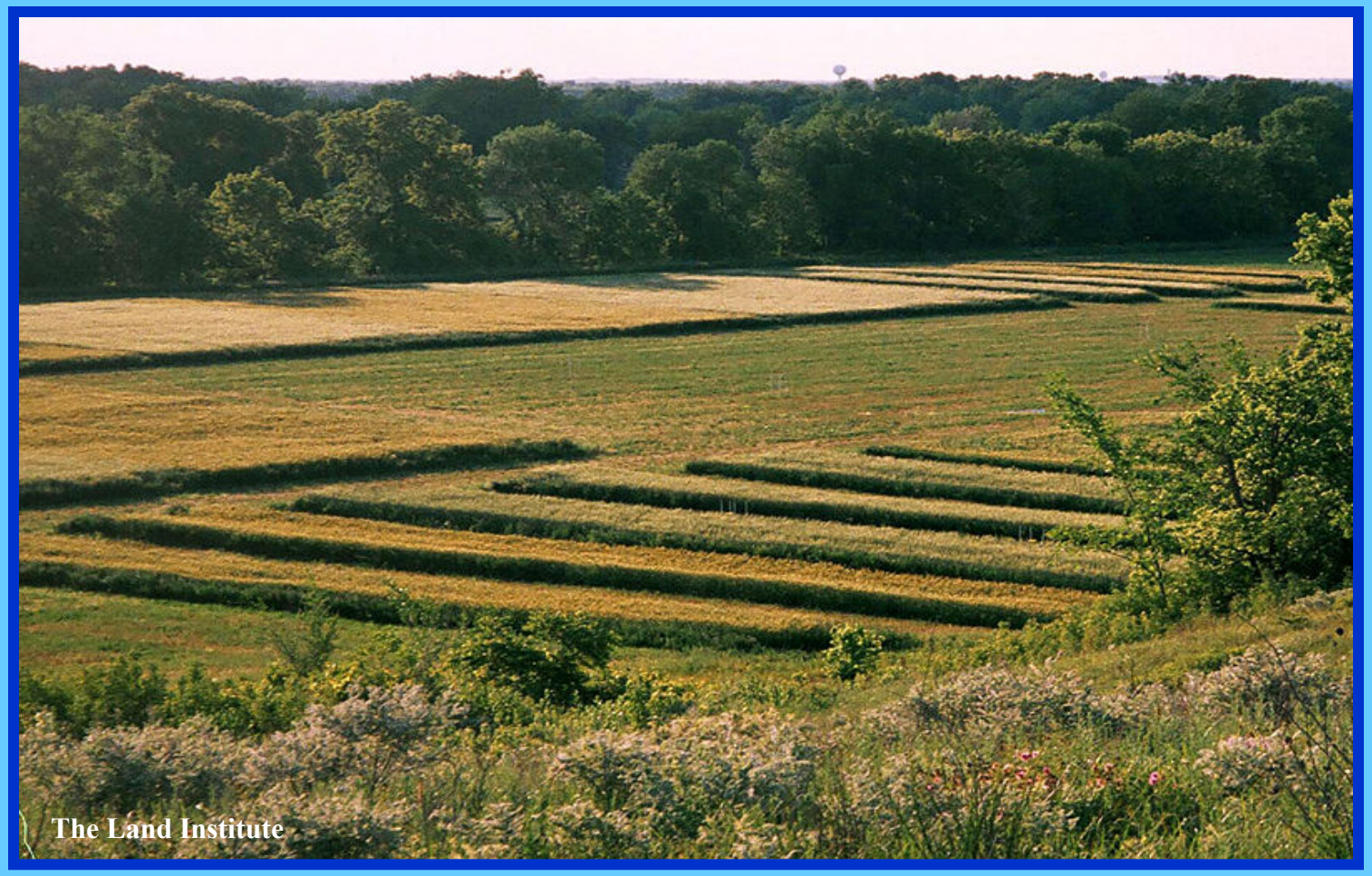

to more sustainable crop rotations.

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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…

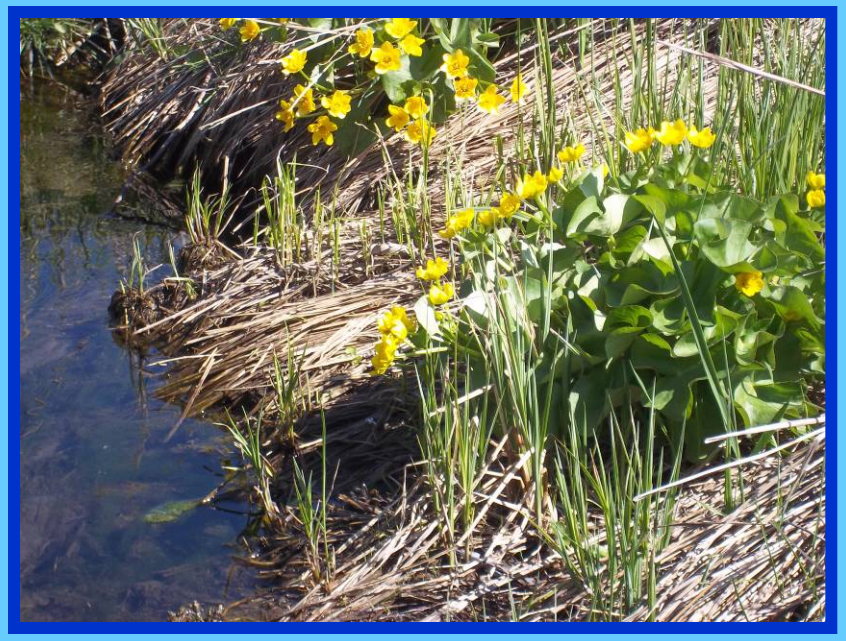

Photo Credits: Janson

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

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- A farm bill that spends political capital to promote watershed improvements to reduce floods.
- A levee and pump system to attempt to control the next “500 year” flood.

These are parallel courses of action.

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THANK YOU!

QUESTIONS?

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