EARTHJUSTICE

CLIMATE INSTABILITY AND AGRICULTURE : THE CHALLENGE

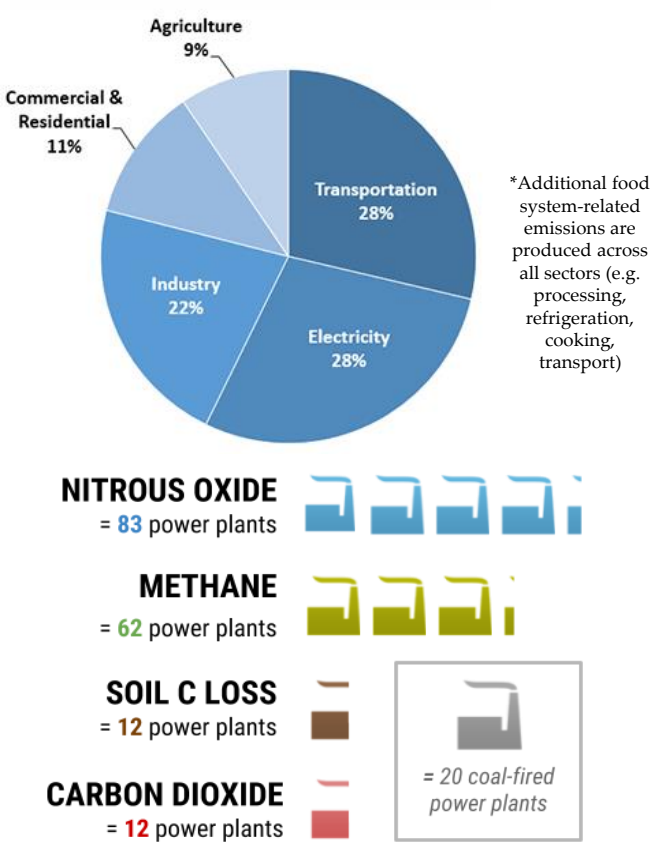
Industrial agriculture drives climate instability

The landscape of agriculture in the U.S. has changed dramatically in the past few decades. On one hand, U.S. agriculture today is more productive than ever. 60% of U.S. land-use is agricultural, providing 70% more food calories than what we need (net of imports). Corn yields have tripled since the 1960's; meat production doubled. Yet this productivity has come with a price: the agricultural sector is increasingly **industrial and concentrated**. Feed for animals and biofuels dominates cropland use - only a quarter of farmland directly produces food we eat. The majority of operations are **monoculture** (growing just one crop continuously) and use more **fertilizers and pesticides** than crops need. 6% of animal operations produce 90% of the animals we eat – confined by the thousands in **concentrated animal feeding operations**. Agricultural activities take up **80% of consumptive water use**. And on top of all that, nearly **40% of agricultural produce goes to waste** from the fields, retailers and restaurants, and our own tables. Altogether, the **total cost of food is twice its market price** including the hidden costs of environmental and public health harms.

This industrial food system drives climate instability and environmental destruction. The food system – from fertilizer manufacturing to food waste in landfills – is responsible for **25 - 30% of anthropogenic greenhouse gas (GHG) emissions**. Agricultural production alone accounts for 10% of all emissions and is the single **largest contributor to methane and nitrous oxide emissions,** both very potent GHG's.

	FOOD	IMPACT (GHG emissions per gram of protein)	COST (Retail price per gram of protein)
LOW	Wheat		$
	Corn		$
	Beans, chickpeas, lentils		$
	Rice		$
	Fish		$$$
	Soy		$
	Nuts		$$$
	Eggs		$$
MEDIUM	Poultry		$$
	Pork		$$
	Dairy (milk, cheese)		$$
HIGH	Beef		$$$
	Lamb & goat		$$$

*Snapshot of annual GHG emissions from U.S. agricultural production**



Agriculture's climate impact is rooted in *what* we produce and *how* we grow crops and raise animals. **Meat production** (beef in particular) dominates land-use and GHG emissions. Methane emitted from **cows and animal manure** rivals that of the entire oil and gas sector. **Excessive fertilizer** and manure applied to cropland emits huge quantities of nitrous oxide. Widespread **conversion of land to cropland and tillage** (i.e. mechanical disturbance of soil) releases previously unperturbed soil carbon as CO_2. In addition, the food system burns through fossil fuels for **fertilizer manufacture, farm equipment use, food processing and transportation.**

Industrial agriculture also harms air and water quality, and wildlife habitat. **Nutrient and chemical runoff** contaminates drinking water throughout the country. Noxious gases from CAFOs cause serious respiratory ailments. Since 2007, **4 to 7.8 million acres** of uncultivated grasslands and forests in the U.S. were converted to cropland.

EARTHJUSTICE

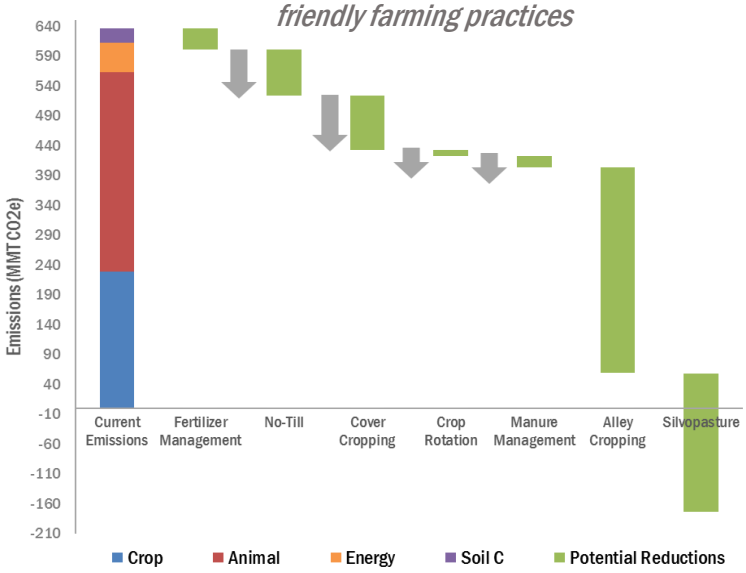
CLIMATE INSTABILITY AND AGRICULTURE : THE SOLUTION

There is growing consensus that the food system – *what* we eat and *how* we grow it – requires major change in order to protect our health, farmworkers, environment and the climate.

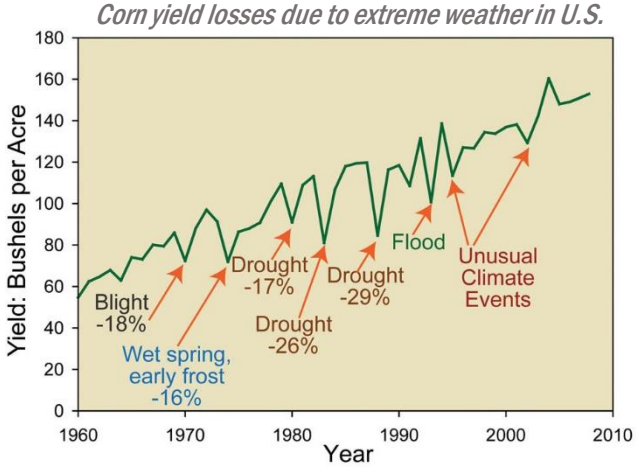
Benefits of climate-friendly farming

Agroecological practices (also known as **regenerative agriculture**) have been repeatedly and widely demonstrated to **reduce GHG emissions, sequester carbon in the soil and increase productivity**. Practices include cover cropping, no-till, multi-year crop rotations, intensive managed grazing and silvopasture and alley cropping, which incorporate perennial crops and trees into pasture and cropland. These practices can also help suppress weeds, reduce reliance on chemicals, and improve water and air quality. For growers, climate-friendly farming is a promising opportunity to improve yield, reduce costs and diversify their revenue stream. **If adopted on a wide-scale, agriculture has the potential to be carbon-neutral.**

Potential emissions reductions of climate-friendly farming practices



Corn yield losses due to extreme weather in U.S.



Protecting farmers from climate instability

Farmers and ranchers are among those most harmed by climate instability. Extreme weather events, such as Hurricane Florence cause millions in damage. New or tougher **weeds and pests** place the burden on farmers to apply more pesticides. Temperature extremes **reduce yields and nutritional value,** and pose dangerous working conditions to the 1.3 million farmworkers in the U.S. Agroecological practices that nourish the soil will improve soil water retention and infiltration to defend cropland against drought and flood.

Building momentum for climate-smart farming in the U.S.

Most farms have yet to adopt agroecological practices, despite their proven cost-effectiveness, due to a gap in accessible information and financial assistance. Only 3% of all cropland acres use cover crops, and 1% of farms are certified organic. To build momentum for climate-friendly farming, policy-makers should:

- **Amend those federal and state policies** that discourage sustainable practices, such as EPA's "aggregate compliance" approach to prevent cropland conversion for biofuels, crop insurance that discourages crop rotations, or incentives for planting on marginal lands;
- Ensure **climate-friendly provisions in the 2018 Farm Bill** (e.g. soil health pilot project, funding for conservation practices) are effectively implemented;
- Increase **funding for agroecological research**, outreach and training;
- Enact **state laws that incentivize "healthy soil" practices** with provisions such as expanding education and training, offering financial assistance for transition, providing preferential purchasing, etc.;
- Better implement existing federal/state programs, such as **Conservation Reserve**, and **water/air pollution laws** to maximize long-term climate benefits and reduce industrial agriculture's impacts.