EARTHJUSTICE

CLIMATE INSTABILITY AND AGRICULTURE : THE CHALLENGE

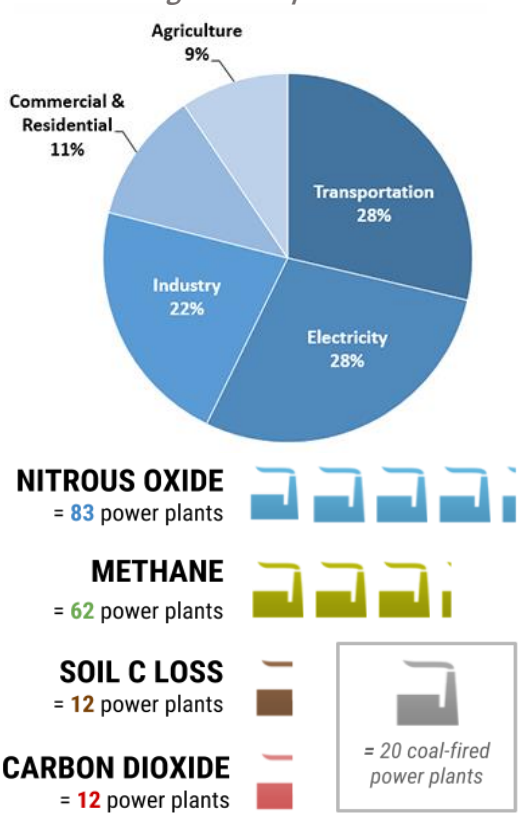
Industrial agriculture drives climate instability

The landscape of agriculture in the U.S. and in New York 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 out 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 non-CO_2 emissions.**

	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 GHG emissions from U.S. agricultural production



Agriculture's climate impact is rooted in *what* we produce and *how* we grow crops and 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, a very powerful GHG. 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 state and 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.

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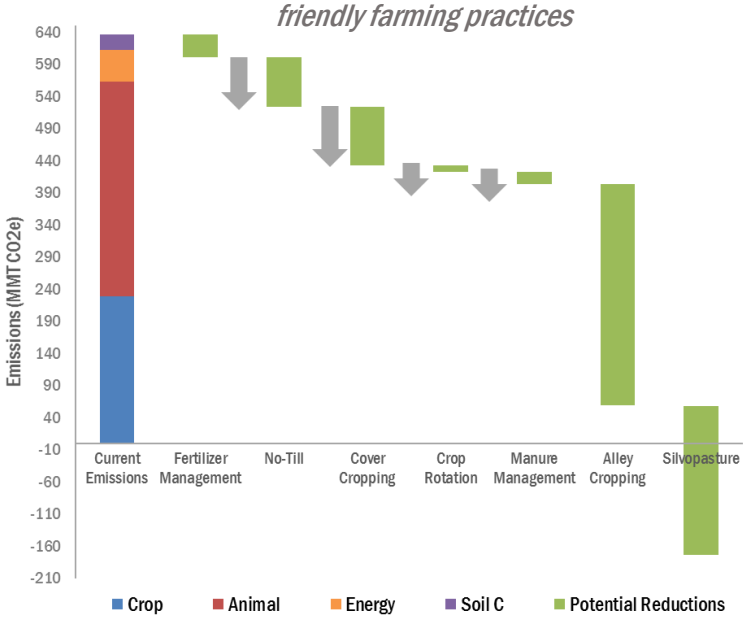
There is growing consensus that the food system – *what* we eat and *how* we grow it – requires major change in order to protect our health, farmworkers, environment and the climate.

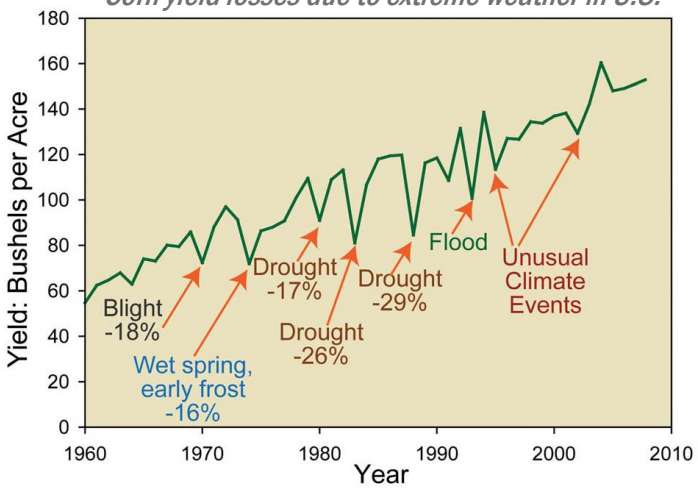
Benefits of climate-friendly farming

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

Building climate resilience is critical for American farming communities and our food supply. **Farmers and ranchers are among those most harmed by climate instability. Extreme weather events,** such as Hurricane Florence cause millions in damage. 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 in New York State

Most farms have yet to adopt agroecological practices because they lack the understanding, knowledge, training, and financial capacity to do so. Only 5% of New York cropland acres use cover crops, and 3% of farms are certified organic. To build momentum for climate-friendly farming, New York State should:

- **Pass a state law that incentivizes adoption "healthy soil" practices**, with provisions such as:
  - Provide education, training and technical assistance for producers
  - Offer financial incentives that pay for practices or tons of carbon sequestered
  - Create preferential purchasing and marketing programs, and certification program
  - Introduce a transition insurance program to help counter the initial risks
- **Expand the Climate Resilient Farming Program** to include more funding for practices beyond cover cropping that will help meet the state's soil carbon sequestration goal.