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Become a Green Rancher

The most powerful tool we have to heal our climate is locked up in feedlots. We just need to open the gate.

— Abe Collins, Vermont Carbon farmer

For millions of years, huge herds of buffalo, deer and antelope roamed Earth's grasslands, grazing in tightly bunched herds to avoid their predators. Wherever they grazed, their manure and urine fertilized the land, and their hooves trampled native grass seeds into the soil. Their impact was sudden, but when they moved on, the grasslands quickly recovered, and the tall native grasses stored copious amounts of carbon, their roots reaching as deep as six meters.

When modern settlers arrived, their first instinct was to kill the predators. In North America, two million wolves were shot or poisoned during the 19th century — and the same thing happened on the Tibetan grasslands and elsewhere. Without their normal predators, the cattle and sheep wandered freely. The native grasses were no longer trampled or fertilized, and instead of being buried, the seeds were blown away on the wind. The soil became more gravelly. The native grasses, once belly high to a horse, were replaced by invasive weeds with shallower roots. The grasslands eroded and turned to desert, and their enormous store of carbon was released to the atmosphere. The wolves and other predators, by corralling the grazing animals so tightly, had been the unwitting guardians of the grasslands' carbon.

Abe Collins

Summer on Cimarron Farm, where the cattle have rotated into a new pasture.

Today, more than 120 million pastoralists tend 3.5 billion cattle, sheep, goats and camels on 3.4 billion hectares of grassland (a fifth of the Earth's land surface), from the plains of North America to the pampas of Argentina and the grasslands of New Zealand. The ranchers are learning, however. In Vermont, Abe Collins practices "mob stocking" on 130 acres at Cimarron Farm, moving his 80 dairy cows up to eight times a day to replicate the way wild animals used to graze. As a result, his pastures have become so thick with carbon storing plants that he has been able to eliminate grain inputs, saving tens of thousands of dollars a year. In Bethesda, Maryland, where Martha Holdridge has been using management-intensive (rotational) grazing at West Wind Farm, soil testing by West Virginia State University demonstrated a five-year carbon content increase in 14 tested paddocks from 4.1% to 8.3%, storing an additional 9 tonnes of carbon per hectare (4 tons per acre), or 1.8 tonnes per hectare per year.[1]

In Australia, farmers call it "carbon farming." Instead of letting their sheep graze everywhere, they use high-density, short-duration grazing and direct-seed their cereal crops into the native perennial grasses. Their sheep graze on small 20-

Methane reduction in grazing animals	
Cystein food supplement + nitrates[2]	<100%
Feed additive based on fumaric acid[3]	<70%
Garlic[4]	<50%
Early season grazing[5]	29–45%
Grinding/pelleting low quality forages[6]	20–40%
4% canola oil mix[7]	33%
Enzyme inhibitors[8]	30%
Alfalfa grass, instead of grass only[9]	25%
Rotational grazing, high quality forages[10]	22%
Organic sugars and special bacteria[11]	20%
Vaccination[12]	20%
Legume lotus/tannins[13]	16%

- American Sahara: wildflowers-and-weeds.com/sahara.htm
- *The Carbon Fields*, by Graham Harvey, Grassroots, 2008
- Conservation Reserve program: nrcs.usda.gov/programs/crp
- Grass-Fed Beef: csuchico.edu/agr/grassfedbeef
- Grass-Fed Food: eatwild.com
- Holistic Management International: holisticmanagement.org
- Grassfarming: eatwild.com/environment.html
- Grassroots Food: grassrootsfood.co.uk
- Rowett Research Institute, Aberdeen: rri.sari.ac.uk
- Ruminant Livestock Efficiency Program: epa.gov/ruminant
- West Wind Farm: westwindfarm.biz
- Wild Farm Alliance: wildfarmalliance.org
- *Wolf Totem*, by Jiang Rong, Penguin, 2008

hectare paddocks and are moved every four to six days, giving the land 70 to 90 days to recover before being regrazed. The hooves push the manure and native grass seeds into the soil once again, and the perennial native grasses return, storing carbon as they grow. Since the carbon-rich soil can hold more water, the yields increase, erosion ceases, and the land stores up to five times more carbon than before, gaining a tonne of carbon per hectare per year.

If all of Earth's ranchers were to adopt these practices, they could capture 3.4 Gt of carbon a year, contributing immensely to the solution we so urgently need.

The Methane Problem

While they are grazing, cows and sheep belch methane, which traps 25 times more heat than CO_2 over 100 years. (See p. 12.) Around the world, 1.3 billion cows each produce 250 to 400 liters of methane a day. Between them, cows and sheep produce 5% of the world's greenhouse gas emissions. In New Zealand, they produce 43% of the country's emissions.

Agriculture research scientists are engaged in a quest to reduce these emissions. While some solutions are still experimental, others show promise, including a diet that is richer in high-quality grasses. Methane can be reduced per kilogram of meat produced when cattle are raised intensively in feedlots and fed grain, because the animals are pushed to grow so rapidly, but this has to be balanced against the acidosis, rumenitis, liver abscesses, bloat, bovine respiratory disease, higher feed costs and nitrous oxide (N_2O) emissions from the feedlot manure lagoons, which trap 298 times more heat than CO_2, because of which the livestock industry produces 65% of the world's emissions.

When a cow digests more easily, it produces less methane. In the wild, when herds of grazing animals wandered constantly in search of more tasty grasses, the native grasslands offered a huge diversity of grasses, wildflowers, mosses, lichens and liverworts. The Yunnan Mountain Grasslands in southwest China host more than 15,000 plant species, providing a delicatessen and a medicine chest for the grazing animals. Restoring cows to organic pastures rich in medicinal herbs would appear to be the best way to reduce their methane emissions.