



This month we feature the ruminations of one of our favorite Eastern Idaho bloggers, rancher and conservationist, Wendy Pratt. Above, Wendy and father-in-law, Gary Pratt, moving cattle to summer range. Photo courtesy: Anita Pratt, 2018. Visit Wendy's blog at: <http://thepastoralmuse.blogspot.com/>.

SOIL HEALTH: NORTHSTAR, ANTIDOTE TO VANISHING AG LANDS

By Wendy Pratt, rancher, conservationist, and blogger.

Our forebears on our Southeastern Idaho ranch were Europeans who, in the early 1900's, homesteaded the only ground that was left – sand – and made a go of it. It was such hardscrabble living that great-grandfather and his kind were referred to as “poor sandhillers.” But it must have worked because we're still here.

Ours is an old-timey ranch, mostly flood irrigated pasture and hay. And on the margin we've left the brushy sandhills which provide shelter to our herd and a dry place to have a calf. We till the soil with trepidation, because in our area, bare soil means blowing soil during the reliable spring winds.

As the century wore on, the Pratts gathered up a few neighboring homesteads. Others gave way to larger operations. The advent of pivot irrigation meant the sandhills were leveled and turned into productive and efficient farms. But bare soil still means blowing soil, and despite efforts by farmers to hold onto their lifeblood, windy days fill our ditches with sand and bury fencelines. Each time I sweep my front porch after a windstorm, I bemoan the tons of soil displacement happening year after year.

I knew it was bad, but only recently learned our ranch is located within a wind erosion corridor designated by the Idaho Department of Transportation (ITD) and the Natural Resources Conservation Service (NRCS). This corridor, which stretches roughly from Burley to Rexburg,

is hazardous during windstorms which results in road closures. This action, coupled with clean-up by ITD heavy equipment following a storm, comes at a significant cost to taxpayers.

Shawn Nield, state soil scientist for Natural Resources Conservation Service (NRCS), said that bare soils of the types found in the corridor can easily exceed erosion rates of 40 tons/acre annually. To help visualize this, Nield explained that 40 tons equates to the width of a stack of 5 dimes across one acre. Wind erosion, which brings to mind the desolate images of the Dust Bowl years, is alive and well in our own modern communities.

In my grandmother's belongings is the 1952 edition of a magazine entitled, *The Land*. The essays in the magazine written



Blowing topsoil is a common occurrence in her part of Idaho, but doesn't have to be, believes Pratt.

67 years ago are as timely as ever – even more so actually - as new challenges like climate change and aquifer declines permeate discussions of land use.

“Soil kept in its right place is the very elixir of life,” wrote Elmer T. Peterson, in his article, *Insoak is the Answer*. What a great word *insoak* is! Holding on to water is joined inextricably with holding on to soil. In our planet’s current state, endangered by floods and droughts, *insoak* should be a household word. It should inform the placement of new homes, of farm and garden design, of city planning. It should be taught on the playground and in the boardroom.

Since the 50’s, soil science has matured. What was traditionally a discipline of chemical and physical properties, following new knowledge now includes the vastness of living microscopic organisms in

the soil. Turns out, trillions of these guys are living under our feet and our crops, especially in fields untouched by tillage, just waiting to do what they do best – build fertility. From worms and bacteria to fungi and nematodes, they promote nutrient cycling which benefits plants and thereby agricultural productivity. This new knowledge is driving the current regenerative agriculture movement.

The five principles of soil health promoted by the NRCS are being implemented around the state. They are:

1. covered soil
2. minimum tillage
3. year round living roots
4. diversity, and
5. livestock integration

Farmers can apply to receive funding assistance from their local NRCS office,

and receive special consideration if their operations are in proximity to major travel routes within the wind erosion corridor.

The first principle of soil health, covering soil with living or dead plant material, means water soaks in instead of running off. It means that life in the soil is protected from temperature extremes. My husband remembers running to swim in the ditch when he was a kid. He would run a few strides across bare sand, then throw his towel down to cool his feet off before taking off again. Covered soil also nearly eliminates soil erosion.

Minimum tillage, the second principle, means the microbe community is protected by soil structure. Just as our homes protect our families, so does the soil protect the trillions of microbes that live there. Think of deep tillage as an airplane hitting your house. It upsets your cooking and sleeping quarters, exposes your climate-controlled indoor temperature to severe hot and cold, and leaves your family defenseless against sun and wind.

The third principle, keeping living roots in the soil for as long as possible, captures the key relationship between roots and microbes. Simple sugars leak from roots which feed microbes. These organisms, in turn, break down nutrients in the surrounding soil to be taken up by roots. If we want to maximize this symbiotic relationship, then the longer we have living roots, the higher our production.

The value of biodiversity, the fourth principle, is another big factor to consider. The symbiosis of different plant species, with different and complementary charac-



Lifted on the wind, airborne topsoil can make driving in erosion corridors hazardous.



Sam Chandler, of Springfield, shows off his cover crop.

teristics, some that go deep like daikon radishes, others that feed pollinators like phacelia, etc. all work in unison to bolster one another. Just as a human community of young and old, of varying cultures and trades, artisans and accountants, cooks, craftsmen and caretakers, all make for a vibrant and resilient village, so does life in the soil need one another to thrive.

And, of course, all of these practices mean soil stays put.

As ranchers, we're especially interested in the last principle of soil health, livestock integration. Before humans discovered how to add fertilizer from long dead organic life, we relied on manure to maintain crop yields. Separating livestock from crop land is a relatively recent occurrence.

We see abundant opportunity for fall and winter grazing in this same wind erosion

corridor if cover crops are planted immediately following harvest. Grazing through early winter helps reduce winter feed costs for the rancher while increasing returns for the farmer. And that's not counting the benefits of increased soil microbial activity!

Cover crops that are not grazed, but instead turned into the soil increase soil fertility, but an extra level of symbiosis occurs when those same crops are cycled through the gut of a herbivore. Cows cannot digest cellulose, it's the microbes in the gut that do the job. The digestion of the microbes themselves provide the cow her needed nutrition. Those microbes are then returned to the soil surface via manure and urine (even saliva) where they ADD TO the microbes already present in the soil. Life begets life, which begets life.

We've experimented over the years with dormant season grazing and appreciate any farmer willing to work with us. We've grazed corn stalks, grain regrowth and cover crops with good, albeit limited success. The logjam continues to be getting the crop planted soon enough following harvest of the main cash crop to make the grazing pay. As one farmer explained to us on a cover crop tour, "every day in August is golden."

But even with late planting and low tonnage, we've seen good results. We were surprised this fall when our cattle gained weight on a marginal crop and stayed out ten days longer than expected. Even the severe frost in mid-October didn't negate the growth of these crops that can withstand cold temperatures.

Because cows have been banned from many farms, it's not an easy pull to put them back on the land. There are no fences or stockwater in



Phacelia promotes pollinators in Sam's crop.

most cases. However, temporary electric fence, which is constantly being improved and refined, is the answer. We've learned a lot over the years about how to move cattle through residential neighborhoods and how to contain them once they arrive. For drinking water we have set up a temporary trough off a house garden hose, insulated the line with straw, put a float in the tank, and been successful.

Electric fence, essentially a twine on a spool, goes up quickly on step-in plastic posts. One wire usually works if cattle are trained to it and it's kept well electrified. Portable energizers hooked to a battery provide the power source. Temporary

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Sam's cover crop: radishes, turnips, beardless barley, kale, and phacelia.



Mark repositions hot wire on a winter grazing pasture.

wires can be strung around yards, around pivot points, etc. and greatly increase our options.

The inconvenience is worth the effort. The land is crying out for herbivores to close a loop nature invented. It's good for our human community, as well, to see cattle moving to fields, to see them grazing

through the snow. Grazing animals are an essential part of the web of life, the diversity of our nation, age-old and symbiotic. They build resiliency in our agricultural community.

Resiliency and insoak are two words we should practice and promote. What does the land look like when insoak is optimized? What does it mean to be resilient? It means we can deal with changes in weather patterns, that we have options and aren't afraid to rethink old paradigms. That we can attract young people back to the ranch or farm. That soil health can be our north star, and wildlife, including polli-



Calves behind a wire dropped from a pivot nozzle, moving as the pivot moves.

nators, soil microorganisms, songbirds, etc. will flourish on our Ag lands. It can even be an antidote to vanishing farm land. ☐



Cattle grazing a cover crop in November.

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