

Minnesota, I cannot say I know a single conventional farmer who sets out to practice the least sustainable methods of agriculture while knowing the impact it has on the environment. The reality is, the practices that degrade natural resources are the most financially accessible methods to most small-scale producers. These same producers have little power or economic stake in the large scale industrial farming system, forcing them to compete with the approximate 3% of US farms producing over 50% of agricultural products. The power imbalance is painfully obvious, and has affected my family, our neighbors, and farmers all across the U.S.

After spending several years working within the agricultural industry, I intend to shift my role to one involved in nonprofit organization and advocacy. I want my work to center on advocating for political reform that allows for just transitions for farmers into sustainable, regenerative practices. Working with a group like the Land Stewardship Project in the future is a personal hope of mine. During this time, I also intend to decide to pursue graduate studies, likely in Sustainable Food Systems or Rural Development, to further my understanding of the complexities of our agricultural system and how it can be reformed and bettered. The industrial agriculture system as we know it is both environmentally and socially degrading, relying on exploited labor and resources to produce cheap food. It is also detached from most consumers. Farmers from somewhere produce food that suddenly appears on our dinner tables. I aim to bridge that conscious and physical divide between communities and producers through educational campaigns and facilitated farmer-community engagement opportunities. I believe this can be achieved by connecting farmers to communities through educational opportunities such as public gardens, workshops, and volunteer opportunities. However, this must be supported by government subsidies to ensure small-scale producers can practice regenerative farming and support themselves financially.

My intersectional educational background, as well as my lived experiences as a rural farmer, equip me with both the understanding and the ability to be a change-maker in the sustainable agriculture and food systems while centering people like my family in my work.

Then, another turning: Democrat Collin Peterson, chair of the U.S. House Agriculture Committee, lost the seat he had long held here in the rural Trump wave.

Peterson based his representation of the 7th Congressional District upon speaking for the largest half-dozen or so crops farmers in each county. He kept the money flowing to these operations, cloaking it in heavily subsidized crop insurance. This crop support inevitably got bid into increasing land values as growing farm operations bid up both land values and rents in what was actually a publicly supported effort to grow more corn, soybeans and wheat. This locks out young start-up farmers, traditional livestock farmers and stymies efforts to get livestock back on the land.

I would like to have stood with Peterson, who thinks of CRP more in terms of crop supply control, viewing the 6-foot drop off to the adjacent corn field to get his take on the effect of row cropping at work.

For Earth to remain viable for human habitation for more than a few decades, agriculture must change. It must move toward perennials.

It must give up its centuries-old fascination with annual crops like wheat and corn, and begin the study of how perennial plants fit food production. Perennial plants, properly managed as under a good planned grazing regimen, incorporate atmospheric carbon into the soil as organic matter, thus beginning to reverse centuries of burning off carbon through tillage. Even carefully planned rotations of annual plants without tillage will not safeguard soil and build organic matter like a good stand of perennials.

Production of perennial crops requires close on-site management driven by observation, experience and a feel for natural systems. This is especially evident for Kernza production, which is best done by a mix of cropping and livestock systems. We have few people in the farm population even capable of this breadth of management anymore. A different set of farming skills and a new attitude are required. The need for decision-making based upon observation and knowledge of place and its biology presupposes that operations cannot be huge. Perennial agriculture will create a different human social structure around it.

Jim VanDerPol and his family have been farming and learning from the land for nearly 45 years. More than half of the 320 acres is now in grass or hay. Decision-making is now guided by the **Holistic Management Model**, which considers the environment and family/community as well as long-term profitability. Read about his farm at <https://www.pasturesaplenty.com/about>

This article is slightly abbreviated from the original. Go to our website for the complete unedited version. Used with permission.

The purpose of this scholarship is to provide financial aid to individuals growing up in southeast Minnesota who are committed to sustainability in the fields of agriculture and forestry, have demonstrated leadership and communication skills, and are interested in pursuing a career in fields related to and advancing practices of sustainable agriculture and/or forestry. Sustainable practices ensure clean water, healthy regenerative soils, and vibrant rural communities for future generations.

The scholarship fund seeks to find the next generation of professionals who will learn how to manage our environment on a completely sustainable basis, provide food, fiber and shelter for people, and in the process protect our precious natural resources for our children and those yet to come.

If you too are concerned about the indiscriminate use of chemicals which are killing our pollinators, polluting our water, and negatively effecting our food supply, then JOIN US by donating today. Contributions to the Fund are fully tax deductible.

Methods of contributions are numerous:

- ★ A check or credit card is wonderful.
- ★ Matching funds from your employer.
- ★ Direct transfers from an IRA.¹
- ★ Endowments through your Estate Plan, wills or life insurance policies.¹

1) See website for method and be sure to contact your financial advisor, accountant or lawyer for advise.

The Scholarship Endowment Fund is structured such that only earnings from the invested capital are used to pay for scholarship(s) and Fund operating expenses. This rule assures that the Fund will operate in perpetuity. The Rochester Area Foundation (RAF) is the steward of the Fund. RAF's administrative fees are 1.25% of the annual fund balance and are amply covered by RAF's investment performance. Neither scholarships nor fees are reducing the endowment equity!

* There is a cost for credit card donations.



To access the website with all its references, current and past newsletters, scholarship information, donor list and more, use your smart phone to scan the QR code.

For more details and references related to articles in this newsletter, visit our website:

www.protectourresources.org



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**100%
of your
donation
goes to
build this
endowment
fund!***



***Introducing
the 2021 Scholarship recipient:***



Audrey
Lavina
Marie
Ochtrup-
DeKeyrel
from
Harmony,
Minnesota.
A Junior at
Gustavus
Adolphus
College with
focus on

environmental studies and geography. But more than that, a review of her coursework demonstrates an individual with a broad education preparing her for her future focus, in her own words: “My time in undergraduate has been dedicated to the fields of Environmental Studies and Geography. The multidisciplinary nature of both of these fields has shaped my approach to sustainable agriculture as integrative as the education I have received. Something as multifaceted as regenerative agriculture requires a multifaceted approach, which I bring by understanding both the scientific and social scientific dimensions. Through coursework in natural sciences, as well as physical geography, I have gained an understanding of the realities of conventional agriculture and its impact on natural resource depletion and overall environmental degradation. Additionally, I have learned the regenerative effects sustainable agriculture and resource management has on an ecosystem from a natural science perspective.

My studies in the area of Geographic Information Systems (GIS) have been integral in my understanding of the impacts of conventional farming. I have distinct memories of mapping out the crop varieties in southeastern Minnesota and seeing nearly exclusively corn and soybeans, despite a majority of each harvest not going towards human consumption. I also remember creating two maps depicting the different

percentages of topsoil between two different decades, which ultimately showed about a 1% loss of topsoil annually. These visualizations of the reality of farming in my region of Minnesota have only fueled my desire to change our conventional agriculture system.

While my coursework in classes such as geology and conservation biology have bolstered my scientific understanding of agricultural and food systems, human geography has added a layer of social and political elements to my critical analysis of regenerative agriculture. I have grown to understand the concepts of food justice and food sovereignty and how those are supported by sustainable, small scale, agriculture. I believe supporting an agricultural system that is accessible to all individuals, regardless of gender, race, or economic status, creates a world in which farming is understood as a practice we all should be invested in, especially in regards to ecological impact.

The economic viability of sustainable agriculture is directly tied to policy that aims to promote environmental quality, while supporting farmers as they transition from “cheaper,” conventional farming. My interdisciplinary intersectional education has molded me into a capable individual, dedicated to creating environmentally sustainable agricultural systems that are accessible to a wider community of people.

Her future plans represent a perfect match with the goals of this scholarship. Again, in her own words:

“I intend to pursue on-site agricultural resource management followed by a career in nonprofit social justice and agricultural policy advocacy. I hope to advance food sovereignty and feasibility of sustainable farming for rural producers. By beginning my professional career in onsite sustainable farm management and labor, I intend to bolster my existing knowledge of effective regenerative agriculture and what barriers exist for farmers. This hands on experience will aid in my nonprofit work. Growing up in rural

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Agriculture must change, with different skills and a new attitude required. It must give up its centuries-old fascination with annual crops like wheat and corn, and begin the study of how perennial plants fit food production.

By Jim VanDerPol



Owners of a piece of property a distance from our family farm in western Minnesota reached out and asked if we were interested in renting 120 acres that was coming out of the Conservation Reserve Program (CRP). I told them I would only use the land for grazing.

The land is damaged, as is all land in agricultural use.

Because it is on glacial till with a gravel subsoil and steep slopes, it is designated by the government's Natural Resources Conservation Agency as highly erodible. The damage is stark. As a measure of the trend in agriculture in the 30-plus years this farm has been in standing, unused grass, it is possible to step down from the property corner a vertical distance of at least 6 feet to the corner of the adjacent corn field. This drop is a crude measure of row crop agriculture's breathtaking soil loss to the creek below in that time.

Managed grazing needed

I showed the owners the stunted brome grass on the hilltops and sides where it was mixed with goldenrod, and the lush patches of reed canary grass and cattails in the low areas between the hills. We saw how the soil was thin with gravel exposed in places on the hills, but very thick at the bottoms where water often stood. I made the argument that the land needed animals managed in a planned grazing system. Managed grazing will develop a strong and extensive root system under the grass. Those roots will keep rainfall in place and more soil on the hills, drying and improving the low creases, and also begin the process of returning atmospheric carbon to the soil, where much of it came from over the years of tillage.

So they asked me to build the fence I envisioned and bring my cattle in. I spent the summer rolling up miles of old barbed wire, pulling out posts and cutting weedy trees. A crew built the perimeter fence in August. I constructed the cross fences, dividing the 120 acres into seven large grazing paddocks. A well was drilled and so we were ready for the cows next April.

Four pairs of leather gloves and two shirts ruined by the barbed wire didn't dim the satisfaction I took in the pandemic summer's work. It seemed to push toward a turning.

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WARNING: Nutritional Contents of Fruits, Vegetables and Grains are Dropping

SOS: Save Our Soils Healthier Soil is Key to Healthier Produce

The Known Essential Nutrients for Sustaining Human Life

Water (Clean)
Air (Clean)

Macro nutrients
Carbohydrates
Proteins (Amino acids)
Lipids-fat (fatty acids)

Macro minerals
Na (Sodium)
K (Potassium)
Ca (Calcium)
Mg (Magnesium)
S (Sulfur)
P (Phosphorous)
Cl (Chloride)

Micro (or trace) minerals
Micro because they are needed in minute quantities but never the less vitally important

Fe (Iron)
Zn (Zinc)
Cu (Copper)
Mn (Manganese)
I (Iodide)
F (Fluorine)
B (Boron)
Se (Selenium)
Mo (molybdenum)
Ni (Nickel)
Cr (Chromium)
V (Vanadium)
Si (Silicon)
As (Arsenic)
Sn (Tin)
Co (Cobalamin)

Vitamins
A (fat soluble, stored in the body)
D (fat soluble)
E (fat soluble)
K (fat soluble)
C (ascorbic acid, water soluble, not stored in the body)
B1 (thiamin) (water soluble)
B2 (riboflavin) (water soluble)
B5 (pantothenic acid) (water soluble)
Vitamin B3 Niacin (water soluble)
B6 (pyridoxal) (water soluble)
Vitamin B9 (Folate water soluble)
Vitamin B7 (Biotin water soluble)
B12 (cobalamin) (water soluble)

Phyto nutrients
Natural chemicals or compounds produced by plants. May help prevent disease and keep body working properly. Antioxidants, flavonoids, etc. New studies suggest that they may have an even greater role to play in human health than the already positive results seen to date.

The US Food and Drug Administration (FDA) changed several recommended daily allowances in recent years. Links at our website.

“Given the large and continuing global rise in agribusiness and manufactured foods, nutrition science must keep pace with and systematically assess the long term health effects of new food technologies. Relatively little rigorous evaluation has been done on potential long term health consequences of modern shifts in agricultural practices, livestock feeding, crop breeding, and food processing methods such as grain milling and processing; plant oil extraction, deodorisation, and interesterification; dairy fat homogenisation; and use of emulsifiers and thickeners.”

Mozaffarian D, Rosenberg I, Uauy R. **History of modern nutrition science—implications for current research, dietary guidelines, and food policy** BMJ (British Medical Journal) 2018; 361 :k2392 doi:10.1136/bmj.k2392

Modern Crops are Poorer in Vitamins and Minerals Compared to Those Grown Decades Ago

	1975	1997	Change
Calcium	103 mg	48 mg	Down 53.4%
Iron	1.1 mg	0.88 mg	Down 20%
Vitamin A	2500 IU	1542 IU	Down 38.3%
Vitamin C	113 mg	93.2 mg	Down 17.5%
Thiamin	0.1 mg	0.07 mg	Down 35%
Riboflavin	0.23 mg	0.12 mg	Down 47.8%
Niacin	0.9 mg	0.64 mg	Down 28.9%

The table shows selected nutrients in broccoli based on 100 grams, edible portion. Source: USDA food composition tables.

—America’s Vanishing Nutrients, 2005

Read the paper to see results from lots of vegetables and fruits. The link, along with several other references, is available on our web-site: www.protectourresources.org

The global micronutrient crisis

Humans require at least 49 nutrients to meet their metabolic needs (table on the left). Inadequate consumption of even one of these nutrient will result in adverse metabolic disturbances leading to sickness, poor health, impaired development in children, and large economic costs to society (Branca and Ferrari, 2002; Golden, 1991; Grantham-McGregor and Ani, 1999; Ramakrishnan et al., 1999). Table 2 (refer to the published paper found on our website for this table) lists the required daily amounts for some of these nutrients for adults as reported by the Food and Agricultural Organization, United Nations, and the World Health Organization (FAO/WHO, 2000). Importantly, the primary source of all nutrients for people comes from agricultural products. If agricultural systems fail to provide enough products containing adequate quantities of all nutrients during all seasons, dysfunctional food systems result that cannot support healthy lives. Unfortunately, this is the case for many agricultural systems in many developing nations in the Global South.

—Welch and Graham 2003

Breeding for micronutrients in staple food crops from a human nutrition perspective
Journal of Experimental Botany, Vol. 55, No. 396, pp. 353±364, February 2004 DOI: 10.1093/jxb/erh064

—Alex Jack, Author of America’s Vanishing Nutrients, pg. 10

The field of nutrition seems to be full of opinion about what constitutes sound basis of using historic data for comparisons. I present the information herein as the most reasonable that I could find.

Comparison demonstrates lack of nutrients in commercial foods

an example of many from the literature

“The Organic Advisory Service of the Organic Retailers & Growers of Australia’s researchers looked at mineral levels of four vegetables (silver beet, capsicums, beans, and tomatoes) to determine whether organic remineralization methods could improve their nutritional content. Equivalent vegetables from a supermarket were then analyzed as a case control comparison. “The hypothesis was based on the observation that consumers purchase fruit and vegetables from supermarkets and stores on the assumption that they are providing them with sound nutrition,” explained Chris Alenson, technical adviser to the Organic Advisory Service. “They do not necessarily know the variety or where or how they are grown. Our belief is that despite its often glossy wonderful appearance, food today is not delivering the range of nutrient elements that it should. The taste is often very average.” In the experiment, the vegetables were grown in a degraded volcanic soil with a pH of 4.5 and low in calcium, magnesium, potassium, and trace elements. The soil was then revitalized with rock dust (basalt) and a special mineral fertilizer containing these elements, a zeolite mineral added to increase the exchange capacity, and good quality compost. The end result was that the vegetables grown on the remineralized soil were often ten times higher in nutrients than the supermarket items.

—Alex Jack, Author of America’s Vanishing Nutrients, pg. 10

“A healthy life is not possible without healthy soils.”
—UN Secretary-General Ban Ki-Moon in marking 2015 the International Year of Soils

“The majority of global micronutrients (53–81 percent) and protein (57 percent) are produced in more diverse agricultural landscapes.”

“The diversity of agricultural and nutrient production diminishes as farm size increases—but areas of the world with higher agricultural diversity produce more nutrients, irrespective of farm size.”
—University of MN www.environmentreports.com/small-farms-stewards-global-nutrition/

“Micronutrient-deficient soils grow lower-nutrient food and drive micronutrient malnutrition in populations reliant on them for food.”
—Ohio State University

“Multivitamins will not replace a healthy diet, as they lack other beneficial compounds, such as antioxidants, phytonutrients, fiber, and essential fatty acids.”
—Michelle Young, RD, LDN, Clinical Dietician

Abstract – Food security, nutritional quality and safety vary widely around the world. Reaching these three goals is one of the major challenges for the near future. Up to now, industrialized production methods have clearly shown severe limitations such as a worldwide contamination of the food chain and water by persistent pesticide residues, and reduced nutrient and flavor contents through low-cost intensive food production and/or processing. In line with several published literature reviews, the French Agency for Food Safety (AFSSA) performed under my coordination an up-to-date exhaustive and critical evaluation of the nutritional and sanitary quality of organic food. This review is based on the AFSSA report issued and recently published studies. The major points are: 1/ organic plant products contain more dry matter and minerals (Fe, Mg); and contain more anti-oxidant micronutrients such as phenols and salicylic acid, 2/ organic animal products contain more polyunsaturated fatty acids, 3/ data on carbohydrate, protein and vitamin levels are insufficiently documented, 4/ 94–100% of organic food does not contain any pesticide residues, 5/ organic vegetables contain far less nitrates, about 50% less; and 6/ organic cereals contain overall similar levels of mycotoxins as conventional ones. Thus, organic agricultural systems have already proved able to produce food with high quality standards. I propose also improvements of organic production to achieve sustainable food production for humans in the near future.

—Nutritional quality and safety of organic food. A review
Denis Lairon, 2009

“Shouldn’t federal subsidies to farmers be based on the nutrition they produced and shouldn’t nutrition of our food products be considered a common good?”
—sustainablefoodtrust.org

All Human Life Depends On It:

“Upon this handful of soil our survival depends. Husband it and it will grow our food, our fuel, and our shelter and surround us with beauty.

Abuse it and the soil will collapse and die, taking humanity with it.”

Vedas Sanskrit Scripture 1500 BC

Excellent informative movie as recommended to us by one of our scholarship contributors:



“The Three Bibles to Biological Soil Management and Maximizing the Potential of Our Crops

in accordance with The Bionutrient Food Association

Science in Agriculture: Advanced Methods for Sustainable Farming by Dr. Arden Andersen.

The Biological Farmer: A Complete Guide to the Sustainable & Profitable Biological System of Farming by Gary Zimmer.

These are two very comprehensive texts outlining the entire process principles and products behind a coherent soil building system. Zimmer’s presentation is simpler and perhaps more readable; Andersen integrates sophisticated understandings in presenting a complete picture. Together these two books clarify everything involved in the process of building soil from the biological perspective.

Biological Ionization as Applied to Farming and Soil Management by Dr. A. F. Beddow, DDS,

This book describes technique for ideally managing soil chemistry and energy to regulate plant growth and development in order to produce the highest quality food possible for human consumption. The only text of its kind.”

—Robert Repetto. From Land Institute quarterly report