

Senate Agriculture & Natural Resources

HB21-1181 Agricultural Soil Health Program

Typed Text of Testimony Submitted

Name, Position, Representing	Typed Text of Testimony
Megan Wilder For Self	Please support HB21-1181 Agricultural Soil Health Program Soil is eroding approximately 10 times faster than it can be replaced. The world requires soil to grow 95% of its food. The health of our soil affects our ability to grow food, and is vital to the health of our economy. Maintaining proper soil health supports all Colorado farmers, ranchers, and others in the agricultural supply chain, including consumers and businesses. Healthy soil will also support our efforts around climate change, as healthy soil sequesters more carbon, supports enhanced biodiversity, and is more resilient to both drought and flood. This soil health bill has bipartisan support and serves the needs of all Coloradoans, regardless of location or political affiliation.
Harold Unwin Against Branson-Trinchera CD	The Branson-Trinchera CD is against HB21-1181 for three reasons; 1. The Branson-Trinchera CD district is rangeland and this bill does not advocate soil health issue's for rangeland. 2. We feel where the Colorado State Conservation Board has already have a matching grant program in place and that this program should run through CSCB instead of the Colorado Department of Ag. 3. The selection of the Advisory Board should not be selected by the Commissioner of AG. They should be selected by each entity that has a stakehold in the Soil Health. Thank You Harold R. Unwin Sec/Treasurer Branson-Trinchera CD

COMMENTS ON HOUSE BILL HB 21-1181

“VOLUNTARY SOIL HEALTH PROGRAM ACT”

Submitted to Colorado Senate Agriculture and Natural Resources Committee; April 29, 2021

To: Chair: Kerry Donovan; Vice Chair Jessie Danielson; Committee Members: Rhonda Fields, Jerry Sonnenberg, Con Coram

Cc: CDA Commissioner of Agriculture

From: Richard D Andrews,

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Managing Gen Partner: J.M. Andrews Family Farm LLLP

(specialty crops; organic vegetables, fruits, herbs, hops; Boulder County)

Founder/President: Boulder Innovative Technologies, Inc. (and subsidiary ZeoponiX) (plant & soil science research, development and demonstration; consulting: soil health, greenhouse gases & agriculture, composting science, specialty soil amendments/high efficiency fertilization)

Founder & member: Organic Land and Foods Coalition

COMMENTS ON PROPOSED BILL HB 21-1181

Thank you for considering the subject bill HB-21-1181. The topic of this bill is of importance for the improvement and proper management of agriculture and the intimately interconnected relationships to environmental protection of our soil health....but beyond that the protection and enhancement of public health, worker safety, water and air quality, food safety, biodiversity, and certainly the rapidly developing issues of climate disruption. All of these are connected to soil health.

We must protect and even enhance soil health on our agricultural as well as urban developed lands. An unfortunately much of the “conventional” agricultural practices that have dominated, notably over the last roughly 70 to 80 years have resulted in a major decline in the health of our soils, particularly on cultivated lands, not only here in Colorado but across the USA and around the world. Our soils have heavily been degraded by the intensive use of agricultural chemicals and particularly massive use of pesticides. Healthy soils are of necessity active biologically, yet the chemicals used are toxic to the amazingly diverse biological life of natural soils. In addition, the intense use of agricultural chemicals has destroyed fertility of soils by such stresses as alteration of the health pH ranges, notably by over use of ammonia based N-fertilizers, and has affected soluble salts adversely, has caused soil elemental toxicities for certain elements that decrease viability/success of germination, and cause loss of leach losses of other important trace elements that contribute to nutritional content of crops.

What I find absent in the proposed Soil Health Program bill is any mention of the importance of weaning ourselves from the chemical treadmill of today's chemical agriculture, and acknowledgement of the importance of regenerative or restorative organic agriculture. Modern day agriculture has over the recent half to three quarters of a century moved to simply view soils as a root support medium, to which agriculturists have been sold the belief that crops can only be grown by buying more and more synthetic chemicals. Instead this program being considered an activity of the Colorado Department of Agriculture needs to have a substantial focus on restoring, regenerating agricultural lands through natural systems, rebuilding the quality with natural soil organisms, natural organic materials to support the soil biological life...and in turn grow healthy crops.

Another key reason that Soil Health is so important is reducing the major impacts that food and forage production (and even grain based biofuels) has on climate change/disruption which are leading to droughts, crop losses, erratic weather patterns, etc. Soils can store enormous quantities of carbon but only if those soils are healthy. Current agriculture and associated food systems account for approximately one third of worldwide greenhouse gas emissions, when properly accounted in full life cycle assessment methods. While you may see much lower estimates, those estimates do not properly account for the massive embodied GHG, carbon dioxide equivalents from the huge inputs of agricultural chemical and fuel inputs in the form of synthetic fertilizers, pesticides, all derived from fossil fuels from the point of well head oil/gas extraction, to pipeline/transport losses, to chemical fertilizer/pesticide manufacturing, to transport to the farm fields and even volatile gas losses and enormous water leach and runoff losses. Synthetic nitrogen fertilizer plant uptake efficiency is poor, often only about 40% of applied N actually taken up by crops, the rest lost to the environment.

In contrast, using more natural and organic agricultural processes and enhanced soil quality can not only reduce climate disrupting greenhouse gases, but it can produce healthier & synthetic toxin free foods and feeds...which in turn produce healthier people and livestock.

Agriculture is all about the most important human activity. Foods, beverages, fibers, and even medicines, and materials, and even the benefits of beauty and biodiversity of our surroundings on a health planet and ecosystem.

My recommendations for this Soil Health Program bill:

1. Build into the bill a clear statement of the reasons for improving soil health, including human health, food safety by lowering toxic chemicals in agricultural products, worker safety by reduced exposures to ag chemicals, ecosystem health, biodiversity and related restoration of natural predator pest controls, lower energy consumption, improving water use efficiency and water quality protection, and heading off the agricultural and food system causes of climate disruption and this imminent and already occurring crisis.
2. Restructure the organization of the Soil Health Programs to not only have the agricultural producer or stakeholder focus which is now apparent via the Advisory Committee described in the bill, but include more solid science based advisors for the comprehensive view of how to achieve soil health and achieve the multitude of spin off and interrelated benefits that come from soil health.

3. As a major improvement, I would highly recommend including a science based Science Advisory Group, either as a companion to the largely producer focused Advisory Committee or preferably intimately integrated. Science specialties should include soil biologists, agro-soil nutritionists, plant nutritionists, pathologists & toxicologists, soil chemists and physicists, geochemists, specialists in compost science, animal husbandry/animal waste management, etc. Advisors should definitely also include food nutritionists and medical professionals knowledgeable in the human health/children's health effects of food and beverage borne toxins, notably pesticide and pesticide metabolic breakdown toxins/food chain exposures.
4. The proposed Soil Health Program has no solidly established source of funding; the only fiscal note for the program only covers minimal advisory committee expenses for quarterly meetings. This is a concern, since the program seems to anticipate sponsorship in outside sources of funding, grants, being voluntary from unidentified sources. While there may be USDA pass thru funding sources, there is a major concern that funds from private sources such as agricultural chemical corporations and related front groups could very well dominate the funding and influence the unbiased integrity of Soil Health programs. Such corporate funds carry a major concern about directing programs toward merely perpetuating the current chemical agriculture treadmill rather than unbiased and solid science based research and demonstration of the best multi-disciplined and untainted programs. The Department is provided authority to receive donations, gifts and grants in 35-73-108 and elsewhere can execute contracts with such parties. Any such grants, donations or gifts should not be allowed to direct how or the purpose of any income to the Soil Health Programs to prohibit influence from donors; exceptions possibly for grants from USDA funding or other federal government sources such as EPA, BLM, USFS, USGS, etc.
5. Recipients of Soil Health Program grants to perform research and demonstrations of soil health activities are all described as voluntary, apparently intended to be largely on farm/ranch programs. However, there is a restrictive element of the law that would prevent disclosure of records, analyses, maps, data from the field programs. This seems totally without necessity and actually destroys a major benefit of transferability of acquired knowledge to other farmers, ranchers and even the broader soil health science spin off opportunities. Instead all grants made to research and demonstration trials should be totally transparent and publicly available. A principle of quality science is openness, learning from not only successes but from failures. There is simply no good reason for the clauses included in 35-73-107 and of the proposed bill. Instead this section should be replaced by a grant contract clause that all recipients of grants from this bill must make all elements of programs open to all publics in order to obtain the greatest benefits of the program, for replication of the successes and avoidance of replicating failures. Each grant should even have a total openness aspect providing for field days and presentations of project outcomes at suitable venues or conferences.

Thank you again for your consideration of these comments on the proposed legislation for improving soil health in agriculture in the State of Colorado. These are very important programs, but as noted above can be made so much better by wise modifications of the bill.

Senator Kerry Donovan, Chair
Senator Jessie Danielson, Vice Chair
Committee on Agriculture and Natural Resources

April 29, 2021

Support for HB21-1181, Relating to an Agricultural Soil Health Program

My name is Darrell Hanavan, a semi-retired and part-time agricultural consultant. For 34 years I was Executive Director of the Colorado Wheat Administrative Committee, the Colorado Association of Wheat Growers and the Colorado Wheat Research Foundation. I am also a partner in Hanavan Farms LLC with my seven brothers and four sisters in the family farm and ranch I grew up on in Cheyenne County, which raises dryland wheat, irrigated corn and cattle (cow-calf).

I urge you to support HB21-1181 to establish a Voluntary Soil Health Program in the Colorado Department of Agriculture (CDA). This bill is necessary to ensure that CDA can develop voluntary, incentive-based programs in partnership with the agricultural community that are designed and constructed by farmers and ranchers for farmers and ranchers. While enactment of this bill will make it easier for farmers and ranchers to access federal resources and programs through NRCS, **it will also allow for the development or facilitate access to complimentary and innovative programs, such as payment for ecosystem services programs and preferential purchasing programs.**

Development of this bill was a multi-stakeholder, grassroots process. The Colorado Collaborative for Healthy Soils (CCHS) is a stakeholder group of 200+ participants representing Colorado's diverse agricultural community, which has been meeting since June 2019. I participated in the CCHS legislative planning group, which consisted of weekly meetings over ~4 months and was attended by industry groups, Colorado Association of Conservation Districts (CACD), and nonprofits. While CDA has been a partner in these efforts, the content of this bill arose out of the input of diverse agricultural stakeholders.

According to USDA and EPA, "Soil is a living and life-giving natural resource." Healthy soils can prevent soil and wind erosion, improve soil's physical and biological properties, supply nutrients, suppress weeds, improve the availability of soil water and break pest cycles along with various other benefits. Approximately, 11.1 million acres, or 17% of Colorado's land area is cropland. Livestock accounts for 70% of Colorado agricultural sales, and nearly 29 million acres or 43% of all Colorado land area is used for pastureland/grassland for livestock.

Given the challenges with drought and other extreme weather events, Colorado farmers are proactively managing and preserving their soil by using more conservation tillage methods and planting more cover crops. While conservation practices on cropland and grazing areas are

growing,¹ more resources are needed. **Soils are the foundation of Colorado’s robust natural resource base and HB21-1181 will provide authority to the CDA to develop voluntary, incentive-based programs that support healthy soils.**

Harnessing the benefits of good soil health practices are becoming even more important as production costs increase and farmers and ranchers face increasingly unpredictable and extreme weather. Colorado farmers and ranchers face several barriers to adopting soil health practices (e.g., upfront cost, education and technical assistance, capacity and resources of conservation districts, markets development, scientific needs). **However, there is a large, unmet need for additional resources to overcome these barriers.** This bill presents an opportunity for CDA to leverage federal funds through a soil health program for both soil health implementation and research with input from and in partnership with Colorado farmers and ranchers that would overcome these barriers.

HB21-1181 helps ensure that soil health programs will be nonduplicative and scientifically supported and will enhance the resources of conservation districts. Through the inclusion of National Resource Conservation Service (NRCS) and Colorado State University (CSU) on the state advisory committee, CDA will be receiving direct input on the best practices to incentivize, how to facilitate producer innovation, and complement federal programs. Federal soil health programs administered by USDA can be one size fits all that doesn’t meet our state-specific needs because of prioritization within USDA’s NRCS. CSU has world-class soil scientists that should play integral role in program development. Further, because NRCS funds several types of conservation projects, grants for soil health practices are often competitive and can’t support every farmer and rancher who wishes to adopt soil health practices. The state advisory committee maintains the leadership role of conservation districts and the Colorado State Conservation Board (CSCB) including two members of CSCB and the Colorado Association of Conservation Districts (CACD) as a member.

Passage of this bill will position Colorado to be a leader in soil health and thus more likely to receive significant federal dollars from the current Administration. The Food and Agriculture Climate Alliance (FACA) which has made 40+ recommendations on federal climate change policy including soil health, recommends establishing a USDA grant program to help states improve soil health on agricultural lands with eligibility limited to states that have enacted and are currently funding a state soil health program. FACA is co-chaired by the National Farmers Union and the American Farm Bureau, and its steering committee includes the National Cattlemen’s Beef Association, National Milk Producers Association and the National Corn Growers Association and many others.

¹ From 2012 to 2017 in Colorado, according to the 2017 Census of Agriculture: No-till acreage increased 5.0%, from 2,760,309 to 2,899,356 acres; reduced tillage acreage increased 38.4%, from 1,888,607 to 2,613,722 acres; and traditional “intensive tillage” land management decreased by 21.3% from 1,826,497 to 1,437,566 acres. According to the Census of Agriculture, 6,538 of 12,407 Colorado farms/ranches – more than half – practiced some form of adaptive grazing management in 2017.

In conclusion, this bill ensures that all soil health programs are voluntary and incentive-based, are farmer and rancher-driven through a State Advisory Committee and maintains and enhances the critical role of conservation districts and the CSCB. It also ensures that programs will be supported through sound science and will be nonduplicative and complimentary to federal efforts. For these reasons, I ask you to support HB21-1181.

Senator Kerry Donovan, Chair
Senator Jessie Danielson, Vice Chair
Committee on Agriculture and Natural Resources

April 26, 2021

Support for HB21-1181, Relating to an Agricultural Soil Health Program

I am Chuck McAfee. My wife MB and I own a 2,300-acre dry-land farm in Montezuma County that got going when my grandfather and his sisters homesteaded here more than 100 years ago. He, my grandmother, and my then one-year-old father migrated in to Montezuma County from Nebraska—they were “droughted out” there. Given our current drought situation I suspect that they might head back to Nebraska at this point!

HB21-1181 is empowering legislation that will advance soil health and address agricultural needs across the state. I support this bill without reservation.

I know firsthand the importance of soil health in supporting agriculture and robust local communities and economies. My grandparents and father lived in a tent for the first two years. He used a grub hoe, then horses, to begin clearing the land for farming. The land was planted to dry beans and wheat for more than 75 years. That’s 75 years of soil erosion, soil degradation, and a hard-pack plow pan a few inches down.

Twenty-five years ago we began to replace the traditional cropping with grasses and forbs for livestock forage. Now all of our ag land is planted to a mix of native grasses, some introduced grasses, and forbs for biomass production. We’re rigorously monitoring soil quality and biomass production. Changes in non-irrigated soil come slowly, and we’re in it for the long haul.

We’re working with two livestock ranchers (cattle and goats) to implement regenerative grazing practices with livestock and through this we are contributing to our local economy and empowering the next generation. One rancher’s children work with her, and she helps them see the whys and results. Her rancher brother is now on board.

Our ranchers know that soil health must be a top priority if the ranch and their business is to thrive. They follow a pre-designed grazing rotation, and continue to observe results and find new ways to make it better.

The practices are new in our region, and both women talk with their colleagues about the what and the why. Our motto, coined by one of the ranchers, is “Happy soil, happy forage, happy cattle” and I added “happy rancher”.

Healthy soil is a major factor in drought resilience. The soil absorbs and holds water more effectively. As the forage plants grow, they begin to break down the plow pan which leads to even more and deeper absorption of moisture.

It was very windy in our patch last week; I watched the horizons disappear as the soil moved on neighboring fields, and I noted that our soil was not moving—we are already making a

difference! Our experience is very promising and shows that a greater understanding of soil health, management practices, and drought resilience is critically needed.

I support HB21-1181 because it will promote education and technical assistance for soil health through voluntary means. It will lead to better production into the future.

I rely on my local conservation district, High Desert Conservation District, for technical support and ideas, and that's another reason that I support HB21-1181. This bill will help CDA provide additional resources to conservation districts to address producer needs and establish new practices. We are fortunate to have access to a conservation district with the necessary interest and technical expertise in soil health to help our ranchers and us be successful and make a difference. And I want every producer to have the same opportunities that I have to improve soil quality.

We have a Western SARE (Sustainable Agriculture Research and Education, funded by USDA) grant to help us implement rigorous soil and biomass monitoring. We share our results with the community, and we bring local high-school interns in to work alongside the ranchers and help take soil and biomass samples. Our intern from last year has decided to pursue ag education as a result of her experiences with our ranchers. I'm proud of that!

HB21-1181 will offer even more opportunities to advance soil health science.

These are my reasons for supporting this bill without reservation.

Thank you.



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Stulp Farms

John Stulp

April 29, 2021

To the Honorable Members of Colorado Senate Agriculture Committee:

Thank you for the opportunity to submit written comments supporting the passage of HB21-1181. My name is John Stulp. Our family (6 generations) farms and ranches on the eastern Colorado plains. I've had the privilege to serve as Colorado Commissioner of Agriculture and as a water policy advisor to two former Governors and to travel and observe much of this wonderful industry and quality of life we call Colorado agriculture. Soil health has always been an important consideration for Colorado agriculture producers.

This legislation is a critical opportunity to create direct linkages with producers and the emerging science around soil health and facilitate the creation of programs that are complimentary to federal programs. It will support producers in implementing soil health practices and will help determine if some of these emerging conversations can be applied to Colorado's diverse and often water stressed agriculture systems. One common attribute all Colorado producers share is a scarcity of water. Whether irrigated, partially irrigated, or non-irrigated, we have all been trying to squeeze out the most production with each precious drop of water. We are actually water harvesters, because the more efficient we are with the limited water resources we receive, the more meat or grain we can harvest to produce the safest food supply known.

Healthy soil may be the greatest water storage vehicle we have regardless of the type or size of a crop or livestock operation. Yes, we need healthy snowpack and rain, but once the water reaches the field or pasture the health of the soil takes over. I appreciate Senator Simpson's leadership on this effort. He has made agricultural water advocacy a pillar of his several vocations. The producers in the San Luis Valley have been very innovative in demonstrating water saving systems in combination with soil health.

Our family farm in southeastern Colorado has seen the direct benefits of minimum and no-till cropping systems during this prolonged drought. I hope this dry pattern does not become the new "normal". We are extremely interested in advancing our dryland (non-irrigated) acres to see if we can adopt additional practices that will sustain our multiple generation livestock and farming interests. Our family also has irrigated farmland in the Yuma area and are experiencing the concerns with the declining Ogallala aquifer. Newer farming practices are helping conserve the stressed water supply and I know soil health can help contribute to farming with less water and make the existing supply last longer.

This legislation with its diverse producer and science advisory group can help attract and utilize new and needed resources. This legislation sets an exciting platform for cooperation with farmers and ranchers, Colorado State University, Colorado Department of Agriculture, Conservation Districts, USDA (NRCS) and other interests. Recent announcements by USDA are encouraging that resources will be made available for soil health initiatives; several NGO and private interests have also indicated interest in making investments to partner with producers. The opportunity for additional resources can help make producers decisions easier to invest in soil health additions.

This legislation will be good for Colorado agriculture. The Soil Health Advisory Committee will be the strength and ultimately the success to another effort to better Colorado agriculture. Thank you for your consideration.

Sincerely,
John Stulp