

HOW THE SHORTCOMINGS OF FEDERAL SOIL CONSERVATION PROGRAMS HAVE IMPLICATED CROP NUTRIENT DEFICIENCIES

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ABSTRACT

American soils have been under attack, and conventional farming practices are largely to blame. While our once nutrient-dense soil continues to degrade, policies aimed at remedying this issue continue to fall short in more ways than

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one. This Note first details the importance of soil health and its impact on the quality of produce, then walks through the evolution of the United States' federal soil conservation efforts throughout the years and critiques the inadequacies of the Conservation Stewardship Program. Aside from providing potential solutions, this Note also aims to spark a stronger sense of urgency and awareness surrounding an issue that is greatly deserving of more attention.

I. INTRODUCTION

Sustainable agriculture can be defined as farming systems that can concurrently maintain their productivity and value to society indefinitely.¹ However, it doesn't end there. While productivity is an important concern for farmers to remain competitive, ideally these farming systems should also function in a way that conserves resources by implementing environmentally sound practices which also yield nutrient-rich crops.² These goals of environmental and economic sustainability exist in constant tension with one another because, inevitably, certain conventional agricultural practices that prove profitable may not also be sustainable and vice versa.³ Still, efforts to strike a harmony between these two pursuits is unquestionably worthwhile.

Agricultural policies in the United States attempt to address one aspect of this issue through soil health management programs designed to halt or reverse soil degradation.⁴ Still, past and present Farm Bill conservation titles and other related legislation addressing this complex topic have proved inadequate.⁵ This can be attributed to insufficient funding allocated to key soil conservation programs and structural issues surrounding those programs that result in the inefficient allocation of already scarce program dollars.⁶

This Note will examine how conventional agricultural practices and the policies surrounding them implicate soil degradation, thus resulting in the reduction of soil nutrients and, subsequently, a reduction in the nutrient content of

1. Richard Duesterhaus, *The SWCS View: Sustainability's Promise*, 45 J. OF SOIL AND WATER CONSERVATION 4, 4 (1990).

2. *Id.*

3. *Id.*

4. *See generally* Soil, FARMERS.GOV, U.S. DEP'T OF AGRIC (June 13, 2024, 9:31 PM), <https://www.farmers.gov/conservation/concerns-tool/soil> [<https://perma.cc/S7EZ-BEET>].

5. *See generally* Marc Heller, *Conservation Cuts Sink in as 2023 Farm Bill Looms*, E&E NEWS BY POLITICO (Oct. 23, 2023, 1:29 PM), <https://www.eenews.net/articles/conservation-cuts-sink-in-as-2023-farm-bill-looms> [<https://perma.cc/SW33-5T26>].

6. *See generally id.*

the produce that ends up in American kitchens. In doing so, this Note will discuss this country's history of soil health management practices, current laws addressing the matter, and how policymakers can implement appropriate change.

II. WHAT IS HEALTHY SOIL, AND WHY IS IT IMPORTANT?

What role does soil play in the produce that ends up in American kitchens? As it turns out, soil is of paramount importance and is not simply an inert vehicle through which produce is grown.⁷ Soil is a live ecosystem that must maintain a delicate balance of soil biota (microorganisms including bacteria, protozoa and fungi)⁸ and minerals in order to be considered healthy.⁹ In comparison, unhealthy soil has few, if any, microorganisms.¹⁰ As such, soil health has profound impacts on the ability of plants' nutrient uptake and thus the nutrient content of the crops it ultimately yields.¹¹ Not to mention, healthy soil also has other positive environmental impacts—it can help with drought and disease protection, erosion prevention, flood resistance, and carbon capture.¹²

It is estimated that roughly 22% of the soil in the United States is made up of Mollisols, which is a highly fertile type of soil containing high levels of organic matter that are capable of storing large amounts of nutrients needed for plant and crop vitality.¹³ Comparatively, this type of soil makes up less than 7% of the land across the globe, giving American farmers a unique competitive advantage over other world regions.¹⁴ Unfortunately, these rich American soils continue to face threats of degradation caused by naturally occurring erosion and human intervention by use of conventional, intensive agricultural practices.¹⁵ Within the human intervention category, such practices include the physical disruption of the soil such as conventional tilling, the failure of producers to implement rotating

7. *Healthy v. Unhealthy Soil*, PROJECT HERO (June 13, 2024, 9:32 PM), <https://herofortheplanet.org/healthysoils/uncover/healthy-v-unhealthy-soil/> [<https://perma.cc/LF73-E5R9>].

8. *Id.*

9. *Soil*, *supra* note 4.

10. *Healthy v. Unhealthy Soil*, *supra* note 7.

11. *Farming Systems Trial*, RODALE INST. (June 13, 2024, 9:33 PM), <https://rodaleinstitute.org/science/farming-systems-trial/> [<https://perma.cc/R9D5-3NDZ>].

12. *Id.*

13. SUBCOMM. ON ECOLOGICAL SYS. & COMM. OF ENV'T, NAT. RES., & SUSTAINABILITY, NAT'L SCI. AND TECH. COUNCIL, THE STATE AND FUTURE OF U.S. SOILS 14 (2016), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/ssiwg_framework_december_2016.pdf [<https://perma.cc/H244-Z8VT>].

14. *Id.*

15. *Soil*, *supra* note 4.

crop methods and cover crops, and the application of synthetic fertilizers which causes chemical disruption of the soil.¹⁶

A. Types and Causes of Soil Degradation

Soil degradation can generally be defined as “the process of rendering a soil incapable of providing its expected level of ecosystem services.”¹⁷ There are several factors at play which contribute to the overall degradation of soil health.¹⁸ This Note will explore three types of soil degradation, all of which lead to soil nutrient depletion: soil erosion, chemical soil disruption, and physical soil disruption.¹⁹ Naturally occurring erosion results from wind and water forces, and degradation caused by human intervention commonly comes in the form of chemical soil disruption following synthetic fertilizer use.²⁰ Finally, physical soil disruption results from conventional tilling, the use of monocrops, and the failure to implement crop rotation and cover crops.²¹

1. Naturally Occurring Wind Erosion

Within the erosion category, soil can be degraded via wind erosion.²² Wind erosion occurs when the top layer of soil (topsoil) is exposed to strong winds which then causes the topsoil to be swept away from one location to another.²³ Wind erosion is a significant contributing factor to soil degradation and is extremely damaging to soil because when it transports soil, it can cause soil mass loss, dryness, and deterioration.²⁴ Wind erosion is prevalent in flat, bare lands,²⁵ and is typically addressed by implementing cover crops, which are plants used to combat wind erosion by providing coverage of the soil surface, thus protecting it from being displaced by the wind.²⁶

16. *Id.*

17. THE STATE AND FUTURE OF U.S. SOILS, *supra* note 13.

18. *Id.*

19. *Soil*, *supra* note 4.

20. *Id.*

21. *Id.*

22. *Id.*

23. Keith Mulvihill, *Soil Erosion 101*, NAT'L RES. DEF. COUNCIL (June 1, 2021), <https://www.nrdc.org/stories/soil-erosion-101#causes> [<https://perma.cc/KTX8-BJUB>].

24. *Soil*, *supra* note 4.

25. *Id.*

26. ANDY CLARK, SUSTAINABLE AGRIC. RSCH. & EDUC., COVER CROPS FOR SUSTAINABLE CROP ROTATIONS 3 (2015), <https://www.sare.org/wp-content/uploads/Cover-Crops-for-Sustainable-Crop-Rotations.pdf> [<https://perma.cc/S3RB-YE5L>].

2. Chemical Soil Disruption Caused by Human Intervention

An unhealthy soil organism habitat can also be a byproduct of chemical soil disturbances.²⁷ As previously mentioned, because soil is a living ecosystem, one marker of healthy soil is the presence of a diverse population of microorganisms.²⁸ When poor conditions inhibit these organisms from thriving, this can result in soil erosion which contributes to poor crop health as well as water and air quality issues.²⁹ Synthetic fertilizers are often the culprits of chemical disturbances to soil.³⁰ When the effects of non-organic chemical fertilizers were examined, research demonstrated that long-term use of such fertilizers can lead to detrimental soil acidification, causing deterioration of the soil's micro-ecological environment, and even an increase in the presence of heavy metal ions in the soil.³¹ Further, exposure to nitrate, a key chemical in synthetic fertilizers, has been associated with developmental issues in children and has been identified as a carcinogen.³² Disruption to the soil's micro-ecological environment is concerning because soil biota aid in the nutrient uptake process from the soil to crops.³³ Aside from this, other benefits to properly balanced soil biota include its positive effects surrounding aeration, reduction of soil compaction, and improved water infiltration and holding capacity, all of which play a part in reducing soil erosion.³⁴ Unfortunately, synthetic fertilizer use is on the rise.³⁵ According to recent data, synthetic, nitrogen-based fertilizer use has sharply risen by over 800% since the 1960s and is expected to rise an additional 50% by 2050.³⁶ This is due to the fact

27. *Soil*, *supra* note 4.

28. *Id.*

29. *Id.*

30. Weiwei Lin et al., *The Effects of Chemical and Organic Fertilizer Usage on Rhizosphere Soil in Tea Orchards*, PLOS ONE, May 28, 2019, at 1, 2.

31. *Id.*

32. Jenny Hopkinson, *Can American Soil Be Brought Back to Life?*, POLITICO (Sept. 13, 2017, 5:00 AM), <https://www.politico.com/agenda/story/2017/09/13/soil-health-agriculture-trend-usda-000513> [<https://perma.cc/FG5W-JD5T>].

33. R.M. Lehman et al., *Soil Biology for Resilient, Healthy Soil*, 70 J. OF SOIL AND WATER CONS. 12A, 12A (2015).

34. Hopkinson, *supra* note 32.

35. *Id.*

36. *New Research Shows 50 Year Binge on Chemical Fertilisers Must End to Address the Climate Crisis*, GRAIN (Nov. 1, 2021), <https://grain.org/en/article/6761-new-research-shows-50-year-binge-on-chemical-fertilisers-must-end-to-address-the-climate-crisis> [<https://perma.cc/8AK4-V7MP>].

that synthetic fertilizers are readily available in large quantities and are generally cost-effective.³⁷

Conversely, organic fertilizers derived from natural sources such as manures (the most popular form of organic fertilizer), plant residues, biogas residue, and agricultural byproducts can have positive effects on the soil such as improved microbial conditions, increased plant yields, and improved resistance to pestilences and plant diseases.³⁸ Unfortunately, the use of organic manure as a fertilizer occurred on less than 8% of the 237.3 million acres of land for the United States' seven major crops according to recent data from USDA.³⁹ This is largely due to the increased costs associated with transporting, storing and applying organic manure as fertilizer in comparison to synthetic fertilizers.⁴⁰

3. Physical Soil Disruption Caused by Human Intervention

Soil can also degrade in quality as a result of physical disruption caused by human intervention.⁴¹ For instance, conventional tillage cropping systems act as a physical disturbance to the soil.⁴² Conventional tilling is the intensive process of penetrating and turning over old soil to expose deeper, more nutrient-dense soil for the purpose of sowing new crops using methods of plowing or rototilling.⁴³ The effects of this process are disruptive to the soil because by breaking up the soil structure and exposing it to air, conventional tilling accelerates the depletion of microorganisms that are characteristic to healthy soil, thus accelerating soil degradation.⁴⁴ The end result is reduced overall soil health.⁴⁵

37. *What Is the Difference Between Fertilizer Derived from Organic and Synthetic Sources?*, MILORGANITE (June 13, 2024, 9:41 PM), <https://www.milorganite.com/lawn-care/organic-lawn-care/organic-vs-synthetic> [<https://perma.cc/F4GM-85SF>].

38. Lin et al., *supra* note 30, at 2.

39. Nigel Key et al., *Despite Challenges, Research Shows Opportunity to Increase Use of Manure as Fertilizer*, ECON. RSCH SERV., U.S. DEP'T OF AGRIC.: AMBER WAVES (Apr. 10, 2023), <https://www.ers.usda.gov/amber-waves/2023/april/despite-challenges-research-shows-opportunity-to-increase-use-of-manure-as-fertilizer/> [<https://perma.cc/VMJ7-79PW>].

40. *Id.*

41. *See, e.g.*, NAT. RES. CONSERVATION SERV., U.S. DEP'T OF AGRIC., SOIL ORGANISM HABITAT (2020), www.usda.nrcs.gov [<https://perma.cc/63LP-JV4W>].

42. *Id.*

43. *Tillage Practices Linked to Poor Soil Health and Reduced Soil Carbon*, UNIV. OF COLO. BOULDER, CTR. FOR SUSTAINABLE LANDSCAPES AND CMTYS. (2020) [hereinafter *Tillage Practices*], <https://cslc.colorado.edu/2020-trends/conventional-tillage-practices-linked-to-poor-soil-health> [<https://perma.cc/Q3N4-HL9D>].

44. *Id.*

45. *Id.*

Contemporary solutions to this problem include the implementation of reduced tillage (also known as conservation tillage),⁴⁶ or no-tillage methods to help lessen the effects of poor soil health.⁴⁷ Data collected by the Sustainable Agriculture Research and Education's (SARE) Citizen Science Soil Health Project has shown that tillage intensity and soil health are inversely related—as tillage intensity decreases, median soil health scores increase.⁴⁸ Specifically, farms that relied on conventional tillage practices presented the lowest soil health score at a median of 10.⁴⁹ Farms that implemented reduced tillage systems had a slightly better outcome with a median score of 13.⁵⁰ Yet, farms that did not implement any tillage practices reported the best soil health score of a median of 20.⁵¹ Currently, roughly 49% of producers in the United States implement conventional tillage every year.⁵² If these producers switched to no-till practices, not only will they see improvement in their soil health and crop nutrient uptake, but they will also benefit by saving an estimated 3.6 gallons per acre of fuel used toward tillage operations.⁵³ So why are so many farmers still practicing conventional tillage? In some instances, the reason behind this could be the producer's expectation of the negative impact on profits if they were to abandon conventional methods.⁵⁴ More likely, however, this is due to the unfortunate fact that many farmers would be willing to adopt such practices if they qualified for government subsidies and such payments exceeded the costs associated with implementing them.⁵⁵

46. Macson O. Ogieriakhi & Richard T Woodward, *Understanding Why Farmers Adopt Soil Conservation Tillage: A Systematic Review*, SOIL SEC., Dec. 2022, at 1, 2 (2022).

47. *Tillage Practices*, *supra* note 43.

48. Elizabeth Black, *The Citizen Science Soil Health Project*, SUSTAINABLE AGRIC. RSCH. & EDUC. PROJECTS (July 14, 2024, 10:02 PM), <https://projects.sare.org/project-reports/fw19-341/> [<https://perma.cc/AX6D-DVT3>].

49. *Tillage Practices*, *supra* note 43.

50. *Id.*

51. *Id.*

52. Roger Claassen, *No-till and Strip-till Are Widely Adopted but Often Used in Rotation with Other Tillage Practices*, ECON. RSCH SERV., U.S. DEP'T OF AGRIC.: AMBER WAVES (Mar. 13, 2019), <https://www.ers.usda.gov/amber-waves/2019/march/no-till-and-strip-till-are-widely-adopted-but-often-used-in-rotation-with-other-tillage-practices/> [<https://perma.cc/65VN-QQUL>].

53. Elizabeth Creech, *Save Money on Fuel with No-Till Farming*, FARMERS.GOV, U.S. DEP'T OF AGRIC. (Nov. 21, 2022), <https://www.farmers.gov/blog/save-money-on-fuel-with-no-till-farming> [<https://perma.cc/9RPJ-SDZL>].

54. Ogieriakhi & Woodward, *supra* note 46, at 2.

55. *Id.*

B. As Soil Health Declines, So Do Crop Nutrient Levels

So, why does this all matter? Unfortunately, as a result of the decline in soil health, nutrients in common garden crops have also declined in the last half century.⁵⁶ This finding was established in 2004 by a well-known USDA study comparing the nutrient contents of a variety of common garden crops in the years 1950 versus 1999.⁵⁷ The study looked at 43 different fruits and vegetables and examined the levels of six key nutrients: protein, calcium, phosphorus, iron, riboflavin, and ascorbic acid.⁵⁸ The results confirmed that as a group, these 43 different garden crops statistically declined in nutrient value during the tracked period.⁵⁹

Because farmers have prioritized conventional, unsustainable agricultural practices aimed at improving traits such as growth rate, climate resiliency, and pest resistance in the name of increasing crop yields,⁶⁰ there has been a decline in the nutrient content of their produce.⁶¹ Thus, while produce has become larger, more attractive to the consumer, more plentiful, and more adaptable to harsh climates, its ability to uptake nutrients at the same rate has been lost in the process.⁶² If soil health continues to degrade, the nutrients needed to transfer to crops will not be available at optimal levels.

III. HISTORY OF FEDERAL SOIL CONSERVATION PROGRAMS

To gain a better understanding of the issues presented here, it is worth examining the history of the United States' treatment of soil management and conservation legislation over time. Federal legislation aimed at addressing soil conservation was first posed in the 1930s⁶³ as a response to the Dust Bowl period

56. Donald R. Davis et al., *Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999*, 23 J. OF AM. COLL. OF NUTRITION 669, 669 (2004).

57. *Id.* at 670.

58. *Id.*

59. *Id.*

60. Roddy Scheer & Doug Moss, *Dirt Poor: Have Fruits and Vegetables Become Less Nutritious?*, SCI. AM. (Apr. 27, 2011), <https://www.scientificamerican.com/article/soil-depletion-and-nutrition-loss/> [<https://perma.cc/2NEV-L7SY>].

61. *Id.*

62. *Id.*

63. *History*, NAT. RES. CONSERVATION SERV., UNITED STATES DEP'T OF AGRIC. (July 14, 2024, 10:09 PM), <https://www.nrcs.usda.gov/about/history#:~:text=On%20April%2027%2C%201935%20Congress,permanent%20agency%20in%20the%20USDA> [<https://perma.cc/H59S-CZ47>].

between 1930 and 1940.⁶⁴ Because of a wide-spread and severe drought, wind erosion desecrated a significant portion of the United States' agricultural farmland that was already subject to poor soil conservation practices.⁶⁵ In response, Congress enacted the Federal Soil Conservation and Domestic Allotment Act of 1936, which in turn established the Soil Conservation Service⁶⁶ (known today as the Natural Resources Conservation Service (NRCS), a federal agency under the direction of the USDA).⁶⁷ The legislative intent behind the bill was to "provide for the protection of land resources against soil erosion and for other purposes."⁶⁸ Through this Act, the USDA was empowered to promulgate conservation programs with the goal to conserve and protect the soil.⁶⁹ The Act also enabled the USDA to distribute federal payments to farmers who electively shifted from soil-depleting crops to soil-conserving crops.⁷⁰ This Act was the first of its kind and laid the groundwork moving forward for the federal government's general policy of encouraging agricultural practices that support conservation of agricultural lands, later extending payments to a wider variety of eligible conservation practices.⁷¹

Twenty years later, the Agricultural Act of 1956 was introduced, which created the Soil Bank, a program that removed over 29 million acres of land out of crop production.⁷² The goal of establishing the Soil Bank was to reduce soil erosion, raise farm incomes, and decrease the need for commodity price support payments.⁷³ The idea was simple: in exchange for governmental rent payments, this land was taken out of production and set aside for soil, water, forest and wildlife conservation program efforts.⁷⁴ By removing these lands from production, the government reduced the surplus of commodities which came about from the

64. *The Dust Bowl*, LIB. OF CONG. (June 13, 2024, 9:52 PM), <https://www.loc.gov/classroom-materials/united-states-history-primary-source-timeline/great-depression-and-world-war-ii-1929-1945/dust-bowl> [<https://perma.cc/AZC5-BZ9K>].

65. *Id.*

66. THE STATE AND FUTURE OF U.S. SOILS, *supra* note 13.

67. *Id.*

68. Zachary Cain & Stephen Lovejoy, *History and Outlook for Farm Bill Conservation Programs*, CHOICES MAGAZINE (2004), <https://www.choicesmagazine.org/2004-4/policy/2004-4-09.htm> [<https://perma.cc/34FF-9QCY>].

69. THE STATE AND FUTURE OF U.S. SOILS, *supra* note 13.

70. *Id.*

71. *Id.*

72. Cain & Lovejoy, *supra* note 68.

73. *Id.*

74. *Id.*

decrease in demand after World War II.⁷⁵ Though the goal was to create more robust soil conservation policies, the efforts driving this policy were motivated by a desire to avoid lost productivity.⁷⁶

It was not until the 1980s that concern for the environment gained more traction in Congress, which spurred a much more aggressive approach toward addressing soil conservation via the enactment of the Food Security Act of 1985 (1985 Farm Bill).⁷⁷ Through this Act, the legislature created four soil conservation programs which focused efforts on remedying the nation's most seriously eroded croplands, or those in danger of becoming eroded.⁷⁸ These programs included: (1) the Sodbuster program, which withheld farm program benefits from farmers if they converted highly erodible land (HEL) that was not previously in production into crop producing land; (2) the Swampbuster program, which denied farm program benefits to farmers that drained wetlands for the purpose of converting it into cropland; (3) the Conservation Compliance program, which mandated the implementation of a conservation program on HEL cropland; and (4) the Conservation Reserve Program (CRP), which aimed to retire from crop production over 45 million acres of land designated as erosive cropland for a period of 10 years.⁷⁹

Further, important federal farm program benefits, such as eligibility for loans from the Farmers Home Administration, disaster payments, federal crop insurance and farm storage facility loans were conditioned on the adoption and implementation of soil conservation plans required by these enforcement provisions.⁸⁰ While compliance with these regulations was technically voluntary, the Act used economic leverage by tethering eligibility of these programs on continued compliance with the soil conservation enforcement provisions.⁸¹ Later, the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) established the Conservation Stewardship Program (CSP), which has evolved over time but is still

75. *Id.*

76. *Id.*

77. Neil D. Hamilton, *Legal Issues in Enforcing Federal Soil Conservation Programs: An Introduction and Preliminary Review*, 23 U.C. DAVIS L. REV. 637, 637 (1990).

78. *Id.*

79. *Id.*

80. *Id.* at 640–41; 16 U.S.C. § 3811 (1988).

81. Hamilton, *supra* note 77, at 641.

in effect today.⁸² Through the CSP, the NRCS authorizes financial and technical support to qualifying producers that help conserve and enhance soil quality.⁸³

IV. CURRENT SOIL CONSERVATION PROGRAMS IN EFFECT

There are five general categories of agricultural conservation programs currently in effect under the NRCS that address soil conservation.⁸⁴ These five programs include: working lands programs, land retirement programs, easement programs, partnership and grant programs, and conservation compliance.⁸⁵ The working lands programs allow private lands to remain in production as long as certain conservation methods are adhered to by landowners.⁸⁶ However, demand for working lands program benefits typically exceeds supply, so not everyone who wants to be a part of the program is eligible for funding.⁸⁷ The two primary working lands programs are the Environmental Quality Incentives Program (EQIP) and the previously mentioned CSP, which in combination, make up more than half of all conservation program funding.⁸⁸ The EQIP works by providing technical and financial support to producers in order to target natural resource concerns like soil health and soil erosion.⁸⁹ The CSP assists producers in developing personalized conservation plans that improve existing conservation efforts based on the producer's operation.⁹⁰ Next, land retirement programs such as CRP allow producers to voluntarily retire their land, using it instead for less resource-intensive purposes, in exchange for payments issued by USDA.⁹¹

82. Conservation Stewardship Program (CSP) Interim Rule, 84 Fed. Reg. 60883 (Nov. 12, 2019) (to be codified at 7 C.F.R. § 1470).

83. *Id.*

84. MEGAN STUBBS, CONG. RSCH. SERV., R47478, AGRICULTURAL CONSERVATION AND THE NEXT FARM BILL 1 (2023) [hereinafter STUBBS 2023].

85. *Id.*

86. *Id.*

87. *Farm Bill Conservation Programs*, NAT'L CAUCUS OF ENV'T LEGIS. (Mar. 6, 2023), <https://www.nceleenviro.org/resources/farm-bill-conservation-programs-issue-brief> [https://perma.cc/RQ2M-SZBF].

88. STUBBS 2023, *supra* note 84, at 1.

89. *Environmental Quality Incentives Program – Iowa*, NAT. RES. CONS. SERV., U.S. DEP'T OF AGRIC. (June 13, 2024, 9:55 PM), <https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives/iowa/environmental-quality-incentives> [https://perma.cc/A3HV-GUM9].

90. *Conservation Stewardship Program (CSP)*, BENEFITS.GOV (June 25, 2024, 3:03 PM), <https://www.benefits.gov/benefit/5868> [https://perma.cc/97SL-EMNE].

91. STUBBS 2023, *supra* note 84, at 1.

A third category covered by the NRCS includes the easement programs which implement either a long-term or permanent land use restriction in exchange for government issued payments.⁹² In the partnership and grant category, the Regional Conservation Partnership Program (RCPP) presents a “partner-driven approach to conservation that funds solutions to natural resource challenges on agricultural land.”⁹³ Under this program, universities, state agencies, and local groups partner with NRCS to help producers create and maintain conservation activities.⁹⁴ Producer participation in all types of conservation programs is voluntary.⁹⁵ Of particular focus here is the CSP, which has considerable impact on soil conservation efforts.

A. How the 2018 Farm Bill Impacted the Conservation Stewardship Program

Due to its popularity amongst farmers, it is worth taking a closer look at the CSP’s effect on soil conservation efforts. As mentioned previously, the CSP is a working lands conservation program intended to aid farmers in protecting and improving existing farmlands by addressing the land’s unique resource concerns, for instance, soil erosion.⁹⁶ Through CSP awarded contracts, farmers are paid to improve and maintain conservation methods already in practice at the time of application.⁹⁷ The Agricultural Improvement Act of 2018 (2018 Farm Bill) fundamentally changed the CSP and thus greatly impacted soil conservation

92. *Id.*

93. *Partner With Us*, NAT. RES. CONSERVATION SERV., U.S. DEP’T OF AGRIC. (July 14, 2024, 10:07 PM), [https://www.nrcs.usda.gov/about/partner-with-us#:~:text=Grants%20\(CIG\).-,RCPP,resource%20challenges%20on%20agricultural%20land](https://www.nrcs.usda.gov/about/partner-with-us#:~:text=Grants%20(CIG).-,RCPP,resource%20challenges%20on%20agricultural%20land) [<https://perma.cc/PT6A-AB35>].

94. *Farm Bill Conservation Programs*, *supra* note 87; *Targeting Natural Resource Concerns Through Local Conservation Partnerships*, NAT’L SUSTAINABLE AGRIC. COAL. (June 13, 2024, 9:56 PM), <https://sustainableagriculture.net/publications/grassrootsguide/conservation-environment/cooperative-conservation-partnership-initiative/> [<https://perma.cc/56HZ-HCRY>].

95. Conservation Stewardship Program (CSP) Interim Rule, 84 Fed. Reg. 60883 (Nov. 12, 2019) (to be codified at 7 C.F.R. § 1470).

96. *Rewarding Farmers for Adopting and Managing Advanced Conservation Systems*, NAT’L SUSTAINABLE AGRIC. COAL. (June 13, 2024, 9:56 PM), <https://sustainableagriculture.net/publications/grassrootsguide/conservation-environment/conservation-stewardship-program/#basics> [<https://perma.cc/C7SF-3LBB>].

97. *Building Resilience Through the Conservation Stewardship Program*, NAT’L SUSTAINABLE AGRIC. COAL. (Oct. 6, 2023), <https://sustainableagriculture.net/blog/building-resilience-through-the-conservation-stewardship-program/> [<https://perma.cc/G9AS-23U3>].

efforts.⁹⁸ While the 2018 Farm Bill had some positive effects, budgetary cuts and structural changes to the conservation title have hurt producers seeking to implement soil-friendly conservation practices.⁹⁹ In particular, the CSP program experienced the most harm due to these changes.¹⁰⁰ Under the CSP, payments to producers shrank by nearly \$2.6 billion in comparison to the prior four-year period since the bill's 2018 reauthorization.¹⁰¹ For context, this translated to actual payments amounting to just 17% of what was originally projected by the Congressional Budget Office prior to the 2018 Farm Bill enactment.¹⁰²

The CSP was also negatively impacted by changes made to its payment structure.¹⁰³ Originally, payments to farmers were based on the number of acres enrolled each fiscal year (permitting annual increases of 13 million acres per year).¹⁰⁴ After the 2018 Farm Bill, payments became limited to a fixed amount of funding for the duration of a five-year contract,¹⁰⁵ completely eliminating the program's original mandate to enroll an additional 12.769 million acres per year.¹⁰⁶

Further structural changes to the CSP have negatively impacted farmers looking to implement soil conservation methods.¹⁰⁷ For instance, take the CSP contract renewal process.¹⁰⁸ Under the old program, renewing applicants were guaranteed re-acceptance.¹⁰⁹ The 2018 Farm Bill nixed this benefit by requiring renewing applicants to compete for program benefits alongside new applicants.¹¹⁰ This creates inefficiency—if renewing applicants, whose implementation of conservation practices were dependent on USDA funding, are suddenly stripped of that funding because they cannot secure a new contract, they may be forced to cease expensive conservation methods. Any progress or momentum gained from

98. Jonathan Coppess, *The Incredible Shrinkage of the Conservation Stewardship Program*, FARMDAILY, Oct. 12, 2023, at 1, 2–3.

99. MEGAN STUBBS, CONG. RSCH. SERV., R45698, AGRICULTURAL CONSERVATION IN THE 2018 FARM BILL 27 (2019) [hereinafter STUBBS 2019].

100. Heller, *supra* note 5.

101. *Id.*

102. *Id.*

103. Coppess, *supra* note 98, at 2.

104. *Id.* at 2–3.

105. *Id.*

106. *Id.* at 2.

107. Heller, *supra* note 5.

108. STUBBS 2019, *supra* note 99, at 6.

109. *Id.*

110. *Id.*

their conservation efforts could potentially be lost without the continued support they originally enjoyed.

B. The Conservation Stewardship Program (CSP)—Flawed from the Start

Though these changes are harmful to farmers, this is not to say that CSP was perfect prior to the 2018 amendments.¹¹¹ In fact, one major critique of the current CSP is that its contract award criteria functions in a manner that disadvantages smaller farm operations and thus discourages many from even applying.¹¹² To illustrate, most farmers are required to pay up front to implement expensive conservation practices before becoming eligible for reimbursement under a CSP contract.¹¹³ Therefore, larger farms that are already implementing these costly practices have a winning advantage over those who cannot afford to.¹¹⁴ In effect, farms with the means to do so will always be awarded a CSP contract over smaller farms that may have the desire to implement soil-friendly practices but not the necessary funds.¹¹⁵ This results in an inequitable distribution of program funds to farms that are already in a financially favorable position.¹¹⁶ Therefore, already limited program dollars are being ineffectively allocated.¹¹⁷ Even if a smaller farm operation does decide to take on the substantial financial risk of putting forth the up-front costs involved with implementing soil conservation practices, they have little assurance they will be reimbursed with CSP contract funds¹¹⁸ because demand for contracts far exceeds available program dollars.¹¹⁹

111. Heller, *supra* note 5; Michael Happ, *Guest Post: Still Closed Out*, NAT'L SUSTAINABLE AGRIC. COAL. (Mar. 2, 2023), <https://sustainableagriculture.net/blog/guest-post-still-closed-out> [<https://perma.cc/2QFX-S4FT>].

112. Heller, *supra* note 5; Happ, *supra* note 111.

113. Happ, *supra* note 111.

114. *Id.*

115. *Id.*

116. Heller, *supra* note 5.

117. *Id.*

118. See generally Erin Jordan et al., *Conservation Programs Offer Climate Solutions, But Vastly Underfunded*, THE GAZETTE (NOV. 16, 2023, 9:36 AM), <https://www.thegazette.com/agriculture/conservation-programs-offer-climate-solutions-but-vastly-underfunded/> [<https://perma.cc/U5TK-4S4W>].

119. Heller, *supra* note 5.

1. Inadequate Funding Causing a Backlog of Unfunded Applicants

Historically, demand for participation in Farm Bill conservation programs has exceeded available funding, resulting in low application acceptance rates and an unending backlog of applicants.¹²⁰ The CSP is a particularly popular program amongst farmers.¹²¹ For example, in 2020, over 20,000 producers were denied contracts as a result of the lack of program funding.¹²² Nationwide, this translates to merely 18.2% of CSP applicants that were awarded five-year contracts.¹²³ In 2022, the number of denied applicants rose to over 24,000.¹²⁴ To further highlight this, in 2022, Minnesota, which was awarded the most CSP contracts of any other state since 2010, was awarded only 241 contracts out of the 3,001 applications received.¹²⁵ This amounts to a mere 8% acceptance rate for that year.¹²⁶ When put into this perspective, that means that 2,760 applicants were deprived of an opportunity to further advance soil conservation efforts because of the lack of program funding.¹²⁷ Since the passage of the Inflation Reduction Act (IRA) in 2022, data has reflected some increase in the number of awarded contracts in the past two years, showing that 24.8% of CSP applicants were awarded contracts.¹²⁸ While some improvement is better than none, the fact remains that the NRCS still rejects more than 75% of CSP applicants.¹²⁹ Clearly, more funding is still needed to help raise this acceptance rate.

2. Flawed CSP Application and Renewal Processes

As previously mentioned, NRCS is responsible for administering the CSP.¹³⁰ Enrollment takes place via a competitive bidding process, which by default precludes some producers who are willing and able to comply with conservation practices from receiving such program benefits.¹³¹ When evaluating contract applications, the NRCS uses a ranking system that measures how current and

120. STUBBS 2023, *supra* note 84, at 13.

121. *Building Resilience Through the Conservation Stewardship Program*, *supra* note 97.

122. *Id.*

123. Happ, *supra* note 111.

124. *Building Resilience Through the Conservation Stewardship Program*, *supra* note 97.

125. Happ, *supra* note 111.

126. *Id.*

127. *Id.*

128. *Id.*

129. *Id.*

130. *Conservation Stewardship Program (CSP)*, *supra* note 90.

131. *Id.*

potential conservation systems will affect the natural resource concerns of that area.¹³² Contracts are then awarded to those who are projected to produce the greatest value of conservation benefits.¹³³ However, farmers have complained that upon rejection, little feedback (if any) has been given to help improve their odds of award for the next cycle.¹³⁴ Therefore, if the application system continues to operate under a competitive bidding process, more feedback should be provided to rejected applicants so that farmers are not left in the dark wondering why their application was not selected. Additionally, Congress should restore the automatic renewal option for returning producers. This will ensure that existing soil conservation progress is not lost due to sudden loss of program support.

3. CSP Support Services Inadequate

According to a 2022 survey conducted by the Center for Rural Affairs, for those farmers that are fortunate enough to be awarded a five-year CSP contract, less than half have expressed that CSP support services have adequately helped them understand the soil nutrient levels of their croplands.¹³⁵ This is evidence of a clear need for NRCS to improve their CSP technical support services for soil testing and interpretation of that data.¹³⁶ Doing so will give farmers who are implementing soil conservation practices a clearer understanding of whether or not their methods are working as they should be, therefore ensuring that program dollars are being put to good use.¹³⁷

C. How the Inflation Reduction Act Impacted Soil Conservation Efforts

With the background of past legislation addressing soil conservation established, we now turn to more recent legislation on the topic. First, it is worth mentioning that on November 19, 2023, Congress reauthorized the 2018 Farm Bill by providing a one-year extension for many of its programs through September 30,

132. *Id.*

133. *Digging Into the Nation's Leading Conservation Program – Part I*, NAT'L SUSTAINABLE AGRIC. COAL. (Jun. 8, 2015), <https://sustainableagriculture.net/blog/csp-update-part1> [<https://perma.cc/9A4N-9PPY>].

134. Jordan et al., *supra* note 118.

135. Kelsey Willardson & Teresa Hoffman, *New Report Outlines Producer Experiences with the Conservation Stewardship Program*, CTR. FOR RURAL AFFS. (Jan. 25, 2023), <https://www.cfra.org/news-release/new-report-outlines-producer-experiences-conservation-stewardship-program> [<https://perma.cc/9DYB-FJVL>].

136. *Id.*

137. *Id.*

2024.¹³⁸ For instance, the CRP, which includes the Soil Health and Income Protection Program (SHIPP), as well as the Grassland Conservation Incentive component of the CSP are set to expire upon termination of the extension on September 30, 2024.¹³⁹ Fortunately, most program components of the CSP that would have otherwise expired on the September 2024 deadline have been extended through fiscal year 2031 due to the enactment of the IRA on August 16, 2022.¹⁴⁰

The IRA, a broad bill which addresses several other unrelated issues, enacted historic climate protection provisions and allocated over \$18 billion in additional funding toward conservation programs under the Farm Bill, like the CSP.¹⁴¹ Specifically, the CSP was allocated \$3.25 billion for the fiscal year of 2023.¹⁴² The legislative intent behind the IRA was for such funds allocated to the CSP to only be spent on Climate Smart Agriculture and Forestry (CSAF) activities that reduce greenhouse gas emissions.¹⁴³ Luckily, many (though not all)¹⁴⁴ of the soil friendly practices mentioned previously (reduced till, no-till and the implementation of cover crops) also act to reduce greenhouse gas emissions and thus qualify for funding as CSAF activities.¹⁴⁵ The bill also provides farmers with incentives to curb chemical fertilizer use.¹⁴⁶ Collectively, the IRA funding provided for these practices amounts to roughly \$487 million.¹⁴⁷ While all of this is positive, certain soil friendly practices (such as contour buffer strips, soil carbon amendment, strip-

138. JIM MONKE, CONG. RSCH. SERV., R47659, EXPIRATION OF THE 2018 FARM BILL AND EXTENSION IN 2024 2 (2024).

139. *Id.* at 12.

140. *Id.* at 2.

141. *Inflation Reduction Act Leaves Farmers and Traditional Conservation Programs Behind*, U.S. SENATE COMM. ON AGRIC., NUTRITION, & FORESTRY (Sept. 14, 2023), <https://www.agriculture.senate.gov/newsroom/minority-blog/inflation-reduction-act-leaves-farmers-and-traditional-conservation-programs-behind> [https://perma.cc/U27L-3WQT]; see Erik Stokstad, *Can Farmers Fight Climate Change? New U.S. Law Gives Them Billions to Try*, SCI.INSIDER (Aug. 16, 2022, 5:30 PM), <https://www.science.org/content/article/can-farmers-fight-climate-change-new-u-s-law-gives-them-billions-try> [https://perma.cc/P2CC-CULU].

142. Happ, *supra* note 111.

143. *Building Resilience Through the Conservation Stewardship Program*, *supra* note 97.

144. NAT. RES. CONS. SERV., U.S. DEP'T OF AGRIC., CLIMATE SMART AGRICULTURE AND FORESTRY (CSAF) MITIGATION ACTIVITIES LIST FOR FY2024 (2024), <https://www.nrcs.usda.gov/sites/default/files/2023-10/NRCS-CSAF-Mitigation-Activities-List.pdf> [https://perma.cc/F5NB-9Y3W].

145. Stokstad, *supra* note 141.

146. *Id.*

147. *Inflation Reduction Act Leaves Farmers and Traditional Conservation Programs Behind*, *supra* note 141.

cropping, vegetation barriers and herbaceous wind barriers) are not considered CSAF activities eligible for the new IRA funding.¹⁴⁸ To best mitigate soil degradation, all known soil conservation practices should qualify for program funding under the IRA.

V. RECOMMENDATIONS

Fundamental issues with our current USDA conservation programs greatly affect efforts to improve the health of the nation's soils.¹⁴⁹ Many of these issues would be solved by an increase in program funding, specifically for the country's most popular conservation program, the CSP.¹⁵⁰ This additional funding is desperately needed and would help alleviate the consistently high demand and backlog of unfunded applicants.¹⁵¹ After all, the more farmers that receive funding for soil conservation practices, the better off our nation's soil conditions will be.

Further, the detrimental changes to the CSP caused by the 2018 Farm Bill Amendments need to be reversed.¹⁵² Lawmakers need to push for the reimplementing of the yearly acreage enrollment increase that existed prior to 2018.¹⁵³ Additionally, the CSP contract renewal process should once again allow for returning applicants to automatically renew their contracts.¹⁵⁴ This would not only help farmers maintain progress gained from implementing soil conservation methods, but would also prevent program funds from being wasted by being spent on administrative costs to reevaluate an application that was recently examined and approved.

The CSP has been rightfully criticized as elitist, largely benefiting those farmers that can already afford to implement costly soil conservation methods.¹⁵⁵ Due to this reality, smaller farms are discouraged from applying and thus are more likely to be deprived of the opportunity to improve their soils under a CSP contract. Because of this, NRCS should eliminate the up-front spending element as a prerequisite to receiving program funds.¹⁵⁶ This would encourage smaller farms to

148. CLIMATE SMART AGRICULTURE AND FORESTRY (CSAF) MITIGATION ACTIVITIES LIST FOR FY2024, *supra* note 144.

149. *See* Heller, *supra* note 5.

150. *See id.*

151. *See* STUBBS 2023, *supra* note 84, at 10.

152. *See* STUBBS 2019, *supra* note 99, at 6.

153. *See id.*

154. *See id.*

155. Heller, *supra* note 5.

156. Happ, *supra* note 111.

apply for a CSP contract because they would not be responsible for the initial monumental costs associated with implementing soil conservation methods.¹⁵⁷

Outreach and technical support to those awarded contracts should also be improved.¹⁵⁸ Farmers have expressed a need for more technical guidance when it comes to understanding the nutrient levels of their soils.¹⁵⁹ This too is a direct result of lack of program funding and while important, should admittedly not take precedence over the issuance of new CSP contracts.¹⁶⁰ However, if more funding does become available, this aspect of the CSP program deserves attention. Further, while the additional funding derived from the IRA is a positive step in the right direction, not all soil conservation methods qualify as CSAF activities eligible for IRA funding.¹⁶¹ All known methods proven to be effective at mitigating soil degradation should be designated as a climate smart activity, because ultimately, even small, positive changes taken in the aggregate can have great impacts on our climate overall.¹⁶²

VI. CONCLUSION

Our nation's once fertile and rich soils have unfortunately become victim to unsustainable conventional farming practices which have negatively impacted the nutrient levels of our soils, and consequently, the nutrient levels of our crops.¹⁶³ Because of this, much work still needs to be done in order to improve the programs under the Conservation Title of the Farm Bill, particularly to the wildly popular Conservation Stewardship Program. To specifically address this, Congress must allocate additional funding to the CSP that is so desperately needed. Furthermore, lawmakers should take a closer look at how the structure of current programs are designed in a way that negatively impacts producers. While many other environmental concerns seem to take precedence now, Congress cannot forget how vital soil health is because, after all, the health of our nation depends on it.

157. *Id.*

158. Willardson & Hoffman, *supra* note 135.

159. *Id.*

160. *Id.*

161. CLIMATE SMART AGRICULTURE AND FORESTRY (CSAF) MITIGATION ACTIVITIES LIST FOR FY2024, *supra* note 144.

162. *See id.*

163. *See generally Soil, supra* note 4.