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"Challenges and Successes of Conservation Programs in 2020"
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Jonathan Coppess, University of Illinois
Written Testimony

Chairwoman Spanberger, Ranking Member LaMalfa and Members of the Subcommittee:

Thank you for inviting me to testify today in this hearing on the "Challenges and Successes of Conservation Programs in 2020." I am currently on faculty at the University of Illinois in the Department of Agricultural and Consumer Economics.

The focus of my work is on federal agricultural policy and agricultural law; I teach two courses and have a partial Extension appointment with much of that dedicated to working with the *farmdoc* project team, including articles for *farmdoc daily*. Much of my research is on the history and development of American farm policy, including conservation.

My remarks today will seek to discuss contemporary conservation issues with some application of the history and development of policy. I will focus my remarks almost exclusively on working lands conservation.

If I may, I would like to begin with a bit of a story. Much of what I understand about farming and conservation I credit to my father, Bill Coppess. I grew up on my family's farm in western Ohio and, while I'm not at all objective, I would argue that my Dad represents the best in American farmers. He is a natural contrarian and experimenter, as well as a committed conservationist who lives out a basic concept: he sees it as his responsibility is to do leave things in a better place than when he found them.

In 1988, as he and my Grandfather were guiding the farm out of the economic crisis of that decade, Dad convinced Grandpa that they should switch to no-till farming. Up to that point, I have strong memories of riding tractor in the fall to plow the harvested field and multiple times in the spring, tilling it up before planting. I recall snow with layers of dirt in it blowing against the barn wall in winter; and the pulverized soil ahead of the soybean drill.

As Dad tells it, he convinced Grandpa that they had to dive all the way in and not merely transition. They sold all of the tillage equipment to purchase a no-till planter and drill, and they never looked back. But to this day, Dad can talk about the farmers in the area who swear no-till simply won't work and the landlords he had to convince that it wasn't trash on the fields, that he wasn't being lazy, but that it was important for the soil even if it didn't look as nice as the well-tilled fields.

I remember the pride he took in the return of earthworms to the field in large numbers and what they were doing for the soil.

He put in grass waterways and buffer strips along the creeks and ditches and was an early adopter of the Conservation Security Program after it was created in the 2002 Farm Bill.

In fact, CSP helped he and my brother add wheat to the corn and soybean rotation around 2007 in large part to begin cover cropping practices because they established better in July than in the fall.

He was one of the first, if not the first, to start experimenting with cover crops in our area. This practice has also been met with much skepticism; the self-assured assuring themselves and anyone who would listen that it just would not work, as well as having to explain it to landlords.

Cover crops really brought out his experimentational side, from adding radishes and field peas only to have the rotting plants in the spring raise concerns that there were gas leaks, to various grasses and mixtures.

One spring when he couldn't terminate annual rye in time, they went ahead and drilled soybeans into the standing rye; it turned out to be some of the best soybean yields they have yet had and the mat of dead rye helped suppress weeds.

Walking fields at home a fence line isn't necessary, I can tell when one of our fields ends and the neighbor's begins by the feel of the dirt and the sounds—in our fields are insects but it is eerily quiet in the neighbor's.

I tell these stories not just to brag on Dad—although I'm happy to do that—but for a point about what it currently takes for conservation to succeed in farming and what it takes for a farmer to succeed with conservation.

It takes more work and it takes more than work; you have to be willing to experiment and tinker; learn by trial and error, often no small amount of error. You have to be willing to have those around you tell you that you are wrong and explain it (sometimes painstakingly).

It also takes money.

While I would consider the family farm successful, I'd guess that Dad has never made as much money as some of the larger, more aggressive farmers in our area. He didn't buy new pickup trucks or turnover equipment regularly; we never owned a boat.

But, it is another anecdote on which I want to focus because it continues to run through my head.

Over a decade ago, they began leasing a new farm and the soil was in bad shape. He had to convince the landlord to accept no-till and cover cropping but over quite a few years he could show some improvements in the soil in those fields.

But a new challenge hit; one of the large, aggressive farmers in the area wanted the acres and offered a much higher cash rent, at a level Dad wasn't paying and couldn't pay.

With the larger farmers this is not an uncommon advantage; they are often able and willing to bid up cash rent and then spread out the additional costs across a larger acreage footprint. I also wouldn't dismiss how increasing farm program payments might contribute to this as well.

To the landlord's credit, he had come to respect what Dad was doing for the soil and while the rent increased it didn't increase all the way and Dad kept the lease.

But, had the other farmer succeeded, he would have taken over the lease and benefitted from nearly a decade of work and investment to improve the soils. And he likely would have returned it to the state Dad found it in when he first began farming it.

And these, I think, are what make functional and strong conservation policy incredibly important but also realistically difficult.

It is a lot of work. But it is also an investment, one that will not pay off for years and many practices are unlikely to ever cover their costs.

It adds risk, like not being able to terminate a cover crop in time. Waterways, buffers and filter strips take acreage out of production that would produce a crop, even if at lower yields; but they also mean having to plant and harvest around them.

But it is the competitive risk that I would argue does not get talked about enough; this competitive risk is certainly not considered sufficiently in farm policy, conservation, payments and crop insurance.

The farmer adopting conservation books additional cost in the operation's management and finances; cost share only goes so far and, as will be discussed below ,can be incredibly limited.

The five-year contracts under CSP are helpful, but the program has long been challenged with paperwork issues and other bureaucratic costs (changing rules; spotty implementation; etc.). And it struggles in the reality of leasing, landlords and tenancy.

But even a CSP payment may not make up the difference.

And like my landlord story, it is very possible that a farmer and the taxpayer can invest in years of conservation on a farm but have it all lost to a more aggressive farmer who will pay a higher cash rent, skip the conservation work and maximize what he can get out of the ground.

Farming is hyper competitive, especially at the local level and among neighbors. Much of it comes through competition over cash rents and the increasingly rare farmland sales. If you are investing in cover crops and conservation you are unlikely to have the room in the budget to pencil out top dollar land purchases or cash rent; and that has a cascading series of consequences, some more painful than others.

If anecdote is insufficient, the numbers bear this out.

My colleague, Dr. Gary Schnitkey is arguably the foremost expert on Midwest row crop farm management and budgeting issues. I'm including his revenue and cost projects for central Illinois corn and soybean farms for 2018 through the 2021 projections from a recent *farmdoc daily* article (Figure 1).[1]

[1] Schnitkey, G., K. Swanson and N. Paulson. "Release of 2021 Crop Budgets." *farmdoc daily* (10):143, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 4, 2020, https://farmdocdaily.illinois.edu/2020/08/release-of-2021-crop-budgets.html.

Figure 1. Schnitkey et al (2020), crop budgets, *farmdoc daily*

Table 1. Revenue and Cost Projections for Central Illinois, Northern Illinoios, 2018 - 2021P

	Corn				Soybeans			
	2018	2019	2020P	2021P	2018	2019	2020P	2021P
Yield per acre	214	191	210	212	67	58	62	62
Price per bu	$3.60	$3.66	$3.25	$3.40	$9.27	$8.81	$8.25	$8.50
	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre
Crop revenue	$770	$699	$683	$721	$621	$511	$512	$527
ARC/PLC	0	10	35	30	0	10	35	30
MFP payments	1	75	0	0	111	75	0	0
CFAP payments	0	26	0	0	0	11	0	0
Other Federal aid[1]	0	0	80	0	0	0	80	0
Crop insurance proceeds	6	12	0	0	6	10	0	0
Gross Revenue	**$777**	**$822**	**$798**	**$751**	**$738**	**$617**	**$627**	**$557**
Fertilizers	126	134	125	123	32	34	31	31
Pesticides	61	54	60	60	36	33	36	36
Seed	112	107	112	113	66	63	73	73
Drying	15	28	15	15	0	1	1	1
Storage	10	10	10	10	4	4	4	4
Crop insurance	24	23	23	22	16	15	15	14
Total direct costs	$348	$356	$345	$343	$154	$150	$160	$159
Machine hire/lease	24	26	26	26	21	22	22	22
Utilities	6	6	6	6	5	5	5	5
Machine repair	28	27	27	27	24	23	23	23
Fuel and oil	21	17	17	17	18	14	14	14
Light vehicle	2	2	2	2	1	2	2	2
Mach. depreciation	63	58	58	57	54	49	56	56
Total power costs	$144	$136	$136	$135	$123	$115	$122	$122
Hired labor	23	23	23	23	20	20	20	20
Building repair and rent	6	9	9	9	3	4	4	4
Building depreciation	16	15	17	17	8	8	8	8
Insurance	10	10	10	10	10	10	10	10
Misc	10	9	9	9	10	9	9	9
Interest (non-land)	23	26	26	27	19	22	22	22
Total overhead costs	$88	$92	$94	$95	$70	$73	$73	$73
Total Non-Land Costs[2]	**$580**	**$584**	**$575**	**$573**	**$347**	**$338**	**$355**	**$354**
Operator and Land Return[3]	**$197**	**$238**	**$223**	**$178**	**$391**	**$279**	**$272**	**$203**
Cash rent	253	253	253	253	253	253	253	253
Farmer Return[4]	**-$56**	**-$15**	**-$30**	**-$75**	**$138**	**$26**	**$19**	**-$50**

[1] Other Federal aid is built in for 2020 based on expectations. No programs have been legislated or announced.

[2] Sum of direct, power, and overhead costs.

[3] Equals gross revenue minus total non-land costs, and represents a return to the land owner and farmer.

[4] Equals Operator and land return minus cash rent.

Source: Historical values come from Illinois Farm Business Farm Management (FBFM). Summaries can be found in a paper entitled "Revenues and Costs for Illinois Grain Crops" available in the management section of *farmdoc*.

That budget analysis for 2019 corn includes $699 per acre in crop revenue, with $356 per acre in direct operating costs, another $136 per acre for power costs, and overhead costs of $92 per acre. Once cash rent is factored in at $253 per acre, the farm would be losing $138 per acre. In 2019, he is factoring in $123 per acre in federal assistance for the farm budget to get back close to breakeven (-$15/acre).

Soybeans fare a bit better at $26 per acre return but only because of federal payments and lower costs for soybeans: take out the payments and the $511 per acre in crop revenue is consumed by costs, with cash rent being the largest and the farmer loses $80 per acre.

If we blend these into a 50/50 corn and soybean rotation, the farm comes out at a loss of $109 per acre without federal payments but barely pulls above breakeven at $5.50 per acre.

It should go without saying that losing money per acre makes for a difficult management situation.

Try adding costs for conservation.

There are only so many options for cost reductions: for corn, fertilizer, pesticide and seed costs make up a significant share.

Gary and the team have done a lot of work on cost cutting efforts, including: tillage;[2] fertilizer;[3] and harvest operations.[4]

And, still, cash rents remain a substantial factor in the budget.[5] And it is one that may be increasingly difficult to manage as record levels of federal payments are made to farmers—it is tough to negotiate lower rents when the landlord knows you are getting $80 to $100 per acre in federal payments promoted with great publicity.

The most straight forward practice is adding cover crops to the rotation. Previous work with Gary and other colleagues on this for the 2018 budgets remains informative. If the corn budget

[2] Swanson, K., G. Schnitkey, N. Paulson, C. Zulauf and J. Coppess. "Cost Management: Tillage Operations." *farmdoc daily* (10):151, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 18, 2020, https://farmdocdaily.illinois.edu/2020/08/cost-management-tillage-operations.html.
[3] Schnitkey, G., L. Gentry and S. Sellars. "Cutting Fertilizer Rates to Save Costs." *farmdoc daily* (10):155, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 25, 2020, https://farmdocdaily.illinois.edu/2020/08/cutting-fertilizer-rates-to-save-costs.html.
[4] Swanson, K., G. Schnitkey, N. Paulson, C. Zulauf, J. Coppess "Cost Management: Harvest Operations." *farmdoc daily* (10):158, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 1, 2020, https://farmdocdaily.illinois.edu/2020/09/cost-management-harvest-operations.html.
[5] Schnitkey, G., K. Swanson, C. Zulauf, N. Paulson and J. Coppess. "Cash Rents in 2020 and 2021." *farmdoc daily* (10):147, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 11, 2020, https://farmdocdaily.illinois.edu/2020/08/cash-rents-in-2020-and-2021.html; Schnitkey, G., D. Lattz, K. Swanson and C. Zulauf. "Cash Rents in 2020 and 2021 Projections." *farmdoc daily* (10):165, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 15, 2020, https://farmdocdaily.illinois.edu/2020/09/cash-rents-in-2020-and-2021-projections.html.

estimate at the time was about an $89 per acre loss, adding a cereal rye cover crop and including a credit for nitrogen pushes the loss to $108 per acre, or about an additional $20 per acre loss.[6]

Figure 2. Swanson et al. (2018), *farmdoc daily*

Table 3. Corn Revenues and Costs, Central Illinois High Productivity 2018 Baseline Corn Budget Compared to Budget with Cover Crops

	Baseline Budget	Cereal Rye	Rye + N Credit	Rye/Vetch Blend	Rye/Vetch + N Credit
Yield per acre	205	205	205	205	205
Price per bu	$3.60	$3.60	$3.60	$3.60	$3.60
Gross revenue	**$738**	**$738**	**$738**	**$738**	**$738**
Fertilizers	130	130	130	130	130
N Credit	0	0	-9	0	-18
Cover Crop Seed	0	15	15	45	45
Total direct costs	**$372**	**$387**	**$378**	**$417**	**$399**
Drilling	0	13	13	13	13
Total power costs	**$121**	**$134**	**$134**	**$134**	**$134**
Total non-land costs	**$563**	**$591**	**$582**	**$621**	**$603**
Operator and land return	**$175**	**$147**	**$156**	**$117**	**$135**
Farmer Return	**-$89**	**-$117**	**-$108**	**-$147**	**-$129**

To be fair, these are merely estimates and averages across multiple (although actual) farms and they are only snapshots; much depends on individual farm management.

But the challenge for conservation on working lands is clear: it adds costs, more work, additional risk and more management complexity. And these get translated into the competition issue as amongst farmers, locally, nationally and around the world.

I argue that these are the critical factors relevant to working lands conservation policy and it all can be understood by the issue of competition.

Look again at cover crops. This is a critical practice for reducing nutrient loss from farm fields, especially tile-drained fields in places like central Illinois. The research on this is relatively clear and getting better.[7] In short, a cover crop growing during the fallow season scavenges residual

[6] Swanson, K., G. Schnitkey, J. Coppess and S. Armstrong. "Understanding Budget Implications of Cover Crops." *farmdoc daily* (8):119, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, June 28, 2018, https://farmdocdaily.illinois.edu/2018/06/understanding-budget-implications-of-cover-crops.html.

[7] I pulled together a lot if it for an earlier law review article. See, Coppess, Jonathan W. "A Perspective on Agricultural Policy in the Age of Nutrient Loss." *Drake J. Agric. L.* 23 (2018): 29. Some of the best work on cover crops is being led by Dr. Shalamar Armstrong at Purdue University. See e.g., Ruffatti, M. D., Roth, R. T., Lacey, C.

nitrogen (or nitrogen applied in the fall) and stores it in the plant biomass. Nitrogen held by the plant is not available for export by precipitation and spring melt and is thus prevented from being lost to waterways. Among the benefits, cover crops can improve the overall health of the soil by adding soil organic matter, improving water retention or holding capacity and potentially provide some weed suppression. They also capture and store carbon in their biomass.

The benefits to the farmer are likely small and incremental, taking years of cost to get improvements in soil health while other farmers make up deficiencies with fertilizer and intensity in the short run allowing them to outcompete.

For cover crops, the most immediate and significant benefits accrue off the farm, however. Less nitrogen in the waterways improves drinking water, lakes and rivers, and should contribute to a decrease in hypoxic or dead zones such as in the Gulf of Mexico, or algal blooms such as in western Lake Erie.

A cost share program such as the Environmental Quality Incentives Program (EQIP) can certainly help; at $45.34 per acre for a basic cover crop practice in Illinois the payment should cover the cost differences.[8] According to NRCS data, Illinois has averaged about $13 million per fiscal year in EQIP financial assistance. At that payment rate, the program could pay for 288,677 acres of cover crops in Illinois; according to the census of agriculture, there is just over 24 million acres of cropland in Illinois. By statute, 50% of EQIP funds are marked for livestock cutting the total potential for EQIP cover crops down to 144,339 acres or about 0.6% of the cropland in the state.

This highlights another challenge for conservation policy; there has yet to be enough funding available to sufficiently meet the need. For EQIP to pay for cover crops on all 24 million acres of cropland in Illinois would cost over a $1 billion each fiscal year.

Nationally, we've averaged just over 330 million acres of total cropland used for crops and about 250 million in the major row crops; 320 million acres of harvested cropland per the 2017 census.

Take the Conservation Stewardship Program as another example; at the $18 per acreage average payment rate, the 320 million acres of harvested cropland would require $5.76 billion each fiscal year, which exceeds the entire baseline for conservation programs in the farm bill (average $5.4 billion per fiscal year).

The Congressional Budget Office estimates that the 2018 Farm Bill will spend an average of $20 billion each fiscal year on farmers through ARC/PLC program payments, crop insurance and

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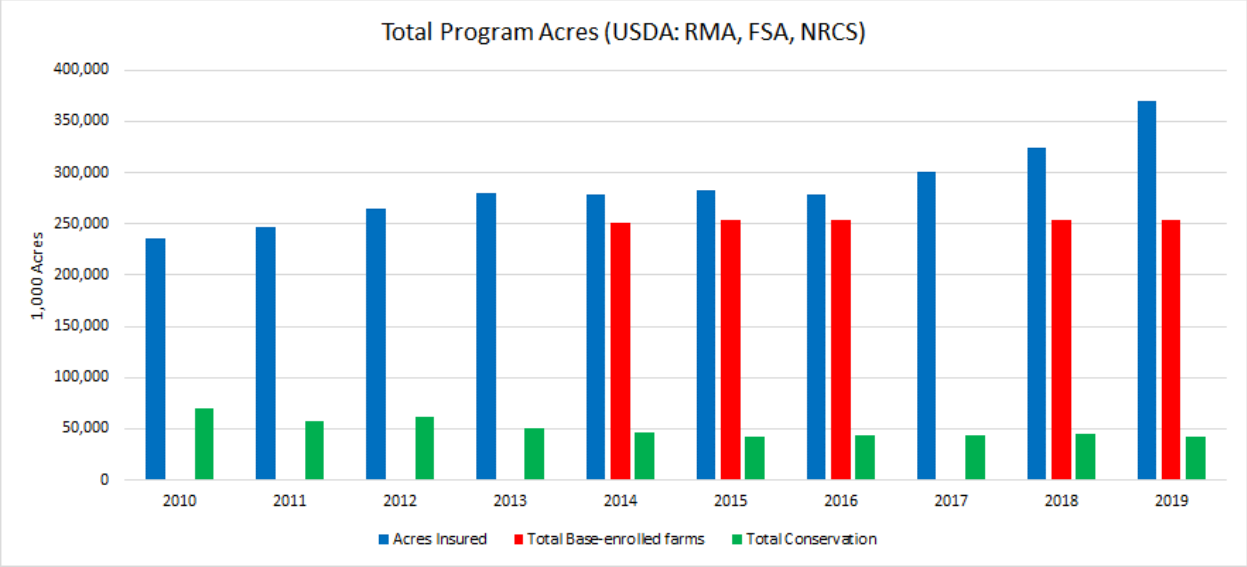
G., & Armstrong, S. D. (2019). "Impacts of nitrogen application timing and cover crop inclusion on subsurface drainage water quality." *Agricultural Water Management, 211*, 81-88. Nevins, Clayton J., Corey Lacey, and Shalamar Armstrong. "The synchrony of cover crop decomposition, enzyme activity, and nitrogen availability in a corn agroecosystem in the Midwest United States." *Soil and Tillage Research* 197 (2020): 104518. Roth, Richard T., et al. "A cost analysis approach to valuing cover crop environmental and nitrogen cycling benefits: A central Illinois on farm case study." *Agricultural systems* 159 (2018): 69-77.

[8] U.S. Dept. of Agric., Natural Resources Conservation Service, Illinois Payment Schedules, https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/?cid=nrcseprd1328235 (accessed, Sept. 28, 2020).

conservation.[9] This comes out to about 42% of the funds on crop insurance, 31% of the funds on ARC/PLC, and the $26.8 billion for conservation over five years constitutes 27% of the funds.

According to USDA records, the average acres insured by crop insurance from 2010 to 2019 was 286 million and the average base acres for ARC/PLC was 253.5 million, while the average acres under conservation contracts was just over 50 million; working lands programs account for about half (24 million acres) of the conservation total. Figure 3 provides the annual acreage per category.

Figure 3. Total Acres by Category (USDA)



Clear from this overview, the acres enrolled in conservation programs lag far behind the other two categories and far in excess of the differences in funding. If we use harvested cropland in the 2017 census for comparison, insured acres are 89% of total harvested, base acres are 79% and conservation acres are 16% of total harvested.

The history of each category of policy development may offer some insights into these disparities. All three categories of programs originated with the New Deal efforts of the 1930s.

Farm support policy was enacted in 1933 with the Agricultural Adjustment Act. Within 5 years, the Agricultural Adjustment Act of 1938 had established the basic parameters of the parity system: price supporting, non-recourse loans (forfeiture if prices were below loan rates); acreage allotments for reduction or diversion; and marketing quotas if approved by farmer referendum. In 1973, Congress modified the system significantly by prioritizing income supporting deficiency payments when prices were below a target price. Loan rates were established below target prices as a further backstop on low prices. Finally, the system of payments was decoupled by the 1996 Farm Bill, which was modified in 2002 by reintroducing target prices; the 2008, 2014 and 2018 Farm Bills also included revenue-based (prices times yields) policy, known

[9] Congressional Budget Office, "Details About Baseline Projections for Selected Programs: USDA Mandatory Farm Programs" (March 2020): https://www.cbo.gov/system/files/2020-03/51317-2020-03-usda.pdf.

known as Agriculture Risk Coverage (ARC). Throughout the more than eighty years of farm support policy, low prices has been the overwhelming focus.

Crop insurance was first created in the Agricultural Adjustment Act of 1938 but was initially only for wheat. It would develop slowly; little used, expensive and ineffective, the George H.W. Bush administration proposed eliminating it in favor of ad hoc disaster assistance in 1990. It was the Agricultural Risk Protection Act of 2000 that installed crop insurance as the primary risk management vehicle. Critical were the permanent inclusion of revenue-based insurance policies with major crops in many areas able to insure up to 85% of their revenue, as well as a substantial increase in the amount of the insurance premium covered by the Federal Crop Insurance Corporation. Today, on average, 62% of total premiums are paid for by the federal taxpayer. Here again, the increase in crop insurance participation can be partially linked to the inclusion of price risk in the form of revenue policies.

Conservation policy developed in an entirely different manner. It first came into existence as a soil erosion control policy during the catastrophic dust storms of the Dust Bowl with the Soil Erosion Control Act of 1935. Less than a year later when the Supreme Court nullified the 1933 AAA as unconstitutional, Congress responded immediately by enacting the Soil Conservation and Domestic Allotment Act of 1936. The 1936 Act paid farmers to reduce planting of crops considered soil-depleting (e.g., corn, wheat and cotton) and increase planting of soil-conserving crops (e.g., grasses and legumes). Notably, Congress appropriated roughly $500 million for the program, which adjusted for inflation to 2020 dollars would be over $9 billion per fiscal year. The goal of the program, however, was less about conservation than about helping farm income by reducing planted acres of oversupplied crops.[10]

Conservation was effectively replaced by the 1938 AAA and then largely lost during World War II and the Korean War. It was the Soil Bank program created in the Agricultural Act of 1956 that re-instituted a version of conservation policy. The Soil Bank included two programs: (1) the acreage reserve paid farmers to reduce planted acres of oversupplied program crops by diverting them into conservation purposes in a short term (3 years or less) contracts; and (2) a conservation reserve paid farmers to remove less productive acres from farming and place them in a long term (up to 10 years) contract and under conservation cover. The Soil Bank was inexplicably short-lived; the acreage reserve was not renewed for the 1959 crop and the conservation reserve was

[10] See, Coppess, J. "The Conservation Question, Part 2: Lessons Written in Dust." *farmdoc daily* (9):200, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, October 24, 2019, https://farmdocdaily.illinois.edu/2019/10/the-conservation-question-part-2-lessons-written-in-dust.html; Coppess, J. "The Conservation Question, Part 3: Lessons in Settling Dust." *farmdoc daily* (9):210, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 7, 2019, https://farmdocdaily.illinois.edu/2019/11/the-conservation-question-part-3-lessons-in-settling-dust.html.

allowed to expire after 1960.[11] At its peak, the acreage reserve removed just over 21 million acres from production and the conservation reserve peaked at 28.7 million acres in 1960.[12]

Importantly, both the 1936 and 1956 programs used conservation as a method to remove acres from production because of an oversupplied commodity situation; this was conservation in service to price support policy. It was the Food Security Act of 1985 that built the foundation of modern conservation policy. During the depths of the 1980s farm economic crisis, Congress created the modern Conservation Reserve Program (CRP), as well as conservation compliance. CRP pays an annual rental payment to remove environmentally sensitive acres from production for 10 to 15 years. Conservation compliance is a quasi-regulatory policy that requires compliance for eligibility for federal farm payments and, since 2014, for the crop insurance premium subsidy. Compliance is based on having a plan to control erosion in place for highly erodible land (HEL), and for wetlands, eligibility is lost if wetlands are drained for farming or if previously drained wetlands are used for production.

CRP as created in 1985 was also an acreage reduction program, albeit with a stronger focus on conservation and the environment. Working lands conservation was not implemented until decoupling of farm policy in 1996 with EQIP, and then with a major increase of funding in the 2002 Farm Bill, as well as creation of the Conservation Security Program (CSP). The 2008 Farm Bill modified CSP and renamed it the Conservation Stewardship Program, with a goal of increasing acres by roughly 10 million each year.

A review of the history and development of these policies helps highlight the significant challenges for working lands conservation policy. Acres enrolled in conservation are far below program and insured acres but bringing them to an equivalent level with payments would likely be prohibitively expensive in the baseline. As such, funding is insufficient to meet the need on the scale of acres that remain in production.

Possibly more important, working lands conservation lacks any connection to farm risk issues that are the most relevant to the farmers who would necessarily undertake the conservation practices. Farm support programs have always involved market price risk in some form or fashion; crop insurance acceptance and popularity took off when price risk was incorporated

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[11] See, Coppess, J. "The Conservation Question, Part 5: Seeds of the Soil Bank." *farmdoc daily* (10):3, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 9, 2020, https://farmdocdaily.illinois.edu/2020/01/the-conservation-question-part-5-seeds-of-the-soil-bank.html; Coppess, J. "The Conservation Question, Part 6: Development of the Soil Bank." *farmdoc daily* (10):13, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 24, 2020, https://farmdocdaily.illinois.edu/2020/01/the-conservation-question-part-6-development-of-the-soil-bank.html; Coppess, J. "The Conservation Question, Part 7: Losing the Soil Bank." *farmdoc daily* (10):31, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, February 20, 2020, https://farmdocdaily.illinois.edu/2020/02/the-conservation-question-part-7-losing-the-soil-bank.html.

[12] See, Coppess, J., G. Schnitkey, N. Paulson, K. Swanson and C. Zulauf. "Production Controls & Set Aside Acres, Part 1: Reviewing History." *farmdoc daily* (10):117, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, June 26, 2020, https://farmdocdaily.illinois.edu/2020/06/production-controls-set-aside-acres-part-1-reviewing-history.html; Coppess, J. "The Conservation Question, Part 4: An Overview of Acres." *farmdoc daily* (9):215, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 14, 2019, https://farmdocdaily.illinois.edu/2019/11/the-conservation-question-part-4-an-overview-of-acres.html.

through revenue-based policies. Working lands conservation policies do not incorporate price or yield, or revenue, risks.

And here we arrive at the most fundamental issue for all of farm policy. Farm program payments are relevant to the farmer but cannot answer the toughest question: what is the return on the taxpayer's investment? The massive increase in payments by the Trump Administration only magnifies this challenge. Crop insurance can answer this question better because it is an insurance program helping farmers remain in operation after disaster strikes in a crop year (yield losses or in-crop year price losses).

Conservation policy can answer that question, funds paid to achieve conservation on working lands represent an important return on the taxpayer investment. Working lands are a large source of nutrient loading that cause problems for water quality, as well as for soil erosion and for the need for irrigation in the drier climates. Working lands conservation policy is not, however, as relevant to the farmer because it does not incorporate prices or yield risk, and with insufficient funding it is not able to reach the scale and scope necessary for the conservation challenges. At the farm level, the lack of relevance to risk and the shortfalls in funding limit the ability of conservation policy to help those farmers adopting conservation practices on working lands compete with other farmers who do not.

One argument for reconsidering conservation policy results from these observations. If working lands policies incorporated elements of price and yield (or revenue) risk, they would be more relevant to the farmers. For one thing, conservation assistance would increase in years of low prices and incomes (or revenue) but decrease in years when the farmer received strong revenue or income from higher prices. It would also help with scale and cost; more acres could receive conservation practices but at a far lower cost in the CBO baseline, similar to how farm programs and crop insurance operate.

An example can be found in a concept introduced during the 2018 Farm Bill debate but which was not included in the bill. Illinois Representatives Bustos and Bost introduced H.R. 4988, the "Conservation Assistance Loan Act of 2018." In full disclosure, I had the privilege to work on this concept with Illinois Farm Bureau, and they advocated including it in the 2018 Farm Bill. I raise it here more as an example and for general consideration.

In short, the conservation option in the MAL program would permit farmers who agree to undertake conservation practices to receive a higher loan rate. The bill used a floating average based on 75% of the national average marketing year average price for the previous five years to set the loan rate. For example, for corn in 2020 that loan rate would be $2.67 per bushel instead of $2.20 per bushel. In addition, if the producer agreed to plant cover crops the loan rate would include an additional $0.20 per bushel.

Critical to this is how the loan program works. The farmer borrows at the loan rate on bushels already harvested and in the bin. Nine months later when the loan is to be repaid, the average prices at the time determine repayment. If prices are above the loan rate, the farmer repays the entire loan (plus minimal interest). If, however, the prices are below the loan rate the farmer pays back at the lower market price and the rest of the loan is forgiven (a loan gain). This

provides some buffer against price risk and for a farmer adopting conservation, the higher loan rate would be a better buffer.

It is an example of one way to begin thinking about incorporating price and/or yield risk into working lands conservations (or vice versa). It also serves as an example about how programs could be designed to help level the competitive playing field; a farmer receiving a higher loan rate because she or he is implementing conservation practices would improve their competitive position as compared to farmers who did not implement the practices and received a lower loan rate. The basic aspects of this concept could be generally applicable across programs or policies.

For what it is worth, I tend to think that a loan concept holds particular appeal for working lands conservation policy. In short, it provides funding to the farmer in advance and likely as many conservation implementation costs are being implemented (e.g., cover crops). It also avoids some of the bureaucratic challenges about having farmers check all the boxes in advance; because repayment of the loan can be tied to performance on conservation practices, the check on farmer compliance can happen later and based on actual efforts. There are, of course, many details and issues that would have to be worked out on any policy along these lines. I raise it not as a fully designed concept but merely a matter for consideration; food for thought about how working lands conservation and price or yield risk can be blended into a single program.

Before I close, and at the risk of crossing subcommittee jurisdictional lines, I would like to highlight the vital importance of research, education, extension, demonstration and outreach to conservation in general, and to working lands conservation, in particular. Land grant universities and the Extension system are critical partners and leaders but the challenges in the wake of the Covid-19 pandemic are magnifying many underlying issues and challenges.

For conservation and research, the critical need is data; data that crosses over with farm programs and crop insurance/risk management; data from farms and field trials that can be used to demonstrate further to other farmers; remote sensing data and more. The 2018 Farm Bill took a big, important step on this front, but more is needed.

In addition, I want to highlight a couple of projects. The Illinois Corn Growers have taken a significant step towards advancing conservation and nutrient loss reduction with the Precision Conservation Management (PCM) project that was accepted in the Regional Conservation Partnership Program. This is an effort to combine farm financial data and business operational management with conservation adoption, implementation and management. It has incredible and outstanding potential to advance conservation and is already producing great data and information for farmers to use. Full disclosure, I have had a minor role in the project and continue to provide in-kind contributions. For those interested, please check out the website: https://www.precisionconservation.org/.

Finally, I have been working with a group of programmers and researchers at the University of Illinois on a project to develop a web-based decision support tool for cover crop practices in Illinois. I'm proud to announce that we are launching the web-based tool today and it can be found here: https://covercrop.ncsa.illinois.edu/. This project has been a partnership with the National Center for Supercomputing Applications (NCSA) on campus to take open-source

modeling for in-field cover crop growth and make it usable, accessible and understandable in a web application. More information will be forthcoming in a *farmdoc daily* article that will be published today. This is merely the first (beta) version of the tool and we will be improving it, adding functionality and features, and expanding it as we go forward. I want to think the Illinois Nutrient Research & Education Council for generous funding and technical advice on this project, as well as the project team that has done such great work. I think it holds potential not just for farmers and the increasing adoption of cover crops, but as a potential example of a method for advancing the demonstration and translation of agricultural research, helping move more of it from the laboratories and field trials into the farmer's hands and fields.

In conclusion, I appreciate the subcommittee offering the opportunity to provide extensive thoughts on this important topic. As you undertake efforts to further consider, and reconsider, working lands conservation policy, I want to reiterate my encouragement for taking into that consideration issues of farm-level competition and the relevancy of the policies and programs to the farmer. Better incorporation of farm risks such as prices and yields can help with program design, making it more relevant to the farmers needed to adopt the practices and likely helping them better compete in the increasingly difficult farm economy. Doing so might also help expand conservation practices to far more acres without a substantial increase in federal spending. Policies that better blend farm risk issues and conservation should result in a much better return on the taxpayer's investment in agriculture. There are as many ways to achieve this as there are program design components.