USDA Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

Economic Research Service

Economic Information Bulletin Number 276

August 2024

Land Use of Rejected, Enrolled, and Expiring Fields in the Conservation Reserve Program

Andrew Rosenberg, Bryan Pratt, David Arnold, and Ryan Williams

Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

Economic Research Service
www.ers.usda.gov

Recommended citation format for this publication:

Rosenberg, A., Pratt, B., Arnold, D., & Williams, R. (2024). *Land use of rejected, enrolled, and expiring fields in the Conservation Reserve Program* (Report No. EIB-276). U.S. Department of Agriculture, Economic Research Service.

Cover photo from USDA Flickr.

To ensure the quality of its research reports and satisfy governmentwide standards, ERS requires that all research reports with substantively new material be reviewed by qualified technical research peers. This technical peer review process, coordinated by ERS' Peer Review Coordinating Council, allows experts who possess the technical background, perspective, and expertise to provide an objective and meaningful assessment of the output's substantive content and clarity of communication during the publication's review.

USDA Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

Economic Research Service

Economic Information Bulletin Number 276

August 2024

Land Use of Rejected, Enrolled, and Expiring Fields in the Conservation Reserve Program

Andrew Rosenberg, Bryan Pratt, David Arnold, and Ryan Williams

Abstract

The U.S. Department of Agriculture's Conservation Reserve Program (CRP)—the agency's largest land retirement program—pays landowners a yearly rental fee to plant and maintain environmentally beneficial land covers on eligible portions of their land instead of crops. In this report, the authors examine land-use outcomes of parcels that were both offered and rejected from General Signup 49, the auction component of CRP that was administered in 2016. Because Signup 49 featured an unusually high rejection rate (81.6 percent), many offers rejected from the auction in this CRP Signup would likely have been accepted in more typical Signups. Examining land-use choices of these rejected offers helps identify what land uses would have been replaced by CRP land covers if the Signup had featured a higher acceptance rate. The study finds that rejected CRP land goes into a variety of land covers, including cropland, grassland, and Continuous Signup CRP (allowing environmentally sensitive land to be enrolled at any time). The study also finds that new program applicants who are rejected are more likely to be in cropland after the Signup, if not in the CRP, compared to returning participants. Finally, the study finds large geographic differences in land-use decisions of rejected CRP applicants and discusses how the current design of the CRP influences its impacts.

Keywords: carbon sequestration, conservation covers, conservation practices, conservation program, Conservation Reserve Program, Environmental Benefits Index, land retirement, land use, rejected offers, soil erosion, wildlife habitat

Acknowledgments

The authors thank Catherine Feather, Rich Iovanna and other USDA, Farm Production and Conservation, Business Center staff for assistance with data and valuable insights drawn from considerable experience with the Conservation Reserve Program. We also thank staff of the Office of Energy and Environmental Policy in USDA's Office of the Chief Economist; and Megan Stubbs of the Congressional Research Service, for helpful insights. The authors also thank several anonymous reviewers and ERS economists for helpful technical feedback. In addition, the authors thank the ERS Publishing Services Branch (PSB) for editorial services.

About the Authors

Andrew Rosenberg and Bryan Pratt are economists with the USDA, Economic Research Service. David Arnold is a geographer with the USDA, Economic Research Service. Ryan Williams is a geographer with the USDA, Natural Resources Conservation Service.

Contents

USDA Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

A report summary from the Economic Research Service *August 2024*

Land Use of Rejected, Enrolled, and Expiring Fields in the Conservation Reserve Program

Andrew Rosenberg, Bryan Pratt, David Arnold, and Ryan Williams

What Is the Issue?

The U.S. Department of Agriculture's Conservation Reserve Program (CRP), administered by the USDA, Farm Service Agency, pays landowners to plant and maintain environmentally beneficial land covers instead of crops. In this report, the authors determined the extent to which CRP removes intensive land uses from production, examining land-use decisions made by the owners of parcels offered and rejected from the 2016 CRP General Signup. The 2016 CRP General Signup had a particularly high rejection rate for a General Signup, the CRP's competitive auction. The high rejection rate means that many rejected offers from the 2016 Signup would likely have been accepted in more typical Signups, and the observed land-use choices of rejected offers from 2016 serve as an estimate of what land uses are replaced when land is enrolled in CRP in other Signups. The authors also examined the tradeoffs that would be associated with prioritizing new or returning CRP applicants or with maximizing total acreage or the proportion of cropland enrolled in contracts.

What Did the Study Find?

The study compared land-use transitions of accepted and rejected offers from the 2016 General Signup with the following results:

- After rejection, 16.6 percent of acres that landowners offered were planted in corn and soybeans, 23.4 percent were in wheat or left fallow, 20.7 percent in grassland, 14.7 percent in mixed forage, and 8.9 percent were idled or were in other land uses. Landowners enrolled the remaining 15.7 percent of offered and rejected acres in the Continuous Signup CRP (an alternative CRP enrollment mechanism which allows environmentally sensitive land to be enrolled throughout the year).
- Rejected offers with higher scores for the Environmental Benefits Index (EBI), the General Signup CRP's multicategory score used for ranking and selecting offers (see definition box), had lower proportions of land in corn and soybeans and higher proportions in wheat.

The authors also estimated the average acreage in each land use that could be retired for every additional $100 spent enrolling land in CRP. They found that:

- If rejected offers that did not subsequently enter CRP through Continuous Signup were instead accepted, the program would retire a total of 1.39 acres on average per $100 spent, including: 0.28 acres of corn and soybeans, 0.23 acres of wheat, 0.12 acres of other cropland, 0.24 acres of mixed forage, 0.33 acres of grassland, 0.01 acres of timberland, and 0.18 acres of fallow or idle land;
- The total acreage in cropland retired per $100 spent would decline if the EBI threshold was set lower, as in other Signups. However, acres in corn and soybeans retired per $100 spent would increase with a decreasing threshold.

Land-use outcomes of rejected offers vary with recent CRP participation prior to applying in 2016:

- Many returning applicants, those with recently expired CRP contracts, reentered the CRP through Continuous Signup after being rejected from General Signup. Returning applicants were more likely than new applicants to have land in grassland and mixed forage after their offers were rejected. New applicants were much more likely to grow crops after their offers were rejected;
- Enrolling new applicants would retire more cropland per dollar spent than reenrolling returning applicants but would also result in less total acreage enrolled per dollar spent.

The report also compared fields that landowners removed from the CRP voluntarily and involuntarily with the following results:

- Landowners that attempted to reenroll in the General Signup CRP but were rejected ("involuntary exits") made similar land-use decisions to those that exited the CRP without attempting to reenroll ("voluntary exits"). However, involuntary exits were less likely to lead to crop planting than voluntary exits after exiting the CRP.

Land-use outcomes of rejected offers also differed geographically. The authors found that:

- Corn Belt States had the highest proportions of non-CRP land with crops. Western States had more land in grassland and mixed forage. Several States had close to half of their land that was rejected from General Signup entered into the Continuous Signup CRP.
- Acreage potentially retired per $100 varied considerably by State. A high amount of acreage per $100 could be retired in Western States due to their low rent land. Corn Belt States could retire the most acres in corn and soybeans, but States with lower rental rates could retire more cropland acres per dollar spent.

How Was the Study Conducted?

The authors observed field-level land-use decisions of all offers made in the 2016 General Signup. They utilized offer data on acceptance status, offered rental rates, practices offered, and EBI scores. Using the USDA, Farm Service Agency's (FSA) Common Land Unit dataset, they linked most offers to land-use data recorded in FSA's Crop Acreage Reporting Database. Land-use information from 2013 through 2019 was pooled into two categories: the 4 years prior to the 2016 Signup (2013–16) and the 3 years after (2017–19).

Definitions:

Accepted offers – Offers submitted to and accepted into the 2016 General Signup. When discussing accepted offers throughout this report, we exclude offers that were accepted but withdrawn. We also do not include offers that were initially rejected but ultimately secured a contract.

Enrolled offers – Offers submitted to the 2016 General Signup that then were enrolled in a contract through that Signup, regardless of whether the offer was initially accepted or rejected. Some offers are initially rejected but later accepted upon appeal and then enrolled in the program.

Environmental Benefits Index – The Environmental Benefits Index (EBI) is used to determine the relative environmental benefits of parcels being offered into the General Signup. The EBI score is made up of six components. The first five components reflect benefits to wildlife habitat, water quality, erosion, enduring benefits beyond the contract period, and air quality, respectively. The final component reflects the cost of enrolling the land being offered to CRP.

Environmental EBI – The Environmental EBI is the Environmental Benefits Index (EBI) without the cost component, including both points for environmental sensitivity of the land and points for the environmental benefits of the practice choice.

Expiring applicants – Offers submitted to the 2016 General Signup with a CRP contract expiring at the end of 2016, so that enrollment in the 2016 General Signup would lead to a new contract beginning the day after the then-current contract expired.

Involuntary exits – Fields that leave CRP at the end of the contract and do not reenter the General Signup CRP, despite the landowner applying for reenrollment. The fields also are not reenrolled into the CRP via the Continuous Signup during our sample period. Such fields are involuntarily leaving the program at the fields' designated departure date. These fields—comprising rejected offers that were offered for reenrollment (returning applicants)—are included in "Rejected offers."

New applicants – Offers submitted to the 2016 General Signup with no history of CRP enrollment during 2013 through 2016.

Non-offers – Fields that were not offered for enrollment.

Rejected offers – Offers submitted to and rejected from the 2016 General Signup. When discussing rejected offers throughout this report, we exclude those offers that were rejected initially but ultimately secured a contract. We also do not include offers that were accepted but withdrawn.

Returning applicants – Offers submitted to the 2016 General Signup, with CRP enrollment during at least 1 year during the period 2013 through 2016.

Unenrolled offers – Offers submitted to the 2016 General Signup that were not enrolled in a contract through that Signup, regardless of whether the offer was initially accepted or rejected. Some offers are initially accepted but were withdrawn during the enrollment process and these offers are never enrolled in a contract through this Signup.

Voluntary exits – Fields that leave the CRP at the end of the contract (or before) without the attempt to reenroll in the General Signup CRP. These fields also do not reenter CRP during the study's sample period via Continuous Signup. Such fields are voluntarily leaving the program at (or before) their designated departure. Voluntary exits are a subset of nonoffers, defined above.

Land Use of Rejected, Enrolled, and Expiring Fields in the Conservation Reserve Program

Introduction

The U.S. Department of Agriculture (USDA) spends nearly $2 billion annually on the Conservation Reserve Program (CRP), administered by USDA's Farm Service Agency (FSA). Most of the funding goes to landowners and operators to retire cropland for 10- to 15-year periods (USDA, FSA, 2022). The program aims to reduce soil erosion, increase wildlife habitat, improve water and air quality, and sequester carbon, chiefly by removing environmentally sensitive land from agricultural production and establishing land covers that advance environmental goals. This report measures the degree to which the CRP displaces intensive land uses from production and explores the relationship between the program's current enrollment mechanism and land-use outcomes that influence the program's environmental goals.

This report assesses the land-use impacts of the CRP, mostly by examining land-use decisions of landowners and operators whose offers were rejected from the 2016 General Signup. The General Signup enrollment mechanism has a competitive format that ranks offers on environmental benefits and cost to enroll, with an offer accepted if it scores above a threshold determined after submissions close. Rejected offers are unique in that we can observe both what landowners and operators[1] actually do with their land after their offers are rejected, as well as what they would have done if their offers were instead accepted. If the offers had been accepted, landowners would have been contractually obligated to plant and maintain the conservation covers in their offer. The report assesses land-use decisions of landowners with rejected offers from a particularly stringent auction, General Signup 49, conducted in 2016. Post-Signup land use decisions on parcels rejected from Signup 49 provide a relevant estimate of CRP's land-use impacts for a large portion of offered land in most Signups, since more than 80 percent of the rejected offers from the 2016 Signup would have been accepted in most other General Signups.[2] The authors also estimate the costs of avoiding additional intensive land uses through CRP, linking proposed CRP rental rates with subsequent land-use decisions.

The report begins with a broad analysis of landowner land-use decisions in the years immediately following Signup 49 on land that was rejected from the 2016 Signup. In the 3 years afterward, 37.7 percent of acreage rejected from the Signup went into crop production, including 13.7 percent in wheat, 8.9 percent in soybeans, and 7.7 percent in corn. An additional 9.7 percent of acreage was fallowed, typically in a wheat-fallow rotation. After crop production, the next most common land use was grass at 20.7 percent of acreage, usually for grazing. An additional 14.7 percent of acreage was in mixed forage. Less than 1 percent of acreage was either idled or used in timber production. Notably, landowners rejected from the General Signup enrolled 15.7 percent of their acreage into CRP through the Continuous Signup, generally at a higher cost to FSA. These results were broadly similar when looking only at rejected acreage that would have been accepted in the four previous General Signups. The authors find that land-use choices of landowners that made rejected offers were relatively stable across Environmental Benefits Index (EBI) values (see the Definitions box entry for EBI), by share of acreage, with a gradual increase in commodity crop production as EBI scores fell.

Next, the authors examine how land-use impacts of CRP vary for some key subpopulations of offers, relevant to two important policy tradeoffs related to land-use impacts of the CRP General Signup. The first tradeoff is

[1] Landowners and operators are often referenced as just "landowners" throughout the report.

[2] The 2016 General Signup had a very low acceptance rate, as detailed in table 1, because the program's enrollment limit had recently been reduced by Congress. The enrollment constraint has since risen.

whether to prioritize new applicants or returning applicants for enrollment in CRP. The authors find that new applicants would be much more likely than returning applicants to grow crops when not in a CRP contract. More than 60 percent of acreage from new applicants was planted to crops in the first 3 years after rejection from the 2016 General Signup, that is, among rejected offers not going into Continuous Signup CRP after rejection. In contrast, less than 25 percent of rejected acreage from returning applicants was subsequently planted to crops among those not entering CRP through Continuous Signup. The most common planting of landowners seeking reenrollment was grass, followed by mixed forage. In addition, a large minority of the landowners seeking reenrollment were able to secure a Continuous Signup contract, which generally pays higher rates than General Signup contracts. Enrolling new applicants would lead to greater cropland retirement per dollar spent in the program. However, there may be environmental benefits for which retaining land in conservation cover would take priority, despite the lower amount of intensive land being displaced. Currently, the EBI provides no benefit or penalty for prior enrollment status.

To further investigate the consequences of landowners with expiring land exiting the program, the authors examine the extent to which landowners voluntarily and involuntarily exiting the program differ in subsequent land use. Landowners are considered to be voluntarily exiting CRP if they possessed an expiring CRP contract in 2016 but did not submit an offer, while a landowner is considered to involuntarily exit CRP if they possessed an expiring CRP contract and did submit an offer to the 2016 General Signup. While landowners voluntarily exiting CRP were more likely to grow crops than those involuntarily exiting CRP, the differences were not large, and cropping occurred on a minority of acres across both groups. This report only includes 3 years of data after program exit, but this finding suggests that both voluntarily and involuntarily exiting landowners often persist in lower intensity land uses, such as grassland for grazing or forage.

The second tradeoff is whether to maximize either total acreage enrolled in CRP (including all land uses retired) or the proportion of acres in contracts representing retirement of intensively managed cropland. The EBI rewards offers with lower rental rates, leading to an intended decline in the number of acres retired per dollar spent by the program as EBI scores decrease. However, regions with higher rental rates also tended to have a higher amount of acres growing valuable commodity crops, which we found leads to a small increase in the share of acreage in corn and soybeans as EBI scores decrease. In the context of this second tradeoff, it is a policy challenge to decide how the program (which is constrained by the maximum number of acres that can be enrolled) balances the goals of retiring the most acreage per dollar spent while also enrolling intensively used land, all the while targeting land with the highest environmental value. This report demonstrates that prioritizing land in terms of this tradeoff relates strongly with decisions about where land is enrolled, showing the considerable geographic differences of land-use impacts of CRP, as well as the costs of retirements per acre.

Estimates of land-use impacts of the CRP have played an important role in many previous evaluations of the program. Hansen (2007) identified three main approaches that have been used in the literature to estimate these impacts. The first approach that uses actual land-use outcomes assumes that CRP lands would remain in the same uses they were in prior to enrolling in the CRP if landowners had not enrolled their land. For example, in estimating water quality impacts of the CRP, Ribaudo (1989) assumed that soil erosion levels would remain constant had the CRP not existed, implicitly assuming that land use would have remained constant as well. This first approach was only feasible for all enrolled CRP land for the initial CRP General Signup. Given that a very large proportion of CRP offers are returning applicants (61 percent of acres in 2016) and that new and returning applicants are very different, this approach is no longer feasible (as we show in this report).

The second major approach that uses observed land-use outcomes, outlined in Hansen (2007), assesses CRP land-use impacts with expiring contracts (e.g., Roberts & Lubowski, 2007; Hendricks & Er, 2018; Bigelow et al., 2020; Morefield et al., 2016). Some studies have used this approach primarily to evaluate the specific impacts of exiting CRP land (e.g., Bigelow et al., 2020), while others have used CRP exits to infer overall landscape impacts of CRP (Roberts & Lubowski, 2007).

The third main approach outlined in Hansen (2007) is to use survey data on CRP participants' intended uses if the CRP didn't exist. For example, in 1993, the Soil and Water Conservation Society conducted a national survey of farmers with land enrolled in CRP. Their study found that farmers would return about 63 percent of their land to cropland if contracts were not renewed (Dodson et al., 1994). Barnes et al. (2020) used survey data to detect selection effects among farmers previously enrolled in CRP in the Western Plains. The authors of the study asked farmers with land previously in CRP how they were currently using their land. The authors compared responses from those farmers who applied to reenroll (but were rejected) with those who did not apply for reenrollment. Those farmers who applied to reenroll were about 14 percentage points less likely to convert their land to crops after their contracts expired. The authors of that article also found a similar difference between farmers currently in the CRP who expect to reenroll or who do not.

The approach taken in the current report expands upon these previous approaches. Landowners with exiting CRP land may be significantly different than landowners that are new to CRP, especially if former participants are slow to change back to intensive uses after the exit. As found by Hendricks and Er (2018), land that transitioned into the CRP was more likely to have come from cropland than land that transitioned out of the CRP was to enter into cropland. The authors hypothesized that the difference may be due to either high costs of land conversion or to nonadditionality, occurring if landowners would have put their land into less productive uses in the absence of the program. Roberts and Lubowski (2007) argued that the low rate of return to cropland among CRP exits was more likely to come from conversion costs than nonadditionality, and that even a small land conversion cost could lead to significant persistence. In the current report, the authors evaluate land-use impacts from both populations—new applicants as well as returning applicants—and examine the differences between land-use impacts of these groups. The findings in the current report expand upon the findings of Rosenberg and Pratt (2024), who estimated land-use impacts of CRP using a regression discontinuity design, based on the EBI threshold. The current report also elaborates on the findings in Barnes et al. (2020), further investigating the differences in land-use outcomes for voluntary and involuntary CRP exits.

The current study also examines how effective the CRP was at obtaining land-use impacts per dollar spent, which is important for examining the cost-effectiveness of the program. Several previous studies have examined other aspects of cost-effectiveness for the CRP (Kirwan et al., 2005; Miao et al., 2016; Hellerstein et al., 2015; Cramton et al., 2021; Smith, 1995). Kirwan et al. (2005) examined CRP offers to estimate the premiums paid to enroll land, measured as the difference between rental rates paid and reservation rents. Further, in a study closely related to our study, Miao et al. (2016) (also using CRP offer data) assessed the cost-effectiveness of the EBI at obtaining environmental benefits using components of the EBI to measure benefits. However, to our knowledge, no existing studies incorporate observed land-use impacts of CRP into evaluations of cost-effectiveness.

CRP Background and History of the General Signup Mechanism

The CRP is USDA's primary agricultural land retirement program. Administered by USDA's Farm Service Agency (FSA), the program primarily provides annual rental payments to landowners and operators to establish conservation cover on land with a history of crop cultivation, as well as partial reimbursement for the costs of establishing such cover. The purpose of the program is to improve air and water quality, wildlife habitat, and carbon sequestration. The mechanism by which the program generates these benefits is through land-use change—specifically, the conversion of intensive crop acreage into perennial cover for 10–15 years, particularly on highly erodible or environmentally important land.

The program comprises three subprograms: General Signup, Continuous Signup, and Grasslands Signup.[3] The General Signup is the CRP subprogram with a competitive auction enrollment mechanism for cropland. The General Signup solicits offers from landowners to enroll in CRP. These offers are ranked according to the Environmental Benefits Index (EBI) and FSA rejects offers below a threshold determined after all offers are submitted.[4] In addition to the national EBI threshold, some offers are rejected due to additional constraints on the program, requiring CRP enrollment to comprise no more than 25 percent of all cropland in any U.S. county. For offers in counties where this restriction is relevant, offers are accepted starting with the highest EBI scores and ending with the lowest EBI scores until the cap is met or the national cutoff is reached.[5] The mechanism of the General Signup permits the analysis presented in this report, as it is possible to observe the actual behavior of fields with legally binding offers to establish conservation cover at an agreed rental rate. For fields associated with rejected offers, it is possible to observe their non-CRP land-use trajectory.

To be eligible for the General Signup, the land being offered must be either highly erodible (greater than or equal to a set threshold) or located within a designated Conservation Priority Area (CPA); and the land must have a sufficient cropping history.[6] Alternatively, land that is in the final year of a CRP contract is also eligible to be reenrolled.[7] EBI scores are awarded points based on estimates of the environmental sensitivity of offered land, as well as the environmental benefits of the cover proposed and the rental rate requested. If parcels are accepted into General Signup, the parcels are typically in a 10-year contract.

The Continuous Signup has become increasingly important in recent years. With few exceptions, enrollment in the Continuous Signup is first-come, first-served. The Continuous Signup involves stricter eligibility requirements than the General Signup, and in return, the Continuous Signup offers higher incentives. In addition to annual rental rates similar to those paid in the General Signup, landowners that enroll in the Continuous Signup may also be awarded additional annual or one-time incentive payments. Many landowners opt to enroll in the Continuous Signup after being rejected from the General Signup, suggesting that at least some landowners prefer the General Signup. However, we do not attempt to assess the choice between the two enrollment mechanisms in this report. The Conservation Reserve Enhancement Program (CREP) constitutes a significant portion of the Continuous Signup. Projects with CREP involve funding from USDA and U.S. State partners. The projects identify high-priority resource concerns and provide incentives to farmers in specified regions that can exceed those from other CRP programs (USDA, FSA, 2021).

The 2016 General Signup, CRP Signup 49, is a uniquely useful Signup for multiple reasons in understanding the land use of fields rejected from the CRP. First, the 2016 General Signup had the highest rate of rejection in the history of the contemporary CRP General Signup at approximately 82 percent (table 1). The result is a large sample of fields with rejected offers—specifically, 33,629 fields associated with a rejected offer that also have administrative land-use records. Second, the 2016 General Signup occurred in a period of legislated reductions to the size of the program. As a consequence, these fields had no other opportunity for enrollment through a General Signup from 2014 through 2019. As a result, most land associated with rejected offers subsequently went into non-CRP land uses in the 3 years following the 2016 Signup unless the landowners were able to enroll through the Continuous Signup. Given the landowners' intentions to join the CRP through the General Signup in 2016, they may have entered the program through the Continuous Signup as soon as 2017.

---

[3] The Continuous Signup includes the Conservation Reserve Enhancement Program.

[4] The 2018 Agricultural Improvement Act expanded the CRP to include a Grasslands subprogram, which also uses a competitive auction enrollment mechanism. However, the Grasslands subprogram enrolls not existing cropland but existing grasslands (including grazing land) deemed likely to be converted to cropland in the absence of the program. Extending this analysis to the Grasslands subprogram is beyond the scope of this report.

[5] The countywide restriction of no more than 25 percent of cropland acres in CRP applies to the sum of all CRP subprograms. Offers are rejected if their acreage would lead the total county enrollment in CRP the following October to exceed the allowed acreage.

[6] Specifically, the candidate parcel must have been cropped during 4 of 6 years prior to enrollment, as specified in the Farm Bill. For the 2016 General Signup, offered land must have been cropped 4 of the years from 2008 through 2013. For the purposes of eligibility as cropland (7 CFR 1410.6(b)(1)), land that is enrolled in CRP is 'considered planted' as cropland (7 CFR 1410.2 "Considered planted").

[7] 16 U.S. Code \S 3831, d, 1.

Table 1

USDA Conservation Reserve Program (CRP) General Signup offer acceptance and rejection rates, 1997–2021

Signup	1997 (15)	1997 (16)	1998 (18)	1999 (20)	2003 (26)	2004 (29)	2006 (33)	2010 (39)	2011 (41)	2012 (43)	2013 (45)	2016 (49)	2020 (54)	2021 (56)
Accepted	63.8	59.6	68.2	70.4	54.3	75.7	79.4	91.6	77.2	87.7	87.0	18.4	90.9	88.3
Rejected	36.2	40.4	31.8	29.6	45.7	24.3	20.6	8.4	22.8	12.3	13.0	81.6	9.1	11.7
County cap	1.17	1.89	2.21	1.72	1.03	1.01	1.57	2.40	2.40	1.28	0.82	0.18	0.43	1.47
Low EBI	35.1	38.5	29.6	27.9	44.6	23.3	19.0	6.05	20.4	11.1	12.2	81.4	8.68	10.2
EBI cutoff	259*	247*	245*	246*	269	248	242	200	221	209	209	292	210	175^
Median EBI	282`	262`	267`	270`	274`	274`	273`	273	262	265	254	249	274`	235`
Offers (thousands)	252	126	90	56	71	26	23	50	39	48	28	26	57	23
Rental rate index	51.3	51.3	51.4	52.1	56	58.2	63.5	92.7	100	101.4	105.8	130.4	124.5	124.5
Rental rate points for a typical field	133.2	87.6	87.5	87.0	88.6	87.2	87.6	74.3	70.3	69.6	67.2	53.7	62.6	62.6

EBI= Environmental Benefits Index.

Note: In the first four rows, the number in each cell represents the percentage of offers in a given category within a General Signup. The "County cap" and "Low EBI" categories are subsets of the "Rejected" category. The EBI cutoff row shows the minimum EBI score accepted at a national level. Those cutoffs marked with an asterisk (*) are from Signups 15–20, which had more total EBI points available than in 2016. The total EBI score for Signups 26 through 56 is 545. Signup 15 had a total possible EBI score of 600, and Signups 16–20 had total possible EBI scores of 560. The (^) mark for 2021 is to note that some U.S. States accepted offers with EBI at or above 165 based on legislative language on the distribution of CRP land across States. The Median EBI row provides the median EBI score of all offers in a given Signup. Those values with a mark (`) are from Signups with at least slightly different EBI formulas relative to 2016. The Offers row presents the number of offers in that General Signup in thousands. The rental rate index is a national estimate of cash rents relative to 2011, the base year. The index is calculated as the national survey estimate for the average rental rate paid for nonirrigated cropland in a given year, divided by the survey estimate for 2011, multiplied by 100. Rental rate points for a typical field show the points awarded for a rental rate to a field with a rental rate equivalent to the median in 2016 ($96.21/acre) adjusted by the rental rate index. For example, the 2011 value represents the points awarded for a rental rate of $73.78, calculated from 96.21*100/130.4. The 2016 Signup had a lower value largely because of the high rental rate index and unchanging EBI parameters for rental rates from prior years. The Signup examined in this report is highlighted in blue with rejection rates highlighted in orange.

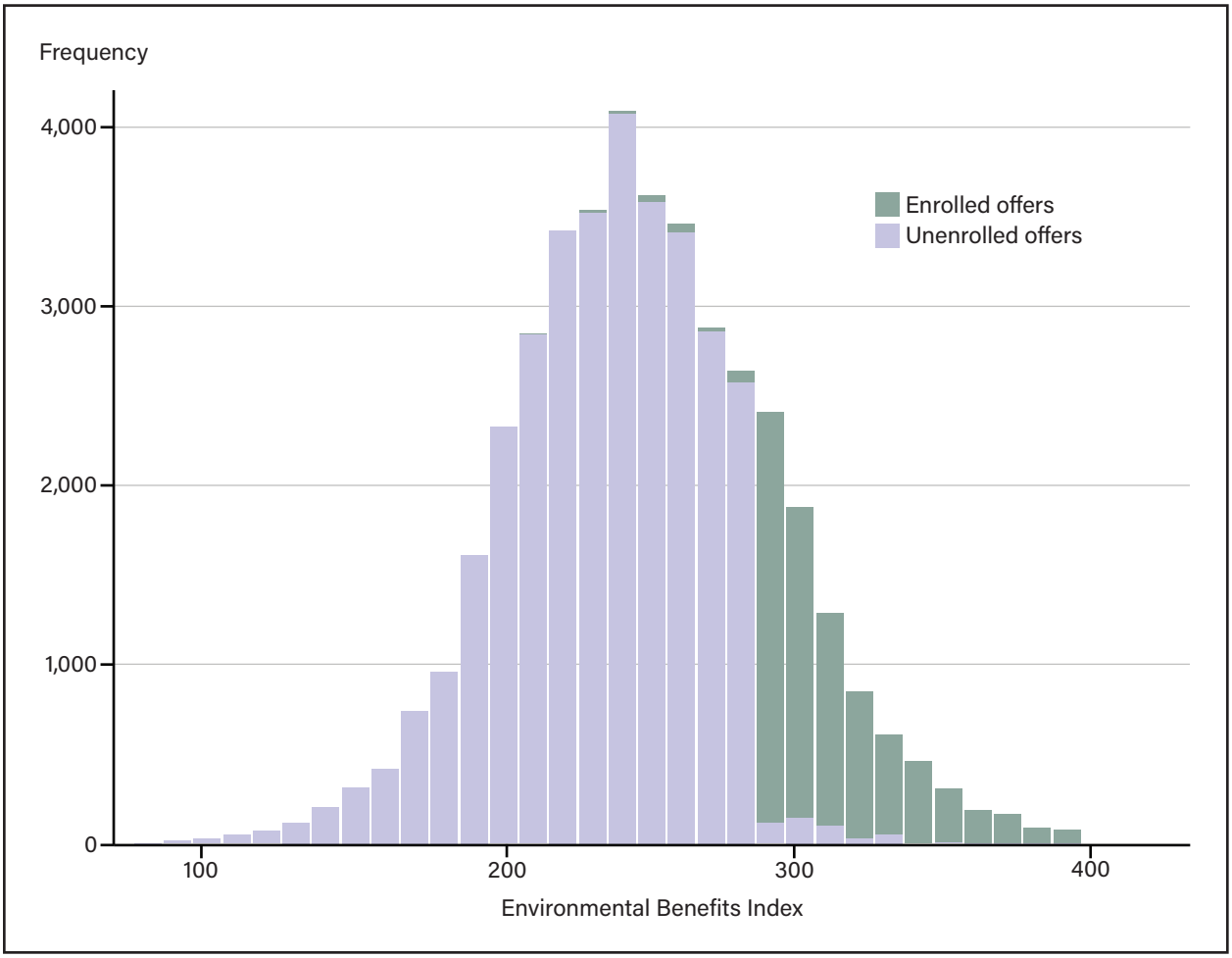
Source: USDA, Economic Research Service using Conservation Reserve Program (CRP) General Signup offer data from USDA, Farm Service Agency and rental rate index data from USDA, National Agricultural Statistics Service.

The 2016 General Signup is also useful because many offers were rejected that likely would have been accepted in other years. With its historically high EBI cutoff and rejection rate, the 2016 Signup had many offers that would have been accepted in 2013 or 2020, for example. It is likely that landowners would have anticipated the competitiveness of the 2016 Signup to some extent, given the accrual of demand for the program since 2013, which would be reflected in higher EBI scores. However, the median EBI score in 2016 was actually lower than in other Signups.[8] This finding is largely a result of inflation in rental rates. Adjusting for the changes in rental rates and the (lack of) changes in the EBI formula, the set of offers in 2016 had higher adjusted EBI scores than in 2012 and 2013 but lower than in 2020. Appendix figure B.1 illustrates the EBI distribution for General Signups in 2010 through 2020. Consequently, we might reasonably consider these rejected offers to be similar in many ways to offers that have historically been accepted into the program.

[8] Decomposing the EBI, 2016 offers did exhibit a higher median point total from cover practice choices.

As a final note on these submitted offers, figure 1 shows the EBI distribution of 2016 General Signup offers, as well as whether offers ended up enrolled in CRP or not. Several points are notable in this distribution. Figure 1 illustrates that the cutoff is strongly binding with limited exceptions. The primary exception was the rejection of offers in counties where the CRP acreage was at or near 25 percent of county cropland. As shown in table 1, only a small portion (0.18 percent) of total offers fall into this category. The other two exceptions were appeals and offers that failed to advance to enrollment. Some accepted offers failed to pass through subsequent steps leading to enrollment, while some rejected offers appealed for inclusion.[9] These processes were rare, with the exception that more than one-half of offers rejected due to county cap constraints were able to secure a contract. Less than 0.5 percent of offers with an EBI below the national cutoff were able to secure a 2016 General Signup contract. Just under 6 percent of accepted offers failed to ultimately enroll in a 2016 General Signup contract.

Figure 1
EBI distribution of the 2016 General Signup-offered fields



Note: This figure is a histogram of fields by offered Environmental Benefits Index (EBI) score. Enrolled offers include accepted offers that enrolled, as well as rejected offers that were able to enroll upon appeal. Unenrolled offers include rejected offers unable to enroll through Signup 49, as well as accepted offers that either chose not to enroll or otherwise failed to enroll through Signup 49. The national threshold for acceptance was an EBI score of 292, while some counties had higher thresholds to comply with legislation requiring CRP land not to exceed 25 percent of county cropland.

Source: USDA, Economic Research Service using Conservation Reserve Program offer and contracts data from USDA, Farm Service Agency.

[9] These formal processes are intended primarily to correct errors in the original offer that led to rejection and to catch offers omitted from the process in error. With respect to accepted offers not enrolling, all landowners and producers are allowed to withdraw their accepted offer within 15 days of notification. Offers may also be deemed infeasible after acceptance and such offers may be revised or withdrawn.

Data Used in the Analysis

The authors completed the analysis with field-level land-use data for the entire contiguous United States. We used two main sources of data and linked them to each other and through time using a panel of field information. First, we used detailed data on all offers submitted to the 2016 General Signup. Second, we derived land-use measures from USDA, FSA's Crop Acreage Reporting Database (CARD), which provides administrative records of land use at the field level each year.

To identify what fields with rejected offers would have done had they been accepted into CRP, we used offer data from USDA, FSA. We observed not only the acceptance or rejection of each offer but also various attributes, such as the maximum allowed rental rate and the offered rental rate, the practice or practices offered, and the scores received for each component of the EBI. The offer data also contained field identifiers that could be used to identify the actual land-use decisions of the applicants after the offers were rejected. There were 26,279 offers made in General Signup 49. About 93 percent of the offers were geolocated, leaving 42,032 offered fields. Among these fields were 33,629 fields associated with rejected offers.

The main data to identify land-use decisions made by landowners after rejected CRP offers came from Form 578 data from USDA, FSA. All landowners are required to file a Form 578 on an annual basis in order to participate in USDA programs and receive financial support from USDA. The data generated through this process is compiled in the CARD, and this record serves as the official record of planted acreage for a variety of purposes. Reported plantings include a variety of useful details, including the crop planted, acreage planted to a specific crop, and the intended use of the planting. Each planting in CARD identifies the crop planted. This information can be used to identify CRP practices when a field is enrolled in CRP. Other than CRP land cover, the primary crops or land use categories used in this report are corn, soybeans, wheat, fallow or idle land, grassland, mixed forage, timberland, and other crops. Other crops include cotton, alfalfa, barley, sorghum and millet, among others that are found in small quantities. At times, corn and soybeans were combined in a single category based on the prevalence of corn-soy rotations, as were wheat and fallow because of the frequency of wheat-fallow rotations. In general, when we refer to crops or crop acreage in this report, we are referring to the combination of the land-use categories of corn, soybeans, wheat, and other crops. We refrain from using "cropland," as there is a specific meaning of this term in the context of the CRP.[10] When referring to all acres, we use terms such as total acreage.

Fields were linked through time to allow for the observation of a panel of individual fields—associated with specific offers—from 2013 through 2019.[11] USDA, FSA's Common Land Unit (CLU) database is a continually updated spatial representation of all fields that interact with USDA, FSA. Because the database is designed to be accurate for the present, it can be challenging to trace a field through time as the field changes owner, operator, shape, or size. We spatially merged CLU polygons for 2016 through 2019 to identify 'fields,' which were the largest spatial unit with a common trajectory of CLUs over all years 2016 through 2019. For the purposes of this report, these spatial unions are referred to as fields, even when the unions comprise only a portion of what a landowner might describe as a field. Notably, data limitations mean that we could not observe land-use outcomes prior to a field-specific year between 2013 and 2016 for a small portion of fields. After limiting the sample to those offers that we could link to land-use data from before and after Signup 49, the analysis in this report used about 1.48 million offered acres (1.17 million of which were rejected) of the 1.86 million acres offered in Signup 49 (1.45 million of which were rejected).

[10] For the purposes of eligibility for CRP, cropland is defined by Title 7 of the Code of Federal Regulations. To be eligible for CRP, any field must be considered cropland or qualify under a specific alternative eligibility pathway. For this purpose, cropland is defined as land determined by a county committee to meet any one of seven conditions. These conditions generally cover land that is currently being used for crops for harvest or has been used for crops for harvest and is still capable of being used for crops for harvest, as well as a few additional unique circumstances (7 CFR 718). The panel ends in 2019 so it does not include the following General Signup in 2020. The reason is to minimize postrejected CRP land uses in the analysis.

[11] The panel ends in 2019 so that it does not include the following General Signup in 2020. This is to minimize postrejected CRP land uses in the analysis.

The Land Uses of Rejected and Accepted Offers

This section begins with a broad overview of land-use outcomes before and after the 2016 Signup for land associated with both rejected and accepted offers. We then examine the land-use outcomes prior to and after the 2016 Signup for offers across the full range of EBI scores. This latter exercise helps to show that outcomes from rejected offers in 2016 provide insights about the land-use impacts of CRP from more typical Signups.

Figure 2 shows land-use transitions for rejected offers. The figure combines major crops into the categories discussed in the previous section, including corn-soybeans and wheat-fallow. We did this because, for the purposes of transition graphs, we needed to categorize fields into discrete categories in each multi-year period, and many crop fields are in rotations. Thus, we combined crops into common rotations to avoid having to identify a corn-soybeans field as either corn or soybeans in a given multi-year period, which may be misleading (in later figures, we depict the actual acreage in each disaggregated crop). The figure further includes the categories of grass and mixed forage, which are generally used for grazing and forage purposes, respectively. The idle or "other" category represents fields growing something other than the specific listed categories (which included corn-soybeans, wheat-fallow, grass, mixed forage, and CRP). Note that the CRP category includes both General and Continuous Signup CRP, but the CRP acres shown after 2016 for fields rejected from the 2016 General Signup are enrolled through the Continuous Signup CRP. Finally, the "no majority crop" category represents fields where no specific category comprises more than 50 percent of the acreage in the years observed[12] (a complete set of values of land use proportions in the figure are provided in table A.1 of the appendix).

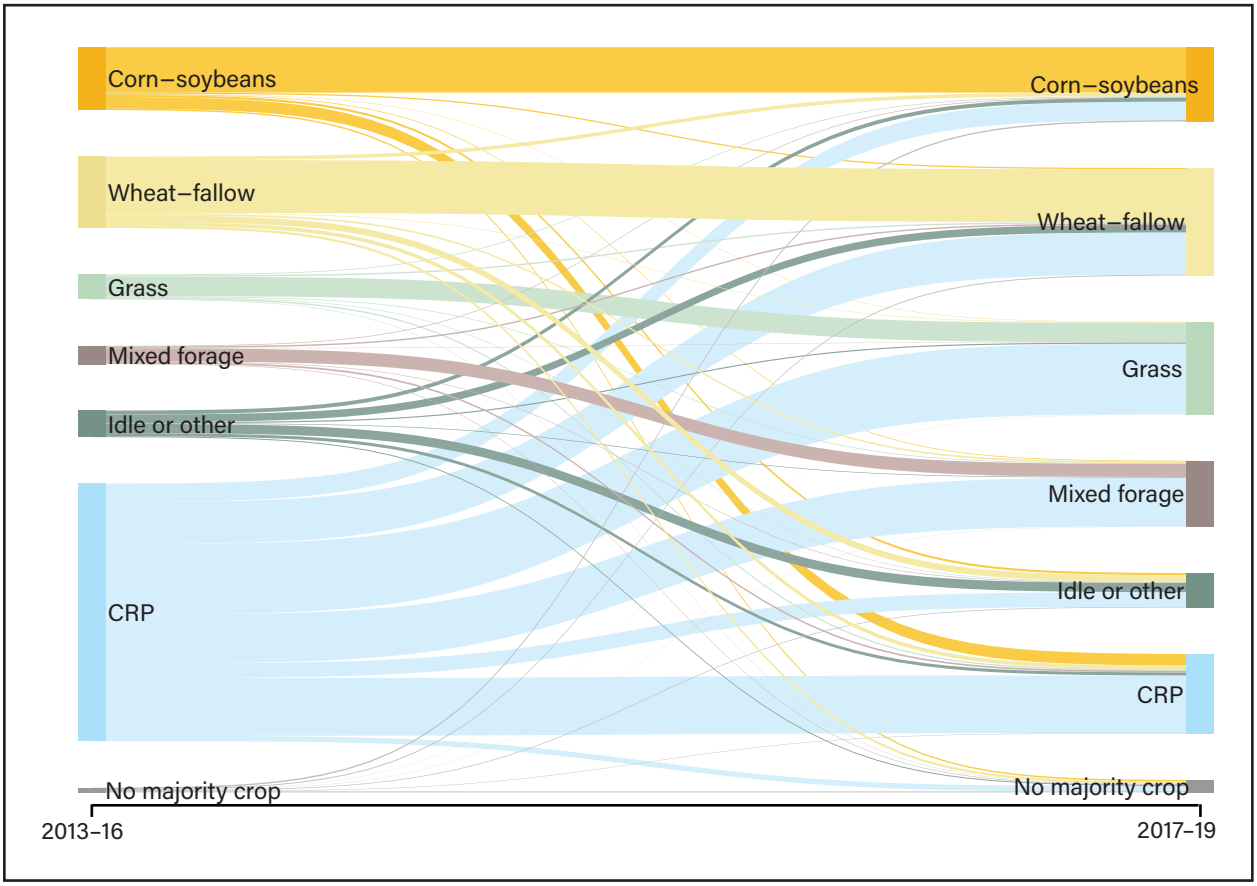
Overall, figure 2 shows that after being rejected from CRP, landowners put 16.6 percent of this acreage into corn and soybeans, 23.4 percent into wheat and fallow, 20.7 percent into grassland, 14.7 percent into mixed forage, and 8.9 percent into idle land and other land uses. From the pre-Signup to post-Signup periods, most landowners kept their non-CRP land in its pre-Signup uses after their offers were rejected. Nearly all acreage in grass or in mixed forage remained in those plantings; approximately three-quarters of acreage in wheat-fallow remained in wheat-fallow. Two-thirds of corn-soybean acreage remained in corn and soybeans. For those fields that were in CRP prior to applying in the 2016 Signup, the most common land use (after rejection) was grass, which is most often used for grazing. In general, post-Signup land uses of fields from returning CRP applicants were substantially different from those of new applicants. We elaborate on these differences in a later section.

Both returning and new applicants enrolled a substantial fraction of their acreage that was rejected from the 2016 General Signup in the CRP through Continuous Signup. The largest fraction of this enrollment was from the group with land exiting the CRP, but there was also a large proportion of corn-soybeans acreage that was enrolled in the Continuous Signup. It was somewhat surprising that so many landowners chose to make an offer through General Signup before going into CRP through Continuous Signup, given the potential for higher compensation from the latter. However, the cover practice required under Continuous Signup might be less desirable to some decision makers, or only a subset of their fields might be eligible for Continuous Signup.

[12] Specifically, the calculation is based on the fraction of acre-years within a field during the relevant period. For example, a field growing corn in 2017, growing wheat in 2018, and listed as idle in 2019 would be categorized as "no majority crop."

Figure 2

Land-use transitions of acres for fields rejected and not enrolled in a General Signup contract, before and after the 2016 General Signup



CRP=USDA's Conservation Reserve Program.

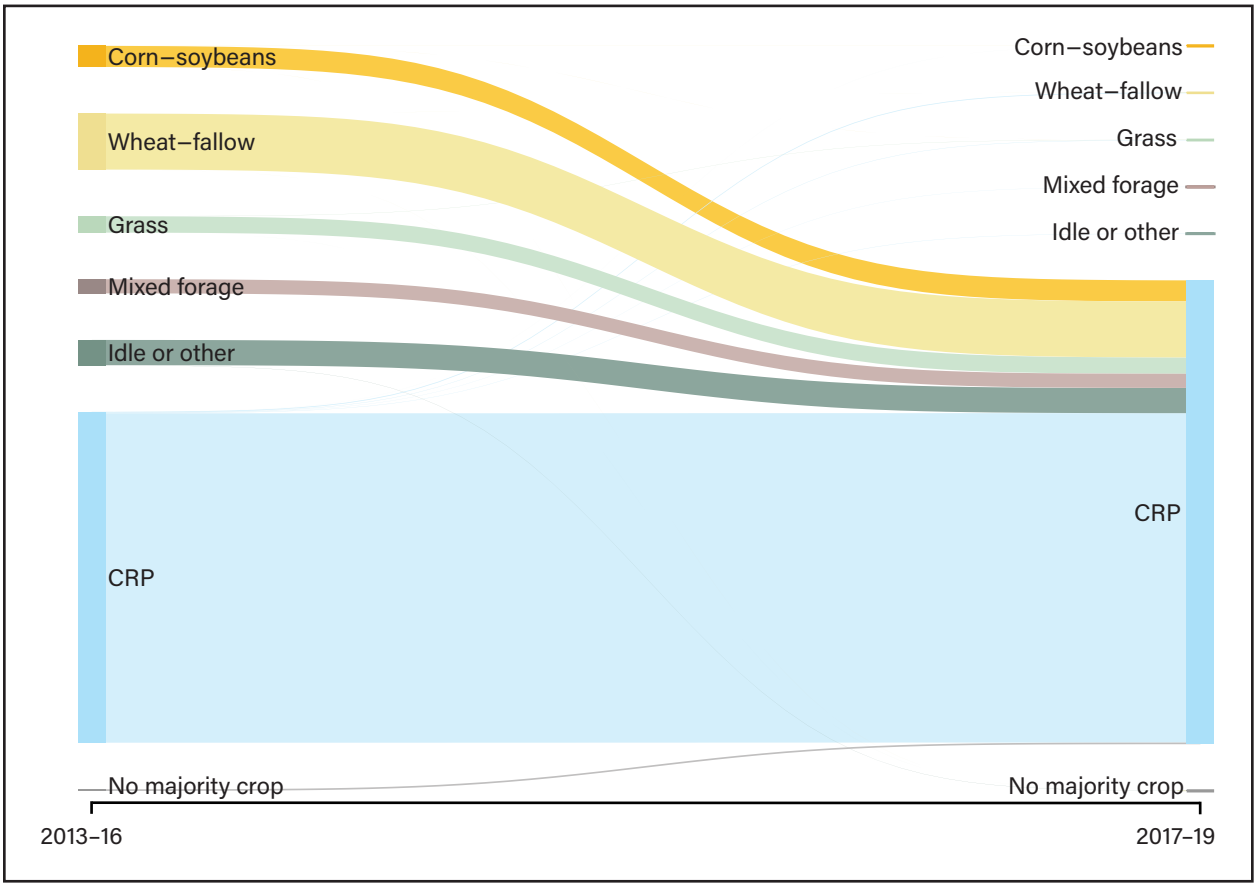
Note: Fields are assigned to a land-use category if the fields are in that land use for the majority of acre-years within each period. "Corn-soybeans" includes any corn or soybean plantings, including continuous corn, continuous soybean, and corn-soy rotations. "Wheat-fallow" includes any wheat or fallow, including continuous wheat, fallow, and wheat-fallow rotations. "Grass" and "mixed forage" include majority grass and mixed forage plantings, respectively. "CRP" includes fields with the majority of their land in CRP. "Idle or other" includes all other crop codes. "No majority crop" represents all acreage where none of these categories represents the majority of acre-years within the period. Data are shown for fields with rejected offers in the 2016 General Signup and no subsequent General Signup contract during the sample period. The thickness of bars reflects the proportion of acres planted to the associated crop, as reported to USDA, Farm Service Agency.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting Data and CRP offer data.

Figure 3 illustrates the land-use transitions for fields that were accepted in 2016 and enrolled in a General Signup contract. Unsurprisingly, nearly all of these fields were in a CRP land cover from 2017 to 2019. Note that the CRP category includes both General and Continuous Signup CRP, but the CRP acres shown after 2016 for fields accepted and enrolled into the 2016 General Signup were enrolled through General Signup CRP. The most common non-CRP land use prior to the 2016 Signup among accepted acreage was the wheat/fallow category. However, overall, the majority of accepted acreage was in a CRP land cover prior to the Signup. It is also true that returning CRP applicants were more likely to be accepted than new applicants. There are two explanations for this difference. First, offers with higher EBI scores typically have more EBI points for immutable characteristics, such as erosion potential, location within priority zones, and estimated rental rates. As a result, offers with higher EBI scores would have been more likely to be accepted into CRP in previous years. Second, higher EBI scores were also associated with offers with more chosen EBI points,

especially for cover practices.[13] This finding would likewise imply that the landowners offering these fields would likely have been more successful in previous efforts to enroll in CRP.

Figure 3
Land-use transitions of acres for fields accepted and enrolled in a General Signup contract, before and after the 2016 General Signup



CRP=USDA's Conservation Reserve Program.

Note: Fields are assigned to a land-use category if the fields are in that land use for the majority of acre-years within each period. "Corn-soybeans" includes any corn or soybeans, including continuous corn, continuous soybean, and corn-soy rotations. "Wheat-fallow" includes any wheat or fallow, including continuous wheat, fallow, and wheat-fallow rotations. "Grass" and "mixed forage" include majority grass and mixed forage plantings, respectively. "CRP" includes fields with the majority of their land in CRP. "Idle or other" includes all other crop codes. "No majority crop" represents all acreage where none of these categories represents the majority of acre-years within the period. Data are shown for fields with accepted offers in the 2016 General Signup. The thickness of bars reflects the proportion of acres planted to the associated crop, as reported to USDA, Farm Service Agency. Non-CRP land uses are rare for accepted and enrolled acres in 2017–19 but are possible if a field drops out of CRP or if the CRP contract exists on only a minority of the field, for example.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure 4 summarizes the proportions of acreage in different land uses across EBI levels in the 4 years prior to the Signup (top panel) and for the 3 years following the Signup (bottom panel) for all offers. In the figure, corn, soybeans, and wheat are separate categories, fallow is combined with idle, and a category for timber is included (previously included in "other"). Proportions for each category reflect the overall share of acreage

[13] For a more thorough discussion of cover practices in the CRP General Signup, the incentives for choosing them, and the choices that landowners and producers make when offering to the General Signup, see Pratt and Wallander (2022).

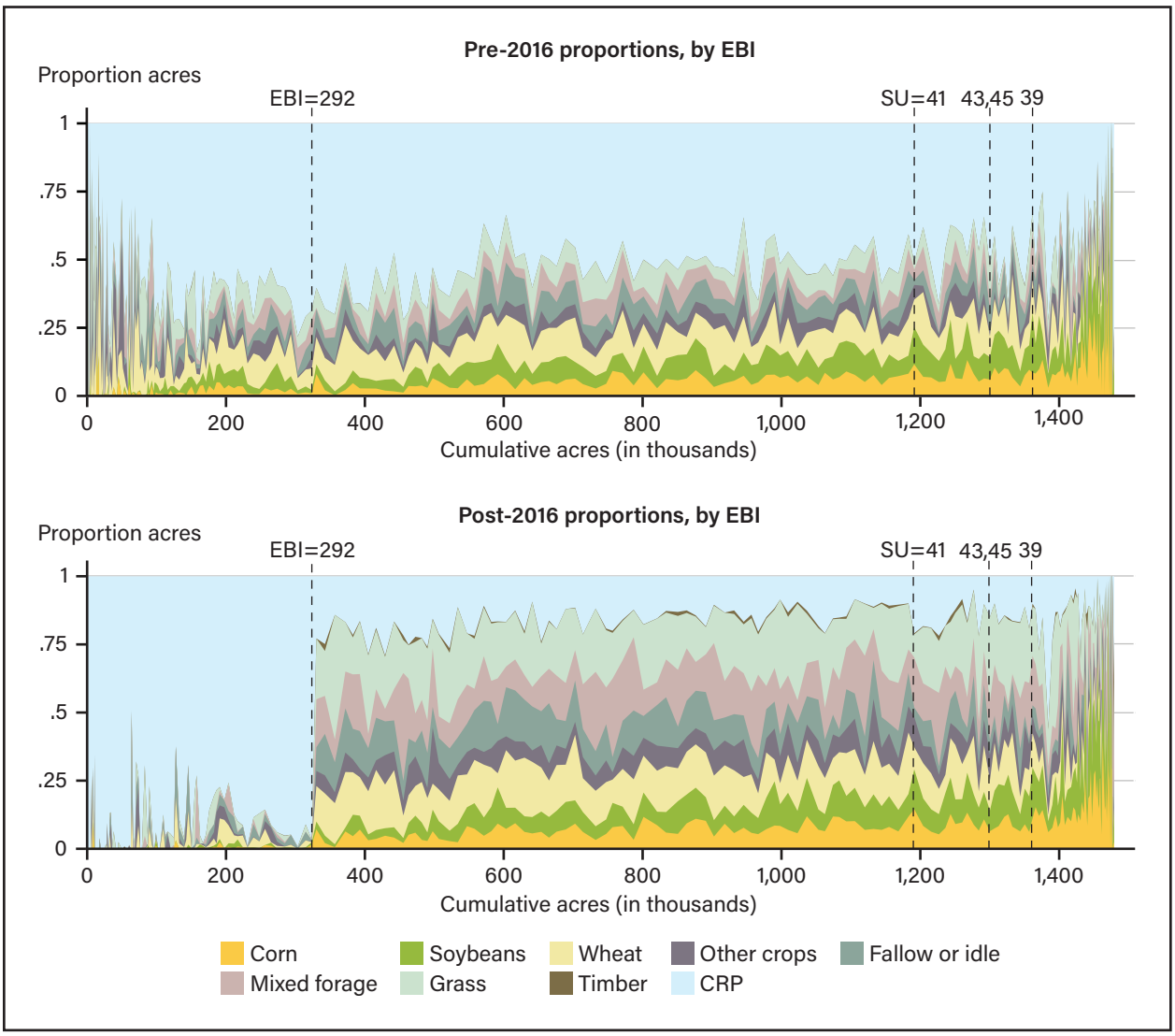
in each category during the specified period for all acres with a given EBI score.[14] Offers are listed by which acreage is accepted first (that is, has the highest EBI scores), so that the figure depicts how land-use impacts vary as more acreage is hypothetically accepted into the program. Overall, in the 2016 Signup, landowners offered nearly 1.9 million acres in total, about 22 percent of which were accepted. After the process of identifying land uses for each field, we were left with about 1.5 million acres of offered land used throughout the analysis in this report.

The first dashed line in both panels of the figure represents the cumulative acreage where the 2016 EBI threshold of 292 falls, above which most offers were accepted. Dashed lines further to the right in the figure indicate where thresholds would have been in 2016 if the proportions of acreage accepted in other recent General Signups were accepted in 2016. Comparing the dashed lines in the figure, these other recent Signups accepted a much higher proportion of offered acreage than the 2016 Signup. As we argue in appendix B, the distribution of EBI scores and field characteristics of offers has remained similar across Signups. Thus, there is good reason to expect that land-use impacts across Signups would be similar for offers at similar points in the EBI distribution and that most rejected acres in 2016 were roughly representative of accepted acres in these other Signups.

The top panel of figure 4 shows land-use decisions in the immediate years prior to the 2016 Signup for all rejected and accepted offers. Interestingly, the pre-Signup land uses were somewhat stable across the full range of EBI scores. However, offers with lower EBI scores (where EBI scores were smaller as more acreage was accepted) tended to have a higher proportion of acres in corn or soybeans prior to making a CRP offer. Accepted offers were more likely to be in wheat or other crops prior to the Signup. For other land uses, the differences were small between the groups. For post-Signup land uses (bottom panel), the shares of acreage in most land uses were also stable across EBI scores of rejected offers. The fractions of acreage in corn and soybeans increased as EBI scores decreased, whereas the fractions in wheat and fallow/idle decreased. The proportions of land in grass, mixed forage, and other crops were mostly stable with EBI levels. Timber represented a small proportion of crops throughout the range of EBI. Finally, less than 20 percent of land went into CRP from 2017 through 2019 via Continuous Signup, with limited variation across EBI scores below the threshold (to the right of the first dashed line).

[14] For these categories, we are aiming for a more disaggregated approach as opposed to one that captures rotations. However, we wanted to minimize the number of categories with small proportions. Since idle and fallow are functionally similar and the amount of land categorized as "idle" is very small, we combined idle with fallow in this case.

Figure 4
Pre-Signup and post-Signup land use of offers



CRP=USDA's Conservation Reserve Program. EBI=Environmental Benefits Index. SU = Signup

Note: The top panel of the figure shows proportions of acres in each pre-Signup (2013–16) land use (delineated by color). The bottom panel of the figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color). Bar segment heights reflect the proportion of offered acreage in each land use. The 2016 EBI threshold, indicated with the left-most dashed line in each panel of the figure, was 292. Amounts of cumulative acres from 2016 that are proportional to the amounts accepted in other Signups are also indicated with dashed lines, with the Signup numbers indicated.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure 4 shows that land-use impacts varied across Environmental Benefits Index scores, which is largely due to the way in which the EBI formula is constructed. A total EBI score includes separate scores for six components, including air quality, enduring benefits, erosion, water quality, wildlife, and cost. These components include measures of the inherent properties of land being offered, as well as additional ways in which offers are made competitive (for instance, through rental rate discounts and practice choice). The cost component is a combination of scores from the maximum rental rate assigned to an offered parcel along with the discount offered by the landowner. In general, higher rental rates are penalized.

The EBI formula does not account for the specific land-use choices that are avoided when land is retired in CRP, though these choices are important for the environmental impacts of enrolled CRP land. For example, going from more intensive land uses like cropland to a CRP land cover will provide more environmental benefits than will going from grassland to CRP land cover for most types of environmental outcomes. However, although the EBI formula does not incorporate land use changes induced by CRP explicitly, the penalty for higher rental rates induces a relationship. Higher rental rates correspond with a higher likelihood of crops being grown; thus, the EBI indirectly penalizes land in more intensive land uses.

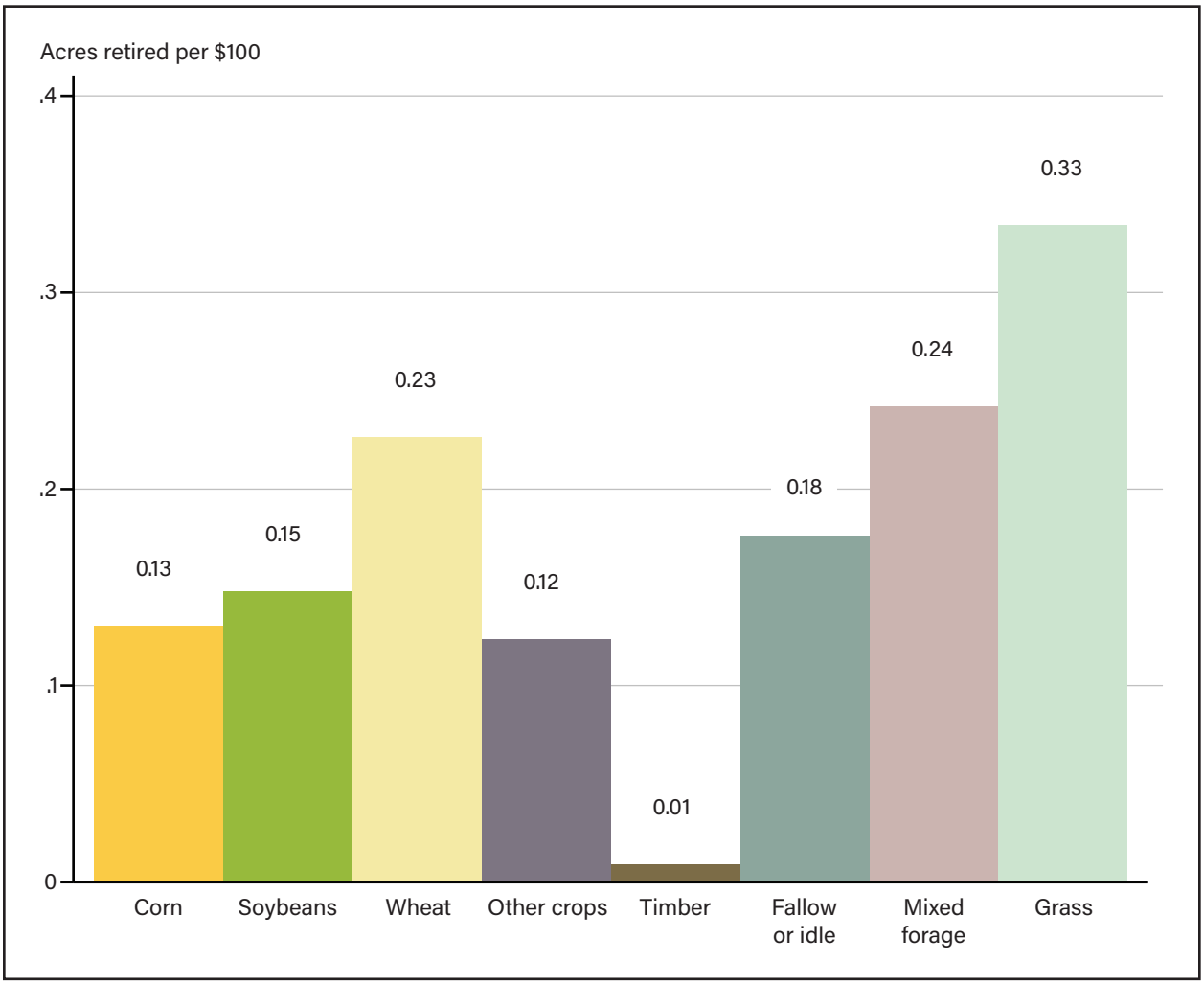
Land-Use Impacts Per Hundred Dollars Spent

In considering the land-use impacts of the CRP and correlations between the EBI and land-use impacts, cost is another important component. Retiring land with a higher proportion in crops may bring higher environmental benefits per acre, but crop acreage comes at a higher cost to CRP on average. Land in commodity crops generally rents for higher rates compared to land in grazing or other less intensive uses. Further, USDA, FSA constrains offers to rental rates at or below a maximum rate based on soil and county characteristics.[15] Given these factors, a tradeoff exists between the higher environmental benefits afforded by retiring more intensive land uses and the increased costs of retiring that land. This section accounts for these competing factors, examining the acres of each land use that would have been retired per $100 spent on rejected offers in the 2016 General Signup (tables providing precise numbers for the graphs presented in this section are available in appendix A).

Figure 5 illustrates the average impact of accepting all rejected offers calculated per additional $100 spent on CRP rental payments annually, excluding those offers that enrolled in the CRP through Continuous Signup. For these rejected offers, a total of 1.39 acres would be retired per $100 spent on rental payments annually. Among these acres, the largest portion of acreage of land retired would go into grass (0.33 acres per $100), followed by mixed forage (0.24 acres). Further, on average, an additional $100 in rental payments would also have retired 0.23 acres of land in wheat, 0.15 acres in soybeans, 0.13 acres of land in corn, 0.12 acres in other crops, and 0.18 acres in fallow or idle use. Only about 0.01 acres per $100 from rejected offers would have gone into retiring timberland. Note that these impacts are averages split across many types of parcels and any particular parcel retired will in most cases be concentrated in only one land use.

[15] The maximum rental rate is intended to be an estimation of the opportunity cost for the field. At the time of the 2016 General Signup, this maximum rental rate was determined by the multiplicative combination of the following: the county average dryland cash rental rate, as determined by USDA, National Agricultural Statistics Service surveys; a soil productivity factor that scales based on the ratio of the field's National Commodity Crop Productivity Index and the county average National Commodity Crop Productivity Index; and an inflationary factor of 10 percent. Although not in effect for the studied Signup, the 2018 Farm Bill restricted maximum rental rate, which is currently executed with a multiplicative factor of 0.85 times the county rental rate.

Figure 5
Acres potentially retired per $100 spent on rejected offers (excluding Continuous Signup CRP)



CRP=USDA's Conservation Reserve Program.

Note: This figure shows acreage in each post-Signup (2017–19) land use (delineated by color) that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted. Specific values for the acres in each post-Signup land use are reported in the figure. Acres potentially retired per $100 are calculated by dividing the proportions of acres in each post-Signup land use by total offered annual rental payments of rejected offers. Fields going into Continuous Signup CRP are excluded. Bar heights reflect the average of offered acreage in each land use per $100 in potential rental payments.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

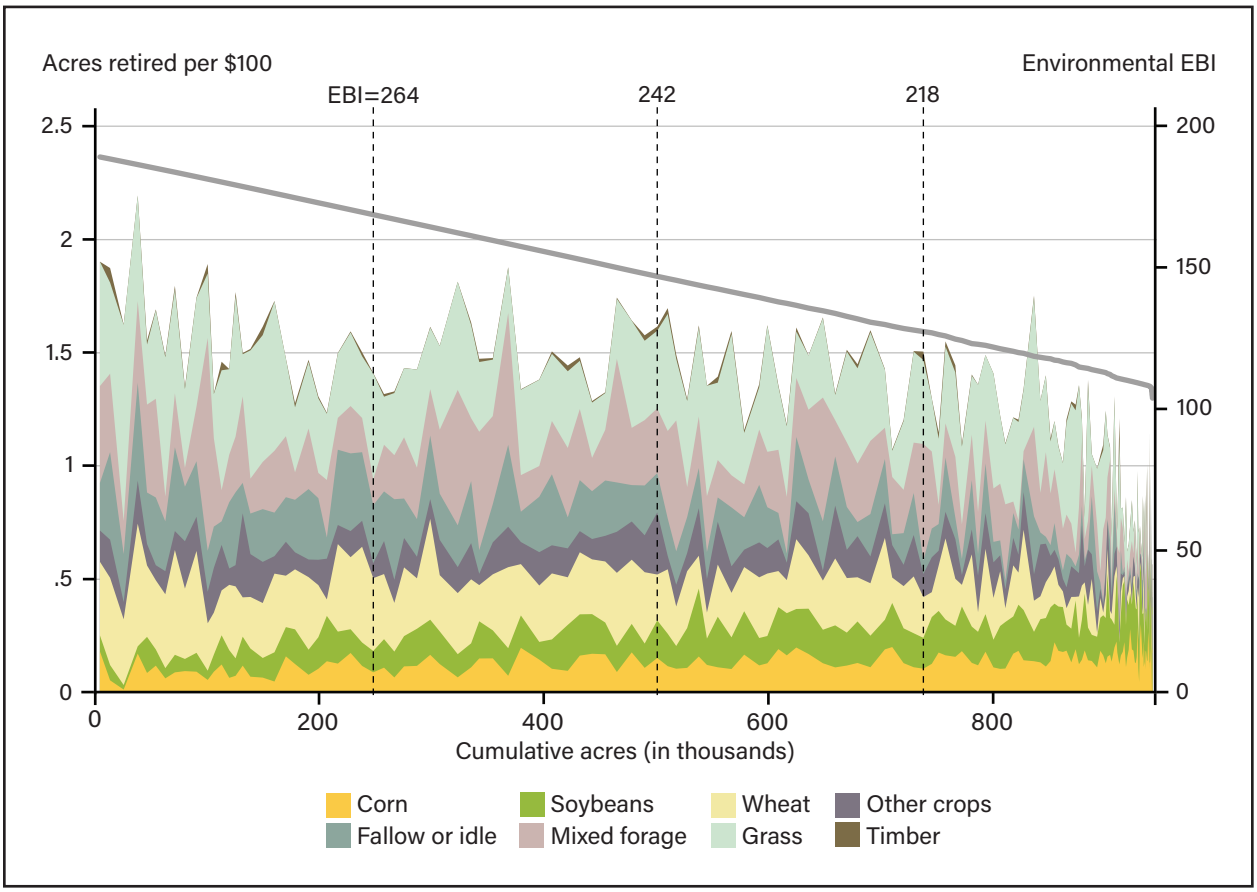
The cost of retiring acreage across different land uses can vary with how much acreage is enrolled in the program. We show this relationship using a similar graphic to figure 4, but we summarize the average acreage that went into each land-use category for every $100 that would have been paid in annual rental rates if the offers were accepted. Figure 6 shows how the potential cost of enrolling rejected land into the CRP varies with EBI scores, and in effect, the total acreage accepted into the program. The horizontal axis is still cumulative acres but with some limitations. First, these are cumulative acres for only rejected offers. Second, this does not include land that goes into the Continuous Signup. Thus, here we only assessed how cost of retirements varies for land on which we could directly observe non-CRP land-use choices. Together, this accounted for about 950 thousand acres of the 1.45 million acres of offered land included in the analysis. Figure 6 also provides the average Environmental EBI score at each EBI level. The Environmental EBI is defined as the total EBI score minus the score assigned to the cost component, following USDA, FSA's approach for measuring potential environmental benefits of CRP enrollments. The figure shows that Environmental EBI

scores decrease as more acreage is hypothetically accepted into the program. Thus, even if acres retired per $100 do not change, the estimated potential environmental benefits of offers decrease as more acreage was enrolled into the program.

In figure 6, acres retired per hundred dollars in annual rental payments are broadly decreasing as more acreage is accepted into CRP, that is, increasing in EBI scores. This results because the CRP rewards more EBI points to offers with lower rental rates. However, the relationship was approximately flat across more than half of the distribution, reflecting the concentration of offers in a small range of EBI scores. Acreage in corn and soybeans increased substantially as EBI values decreased. On the other hand, acreage in grass, mixed forage and fallow/idle uses decreased and constituted the bulk of differences across EBI scores.

Figure 6 provides evidence that the crop acreage potentially retired in CRP per hundred dollars spent is fairly stable as more acreage is enrolled into the program. This finding occurs because the EBI penalty for higher rental rates relates to acres per hundred dollars in two directions. First, the penalty directly rewards parcels that can be enrolled more cheaply, meaning offers with more acreage retired per $100 have higher EBI scores. Second, as figure 4 shows, there is a negative correlation between proportion of crop acreage and the EBI.

Figure 6
Acreage of land uses potentially retired per $100 spent by EBI (excluding Continuous CRP)



CRP=USDA's Conservation Reserve Program. EBI=Environmental Benefits Index.

Note: This figure shows acreage in each post-Signup (2017–19) land use (delineated by color) that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted by EBI. Offers are ordered in decreasing EBI levels from left to right, and the horizontal axis is scaled to reflect the cumulative acres enrolled by accepting all offers between the true 2016 EBI threshold (292) and the EBI value in question. The amount of acres potentially retired per $100 is calculated by dividing the total acres in each post-Signup land use by total rental payments across all rejected offers for each EBI value. Fields going into the Continuous Signup CRP are excluded. Area heights reflect the offered acreage that would be retired per $100 in potential rental payments for each EBI value of rejected offers. The total of acres retired per $100 is shown by the uppermost edge of each area graph. The overlying lines depicted show how the Environmental EBI, defined as the noncost portion of EBI, varies by EBI levels (or cumulative acres).

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

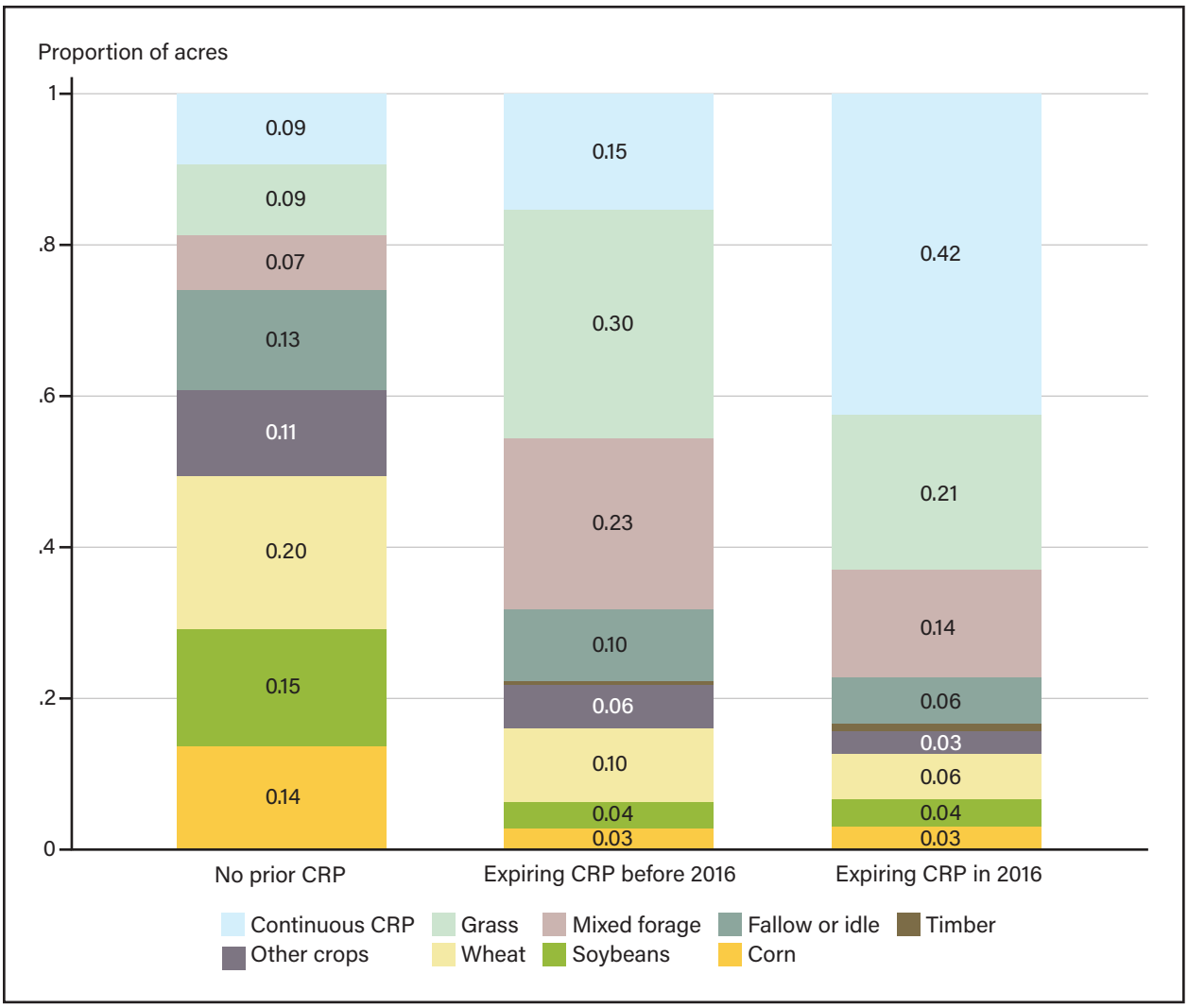
Variation in the Land Uses of New and Returning Applicants

This section examines how land-use impacts of CRP differ based on the prior CRP experience of landowners making CRP offers. As figures 2 and 3 show, a large proportion of offers in the 2016 General Signup included expiring CRP land. There are theoretical and empirical reasons to believe that returning and new applicants will be in differing land uses after rejection from the General Signup. Land enrolled in CRP is planted to a perennial cover that may include a diverse array of species and plant types. As discussed in Pratt and Wallander (2022), the typical cost of establishing such cover for popular practices can be in the range of $50 to $100 per acre. Accordingly, landowners may prefer to utilize this cover for grazing or other purposes rather than immediately destroying the cover to plant a commodity crop. Compared with the overall costs of converting the land to commodity crop production, using the land for grazing may be more profitable. Landowners are more likely to persist in their existing use than to transition unless entering their fields into CRP as a new enrollment.

Figure 7 shows the post-2016 land uses of rejected offers conditioned on prior land use. The left column in the figure shows the land-use decisions made by landowners with rejected offers without prior CRP enrollment, that is, new applicants with rejected offers. The middle column in the figure shows land uses of landowners with rejected offers that had land in CRP that expired before 2016, and the right column presents land uses of landowners with rejected offers with land exiting CRP in 2016. New applicants were substantially less likely to enter CRP through Continuous Signup (after being rejected from General Signup) than either group of returning applicants. Landowners with CRP contracts expiring in 2016 were much more likely to enter Continuous Signup after being rejected than either of the other groups. We could also see more clearly here the substantial difference between new and returning applicants in the amount of their land they put into crops after being rejected, with new applicants much more likely to go into corn, soybeans, and wheat.

Less than 20 percent of acres from returning applicants with CRP expirations in 2016 were in crops of any kind. Further, both groups of landowners with prior CRP enrollment had similar proportions of acreage in grass or mixed forage when Continuous Signup land is excluded (61 percent in both cases). These levels differed dramatically from the land-use decisions of landowners with no prior CRP enrollment. The most plausible explanation is that returning applicants did not quickly remove the CRP plantings either between expiration and the 2016 General Signup or after being rejected from that Signup. CRP plantings primarily comprise grasses and plants that may provide value as forage, which could explain why these plantings would persist beyond contract expiration for the majority of fields. Providing further evidence that fields kept their land in conservation cover, a large minority of the grassland and mixed forage land managed by returning applicants were categorized in CARD as "left standing" during 2017 through 2019—more than 30 percent of the acreage in grass and more than 15 percent of the acreage in mixed forage. Crops that were left standing were indicated as having no commercial purpose. The majority of grassland was used for grazing, while the percentage for mixed forage was relatively evenly split, with 40 percent each for grazing and forage (table A.6). Figure E.3 in the appendix shows how land-use impacts vary for new and returning applicants across space.

Figure 7
Post-Signup land use of offers rejected in the General Signup, by prior CRP status



CRP=USDA's Conservation Reserve Program.

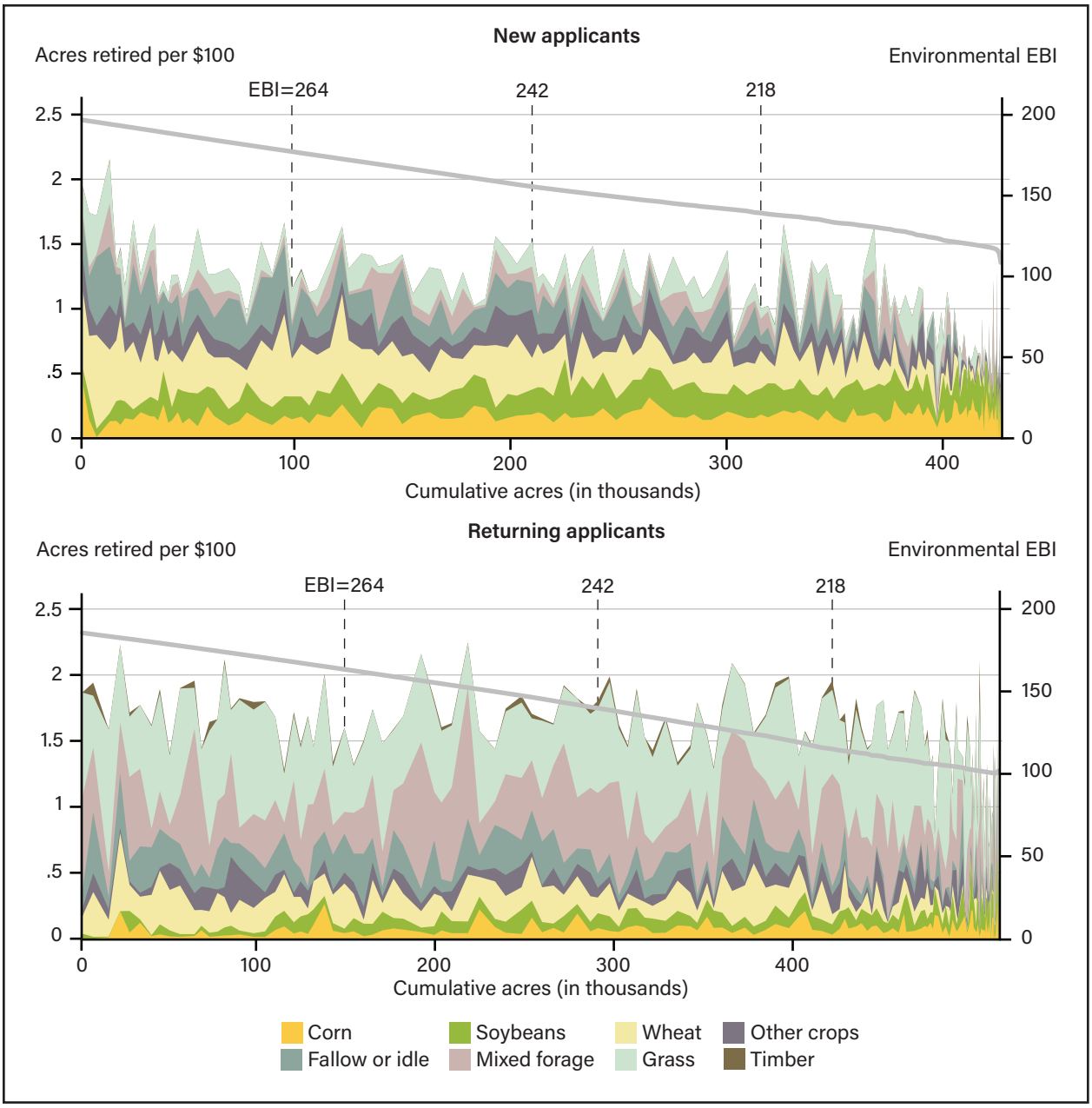
Note: This figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers, split by whether the offered land was in a CRP contract that expired during 2016, in a contract that expired between 2013 and 2015, or not in a CRP contract between 2013 and 2016. Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. Bar segment heights reflect the proportion of offered acreage in each land use.

Source: USDA, Economic Research Service analysis of Farm Service Agency Crop Acreage Reporting Data and CRP offer and contract data.

We next explore how the land uses that could be retired per $100 spent on enrolling additional rejected acreage differ by prior CRP participation. Figure 8 illustrates the post-Signup land uses of landowners with rejected offers across EBI scores by prior CRP status. The results in the figure largely reflect the differences in the proportions of land use in figure 7. Comparing the top panel of figure 8 with the bottom panel, retiring additional acres from returning applicants would lead to significantly different types of land being retired. Additionally, enrolling these offers would retire substantially more acres in grassland per $100, as well as more acres in mixed forage. On the other hand, enrolling new applicants (in the top panel) would retire substantially more acres in crops per $100. For fields both with and without prior CRP enrollment, total acreage in crops tended to increase in EBI scores, although acreage in corn and soybeans decreased.

Figure 8

Acres potentially retired per $100 in each land use by prior CRP status, for fields rejected from the 2016 CRP General Signup



CRP=USDA's Conservation Reserve Program.

Notes: This figure shows acreage in each post-Signup (2017–19) land use (delineated by color) that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted by Environmental Benefits Index (EBI) and prior CRP status. The top panel includes only fields with rejected offers and no CRP during the period of 2013 through 2016. The bottom panel includes only fields with rejected offers and some amount of CRP during the period of 2013 through 2016. Offers are ordered in decreasing EBI levels from left to right, and the horizontal axis is scaled to reflect the cumulative acres enrolled by accepting all offers between the true 2016 EBI threshold (292) and the EBI value in question. Acres potentially retired per $100 are calculated by dividing the total acres in each post-Signup land use by total rental payments across all rejected offers for each EBI value and offer group. Fields going into Continuous Signup CRP are excluded. Area heights reflect the offered acreage that would be retired per $100 in potential rental payments for each EBI value of rejected offers and offer group. The total of acres retired per $100 is depicted by the upper-most edge of each area graph. The overlying lines depicted show how the Environmental EBI, defined as the noncost portion of EBI, varies by EBI levels (or cumulative acres).

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

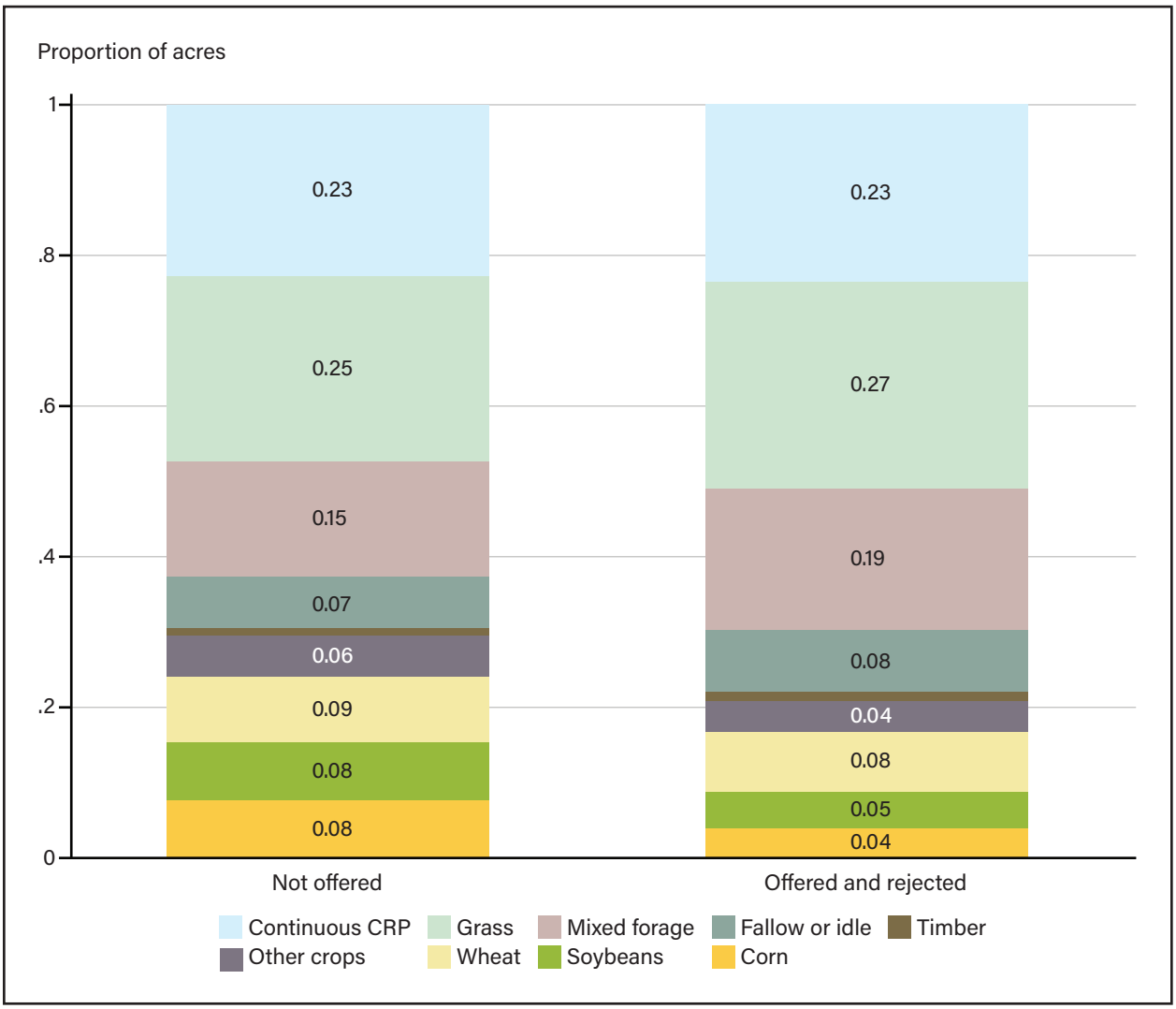
Figure 8 also demonstrates that, while less total land was retired per $100 for new applicants, more acres of crops (corn, soybeans, wheat, and other crops) were retired per $100 for new applicants compared to returning applicants (for comparable overall EBI levels and Environmental EBI levels). Whether it is desirable to prioritize newly enrolled land over returning applicants may depend on program priorities. For certain benefits (such as wildlife habitat or carbon sequestration), there may be reason to prioritize long-term enrollment, even if the land being displaced is less likely to be used intensively. For example, crop acreage is more likely to be tilled, which can release large quantities of carbon stored for many years back into the atmosphere (Li et al., 2022; Sullins et al., 2021). On the other hand, different environmental benefits may require that the most environmentally sensitive acres be replaced with a conservation cover annually. In that case, new applicants would likely bring greater benefits per dollar spent.

Comparing Voluntary and Involuntary Exits

This section compares land-use decisions of landowners with expiring CRP land who attempted to reenroll in CRP and were rejected with those with expiring CRP who did not attempt to reenroll. Figure 9 provides a general overview of land-use outcomes between these two groups. The left bar of the figure shows post-Signup land-use decisions of landowners with fields in General CRP contracts set to expire on September 30, 2016, who did not make an offer in the 2016 General Signup. The right bar of the figure shows post-Signup outcomes of landowners with fields in General CRP contracts expiring in 2016 who made a rejected offer in the 2016 General Signup. First, it is apparent that those landowners who did not make an offer were just as likely as those who did to end up in CRP through Continuous Signup. However, overall preferences varied between these groups. The nonoffering group found either Continuous Signup or not participating in CRP at all to be preferable to General Signup. The group that made offers to reenroll preferred General Signup. The second main finding shown in figure 9 is that those not making an offer were more likely to end up planting crops and less likely to end up in grasses or mixed forage.

Figure 9

Post-2016 land use of fields with General CRP practices expiring in 2016, by offer status and excluding 2016 General Signup enrollments



CRP=USDA's Conservation Reserve Program.

Note: This figure shows post-Signup (2017–19) land use weighted by acreage of fields, including only those fields with an expiring CRP contract in 2016 with a "General Signup" practice. Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. Expiring CRP is restricted to conservation practices (CPs) found in General Signup contracts. Fields may have been in a Continuous Signup contract with one of these practices, but Continuous Signup contracts with these practices would represent a small portion of the fields included. An individual field may contribute to more than one land-use category, with the appropriate fraction apportioned to each category. The "Continuous CRP" category refers to Continuous Signup enrollment.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data, CRP offer data, and contract data.

Figure C.1 in the appendix presents a similar comparison to that in figure 9 but removes those fields going into CRP through Continuous Signup. The appendix figure C.1 provides a comparison of true exits from the CRP. The left bar shows those landowners "voluntarily exiting" CRP—those with expiring CRP contracts in 2016 who did not apply for General Signup in 2016 and who also did not enroll through Continuous Signup from 2017 through 2019. The right bar shows landowners that were "involuntarily exiting" CRP—those with expiring CRP contracts in 2016 who had offers rejected from the 2016 General Signup and who were not

enrolled in CRP in 2017 through 2019. Landowners who voluntarily exited were more likely to go into corn, soybeans, and other crops—while landowners who involuntarily exited CRP were more likely to go into grass or mixed forage. The differences in corn and soybeans, in particular, were statistically significant even when controlling for prior land use and local differences.

These results mirror those from Barnes et al. (2020), who also found that landowners voluntarily exiting CRP were more likely to go back into crops. These results could be due to underlying differences in land quality as well as other factors; for example, landowners wanting to grow crops on the land will be more likely to exit the CRP voluntarily. Appendix C also looks at post-2016 land use of fields with expiring CRP, including exits from Continuous Signup, in figures C.2 and figure C.3. The primary difference is that substantially more acreage among the group not making a General Signup offer enrolled in CRP through Continuous Signup. This finding may reflect landowners of these fields being disproportionately eligible for and interested in the Continuous Signup. Appendix D explores the comparison between rejected offers and nonoffered land in greater depth.

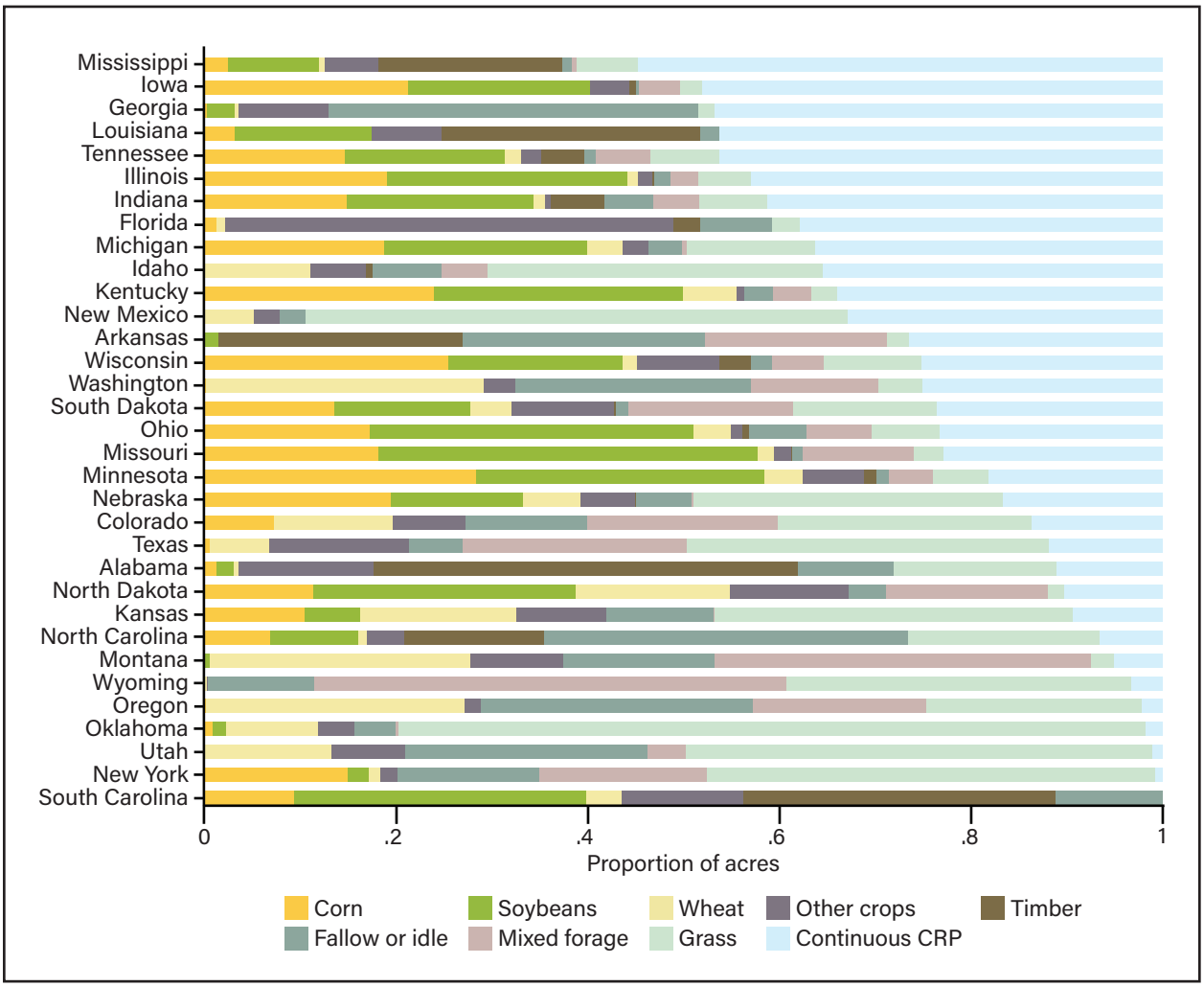
Geographic Differences in Land-Use Decisions of Rejected Offers

Another important way in which land-use impacts varied was geographical. Figure 10 illustrates the proportion of acres in each land use during 2017 through 2019 among fields rejected from the 2016 General Signup, by U.S. State. The proportions for non-CRP land use across States largely reflect the predominant land uses in those States. For example, Corn Belt States like Iowa, Illinois, and Minnesota have a high proportion of land in corn and soybeans after being rejected. On the other hand, drier States like Oklahoma and New Mexico have a lot of rejected acres in grassland. Figure 10 also emphasizes that there was a large amount of variation across States in the proportion of land that eventually enrolled in the CRP through Continuous Signup. Large portions of acreage entered the Continuous Signup in Mississippi, Louisiana, and Iowa, among other States. Values of proportions in figure 10 are provided in table A.2 of the appendix.

Midwestern States like Illinois, Iowa, and Missouri had high proportions of land in corn and soybeans after being rejected. Kansas and North Dakota had large proportions of land in wheat production after rejection. Several States in the South had a large proportion in timber, including Louisiana, South Carolina, Mississippi, North Carolina, Alabama, and Arkansas, even though timber represents a low proportion of overall acreage for rejected offers. Proportions from figure 10 (not including land in Continuous Signup) are provided in table A.3 and figure E.1 of the appendix.

Figure 10

Proportion of acres in land uses for rejected offers, after CRP Signup 49, by U.S. State



CRP=USDA's Conservation Reserve Program.

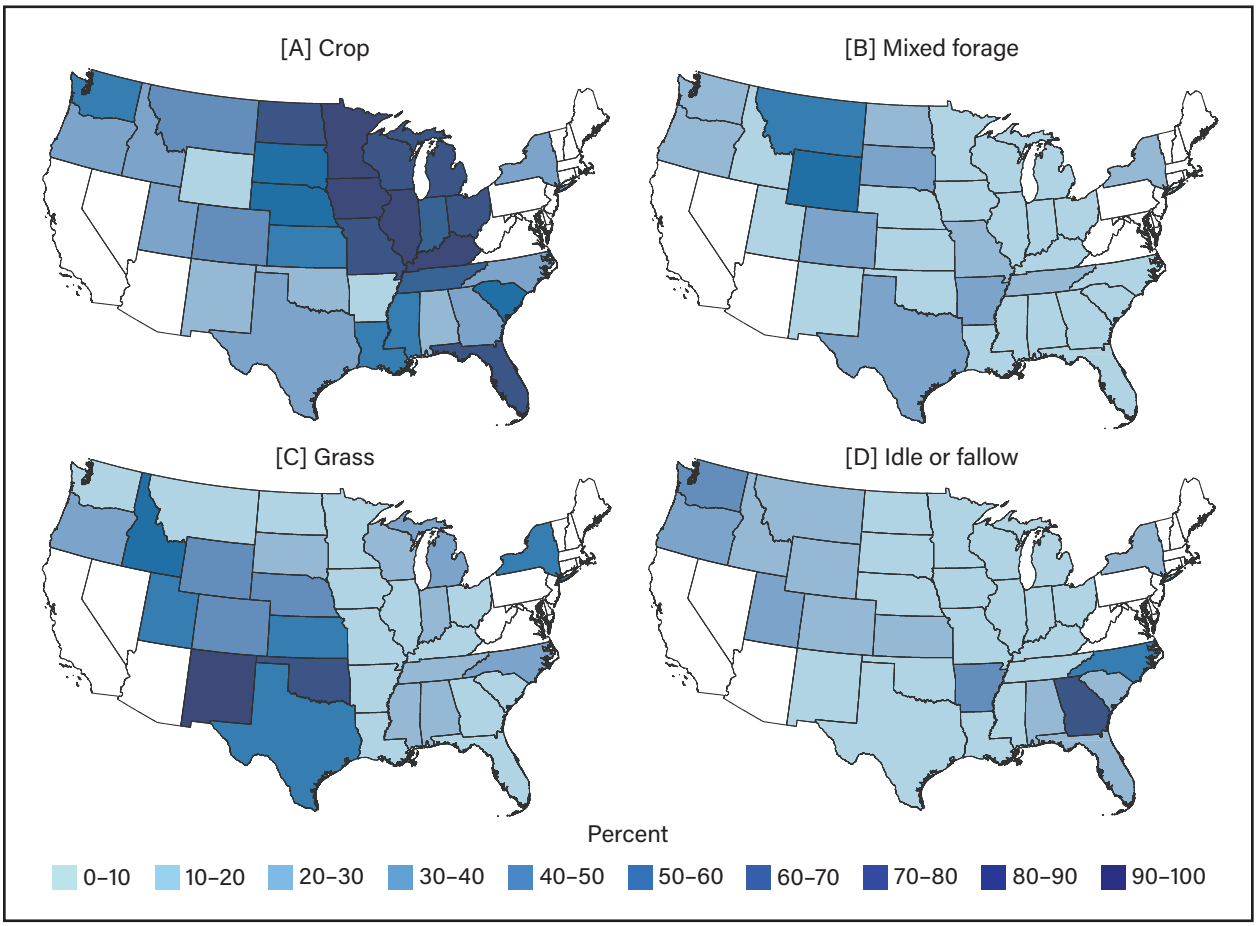
Note: This figure shows the proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by U.S. State. Bar segment widths (in the horizontal dimension) reflect the proportion of offered acreage in each land use within a State. States are ordered by proportion going into Continuous Signup CRP, starting with the highest proportion. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure 11 provides a clearer picture of the proportions in each land use for parcels rejected from CRP that were not subsequently enrolled into CRP. The figure provides maps for all crops (panel A), which combines the four categories of crops in figure 10: mixed forage (panel B), grassland (panel C), and fallow or idle land (panel D). As the figure shows, the proportion of crop acreage in Midwestern States was very high for those landowners who did not enroll into CRP. Grassland was most common for rejected land in the Southern High Plains, and mixed forage was most common in the Northern High Plains.

Figure 11

Land-use percentages during 2017 through 2019 among fields rejected from the CRP 2016 General Signup



CRP=USDA's Conservation Reserve Program.

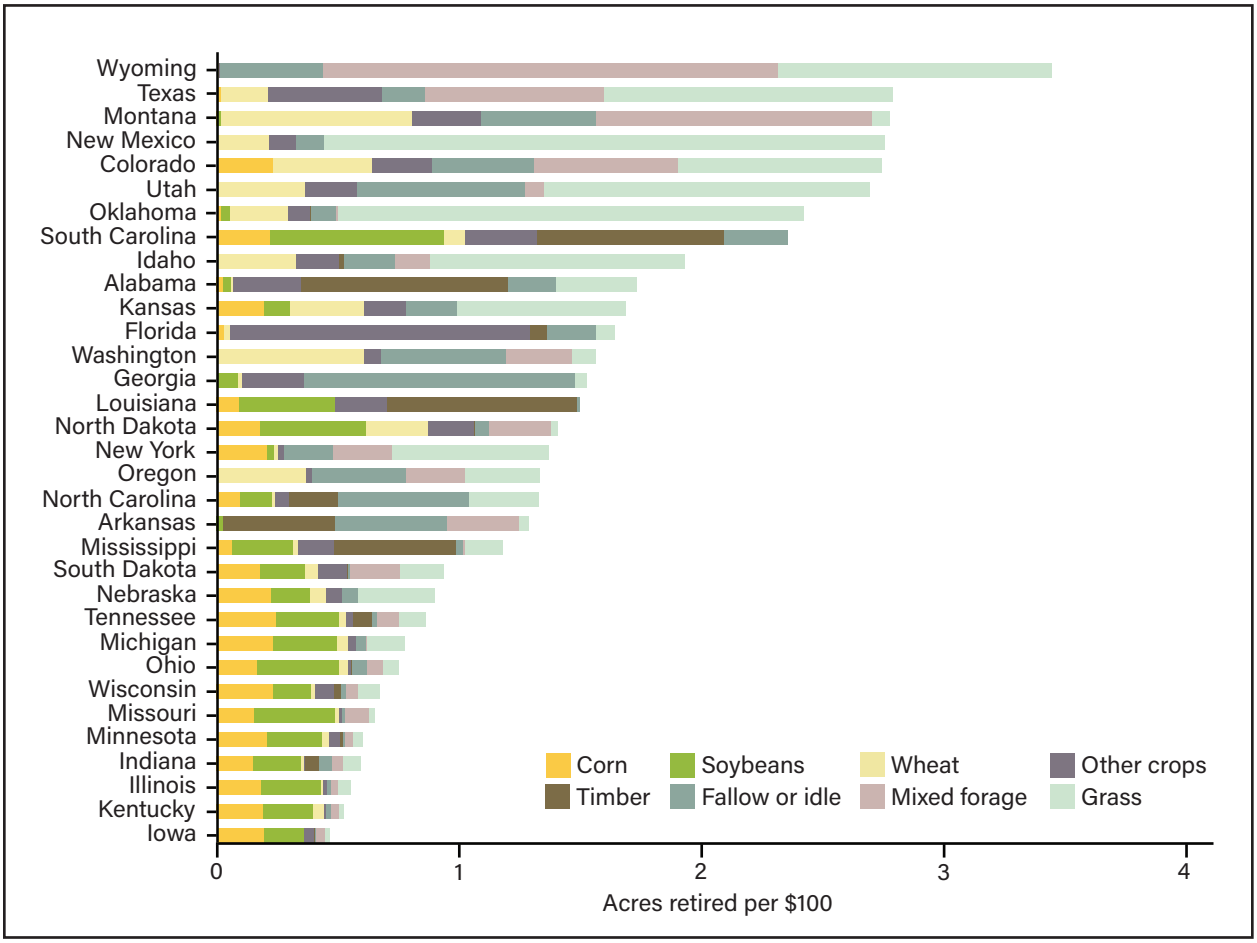
Note: Each panel illustrates the percentage of acres offered to and rejected from the 2016 General Signup by State. Panel A shows the percentage of this acreage that subsequently was used for commodity cropping. Panel B shows the percentage used for mixed forage. Panel C shows the percentage in grass. Panel D provides the percentage of idle or fallow. Alaska and Hawaii are visually omitted from all panels, as there were no fields offered in Signup 49 from these States. States in white are omitted due to either insufficient or no offers submitted in 2016, or a lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure 12 shows the acres in each land use that would have been retired per $100 had rejected offers instead been accepted, by State. The figure shows that retiring more land in Wyoming, Texas, Montana, Colorado, New Mexico, and Utah all would have provided an average of nearly three or greater than three acres retired per $100 spent on enrolling rejected offers. However, in each of these States, the majority of the acres were planted in grass, mixed forage, or fallow/idle after rejection from the 2016 General Signup. States that had the lowest amounts of total acres per $100 spent, tended to have the highest amounts in corn and soybeans (such as Minnesota, Iowa, Indiana, and Illinois). However, although States in the Corn Belt tended to have high amounts of crop acreage for grain, these States retired less crop acreage per $100 spent. Other States that had high amounts of wheat and other crops had the most potential acres retired in crops overall per $100 (like Kansas, Montana, and North Dakota). As we found with the proportions of land use, southern States like South Carolina and Louisiana had high acreages that went into timberland after being rejected (values of the proportions in figure 12 are provided in table A.4 of the appendix).

Figure 12

Acres potentially retired per $100 spent on rejected offers, by U.S. State (excluding Continuing CRP Signup)



CRP=USDA's Conservation Reserve Program.

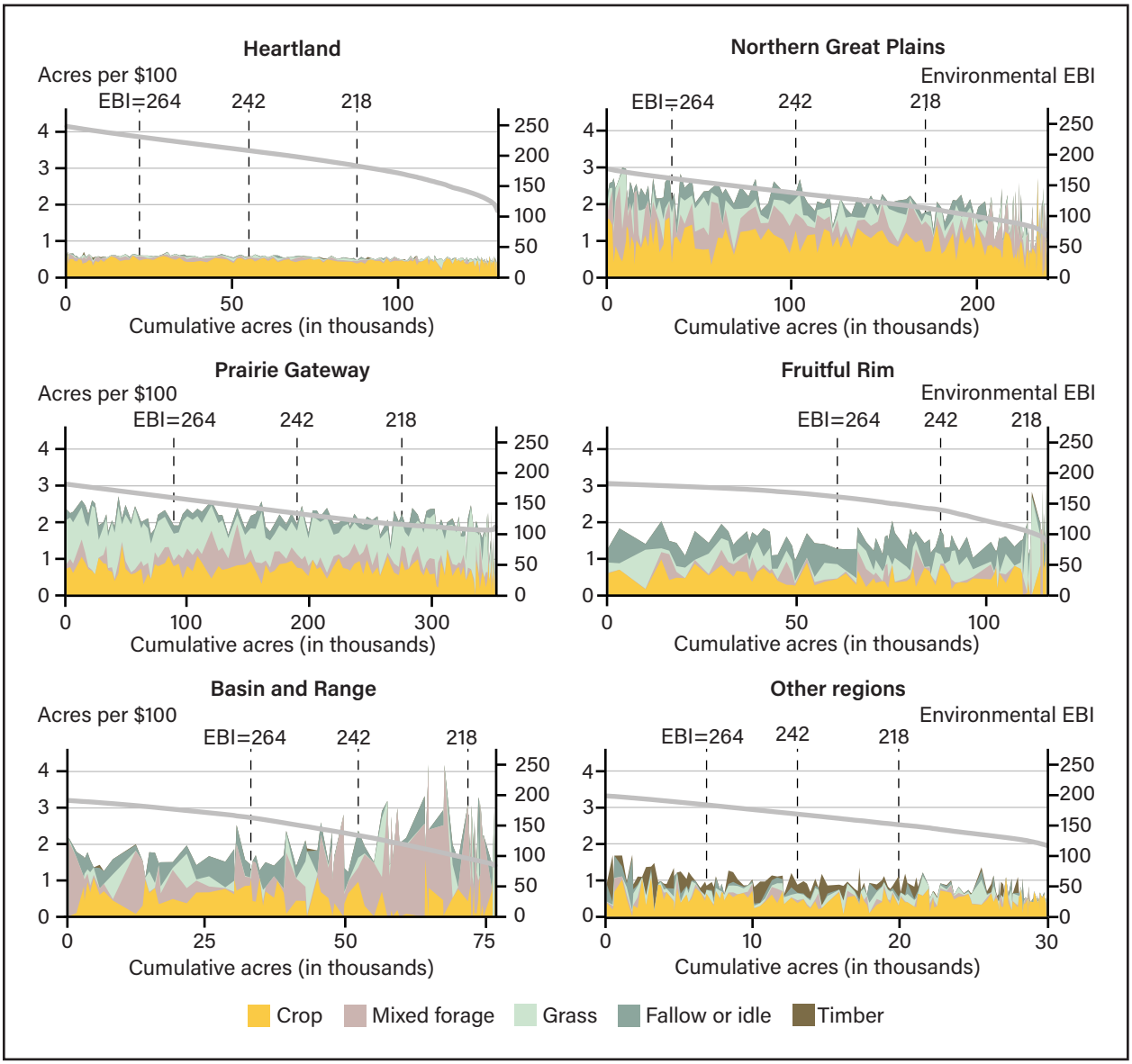
Notes: This figure shows acreage in each post-Signup (2017–19) land use (delineated by color) that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted by U.S. State. Acres potentially retired per $100 are calculated by dividing the proportions of acres in each post-Signup land use by total offered annual rental payments of rejected offers for each State. Fields going into Continuous Signup CRP are excluded. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data. Bar segment widths reflect the offered acreage in each land use per $100 in potential rental payments for each State.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure 13 shows how acres per $100 varied by land use for cumulative acres by region. The authors chose six different regions from among ERS resource regions (appendix figure E.4 depicts all nine resource regions). The figure shows how much acres would be retired per $100 spent by region, at different levels of the EBI. For figure 13, we used the simplified land-use categories described for the maps of figure 11. The figure shows that the Heartland (which encompasses States like Iowa and Illinois) was mostly acreage in crops retired, but few acres were retired per $100 across the Heartland EBI spectrum. On the other hand, enrolling land in the Northern Great Plains and Prairie Gateway tended to have a similar amount of acreage in crops enrolled per $100 but with more of other types. Patterns in the Fruitful Rim, Basin and Range, and other regions tended to be more irregular.

Figure 13

Acres potentially retired per $100 in each land use by EBI and region, fields rejected from 2016 CRP General Signup



CRP=USDA's Conservation Reserve Program.

Note: The figure shows acreage in each post-Signup (2017–19) land use (delineated by color) that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted, by Environmental Benefits Index (EBI) and USDA, ERS region. The acres retired per $100 is indicated by "Acres per $100." Offers are ordered in decreasing EBI levels from left to right, and the horizontal axis is scaled to reflect the cumulative acres enrolled by accepting all offers between the true 2016 EBI threshold (292) and the EBI value in question. Acres potentially retired per $100 are calculated by dividing the total acres in each post-Signup land use by total rental payments across all rejected offers for each EBI value and USDA, ERS region. Fields going into Continuous Signup CRP are excluded. Area heights reflect the offered acreage that would be retired per $100 in potential rental payments, for each EBI value of rejected offers and USDA, ERS region. Total acres retired per $100 are given by the uppermost edge of each area graph. The overlying lines depicted show how the Environmental EBI, defined as the noncost portion of EBI, varies by EBI levels (or cumulative acres).

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

These regional differences bring tradeoffs of their own. Although at first glance the Heartland appears to be the least effective at enrolling land likely to bring environmental benefits, Environmental EBI scores tended to be higher for given total EBI levels. Thus, enrolled land in this region was expensive but brought high environmental benefits due to high crop acreage intensity and high environmental scores. On the other hand,

the Northern Great Plains and Prairie Gateway tended to have more overall land enrolled per $100. Finally, it was interesting to see the differences in the proportion of offered acreage in each region that fell below certain EBI levels. For example, a large proportion of land in the Fruitful Rim had high EBI scores. The dashed line indicating an EBI level of 264 was far to the right in the graph. This finding is also reflected in the high amount of acres enrolled in this region in Signup 49, particularly in eastern Washington. This information indicates how the program currently prioritizes offers across regions.

Post-Signup Land-Use Decisions by Offered Practice

In most of this report, the authors assess the land-use impacts of CRP as the non-CRP land use that is being displaced by CRP when landowners enroll their land. However, CRP impacts also depend on the specific CRP cover chosen when land is enrolled. Thus, to assess CRP impacts, we took advantage of the information available about both the proposed CRP land cover and the actual land-use outcome for rejected offers. Figure 14 provides an overview of land uses of all rejected offers in the years following the 2016 Signup. In the figure, shares of acreages by land-use categories are shown across broad CRP practice categories. Cover practices in General Signup CRP can be categorized broadly as grass, habitat for rare and declining species and pollinator habitat (collectively called "rare"), wildlife habitat (called "wild"), and trees.[16] The size of each rectangle is weighted by the proportion of total acreage represented.

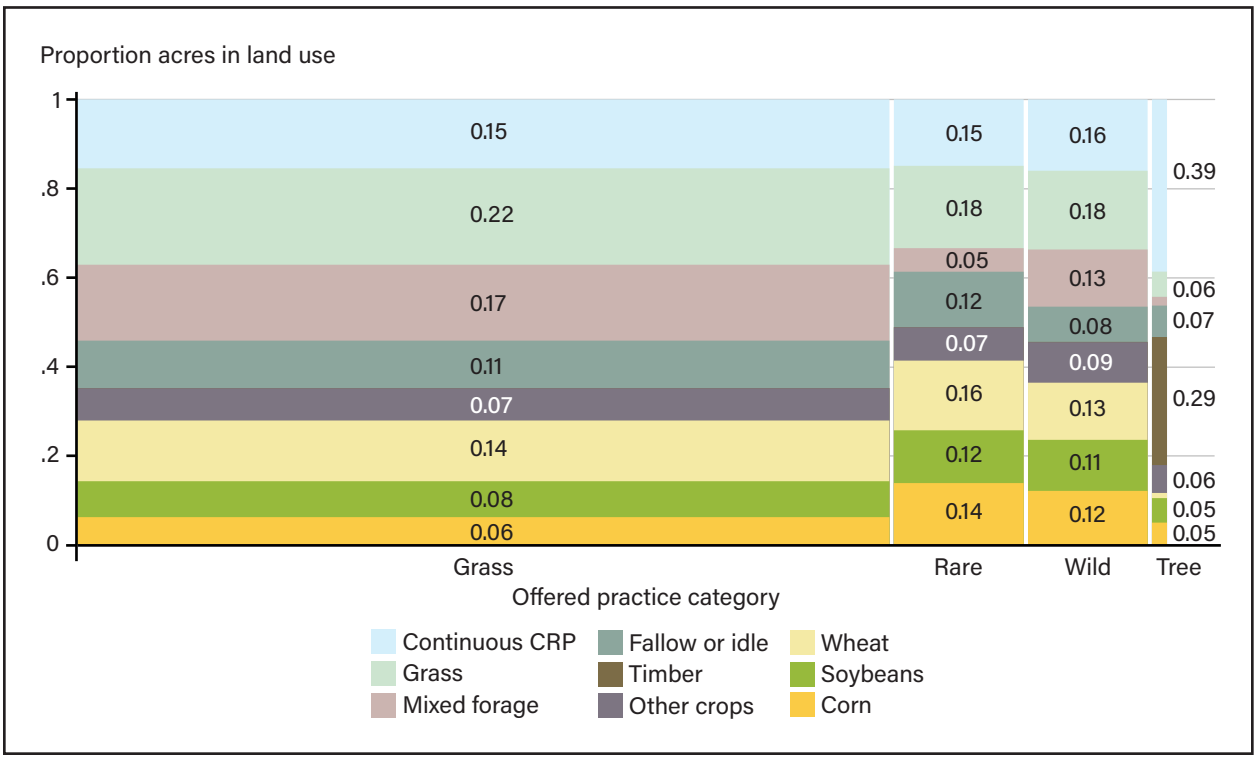
As is visible along the horizontal axis, the majority of offered acreage was in grass practices, whereas rare and declining habitat and wildlife practices were less common. Tree practices comprised the least amount of acreage. Among offered grass practices, nearly 40 percent went into some type of crop after rejection. Figure 14 suggests that acreage offered to rare habitat and wildlife practices (which each contribute higher amounts to EBI scores) was associated with a higher proportion in intensive crops. This finding results in part because offers from parcels with higher rental rates must offer more competitive practices to make up for lower baseline EBI scores. Perhaps unsurprisingly, a large proportion of acreage that offered tree practices went into timber. This acreage primarily comprised land that was previously in CRP. Further, for the nontree practices, nearly 20 percent of acres found another way into CRP, likely through Continuous Signup.[17] The proportion entering CRP through Continuous Signup was nearly 40 percent for land that offered tree practices (see additional figures that split figure 14 by prior CRP status in appendix G).

[16] Tree practices constitute less than 700,000 acres nationally and geographically concentrated outside our sample. Pollinator habitat constitutes approximately 540,000 acres nationally. Both tree practices and pollinator habitat are excluded from the figure, given their limited acreage.

[17] The vast majority of cover practice codes among these fields are only available through Continuous Signup, and those cover practice codes that are available through General Signup are relatively rare in Continuous Signup. Grasslands Signup uses a separate set of cover practice codes. Because these cover practice codes are reported in the planting data that we use, we can identify CRP acreage on these fields as either definitely Continuous, probably General, or Grasslands Signup. Notably, almost all of this acreage is in cover practice codes that are only available through Continuous Signup, suggesting either preexisting partial-field enrollments or new enrollments in Continuous Signup. There may be preexisting General Signup partial-field enrollments on fields with rejected offers, but the evidence would suggest this is rare.

Figure 14

Proportion of acres in land uses by practice category of 2016 General Signup rejected offers



CRP=USDA's Conservation Reserve Program.

Note: This figure shows the proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by offered practice category (horizontal axis). Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. Bar widths for each practice category (in the horizontal dimension) reflect the proportion of total offered acreage in each offered category. For example, the majority of rejected acreage had offered to implement a grass practice. Bar segment heights (in the vertical dimension) reflect the proportion of acres, within offered practice category, in a given land use or crop. The grass practice category includes "Introduced grasses" and "Native grasses." The rare practice category includes "Rare and declining habitat" and "Pollinator habitat." The wild practice category includes "Wildlife habitat." The tree practice category includes "Tree planting" and "Hardwood tree planting."

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Conclusion

The CRP General Signup aims to be cost-effective at enrolling environmentally beneficial land. The program prioritizes lower cost land and land estimated to have the highest potential environmental impacts but does not account for the actual land-use change induced by the program, which we find can vary substantially across offers. With its rental rate penalty, the CRP's Environmental Benefits Index favors offers that bring more acreage at lower cost, but this method of prioritization has the indirect effect that high EBI offers are less likely to be intensively used for commodity crops. When these effects are assessed together, we find that as more land is accepted into CRP, though the inherent environmental value of land declines, the degree to which crop acreage is displaced only decreases marginally. Thus, environmental benefits that depend on replacing crop acreage with conservation cover can be obtained even if a high amount of acreage is enrolled in CRP.

Further, the program does not currently distinguish between returning and new applicants or by land-use differences across regions, despite our finding that there is considerable heterogeneity in land use after rejection by prior CRP status and across U.S. States. Whether it is desirable for the program to account more explicitly for differences in land-use impacts will depend on the specific benefits being considered, some of which may depend on retiring specific types of land use or on the persistent use of land for conservation cover. This report finds that landowners with exiting CRP land are less likely to return to intensive commodity cropping compared to those making new offers. This finding suggests that for some environmental outcomes, prioritizing new applicants could mean retiring land likely to have been used for crops—while at the same time, taking advantage of the benefits of the less intensive uses of exiting CRP land. If instead, reenrollments were prioritized, the less intensive land uses likely to occur after CRP enrollment ends would be replaced by CRP land covers. This outcome could be desirable if the goal is long-term enrollment of individual fields.

There are several ways that the General Signup could incentivize new enrollments, including decreasing maximum rental rates for prospective reenrollments or rewarding new enrollments through the EBI. The EBI and allowed rental rates may also be used to prioritize new enrollments with a history in specific crops, such as corn or soybeans. On the other hand, the General Signup could incentivize reenrollments, such as providing additional EBI points for reenrolling in existing cover practices. More broadly, the General Signup could separately rank and accept offers for new and returning applicants, with a target ratio of new land and reenrollments. This would allow for complete flexibility to determine the program's priorities over new land and reenrollments.

Questions such as how expanding the CRP might impact the landscape, how much it will cost to expand CRP, and how these impacts differ for different subpopulations might be informative when considering expanding acreage in the CRP. However, this report has important limitations in providing insights for CRP changes. First, although our results are useful for incremental expansions of CRP Signups that would include similar offers, the expansions may not carry over to large-scale increases in the CRP or changes in program design. Such changes may result in a set of offers that differs significantly from those being assessed in this report. Second, the report leaves remaining questions as to the long-run land use impacts of the CRP. Land-use decisions beyond the immediate years after the 2016 Signup are not observed in this report. Further, although indirect land-use impacts of the CRP are a subject of great interest (e.g., Wu, 2000; Fleming, 2014), this report focuses only on the direct land-use impacts of CRP.

References

Barnes, J.C., Sketch, M., Gramza, A.R., Sorice, M.G., Iovanna, R., & Dayer, A.A. (2020). Land use decisions after the Conservation Reserve Program: Re-enrollment, reversion, and persistence in the southern Great Plains. *Conservation Science and Practice*, *2*(9), e254.

Bigelow, D., Claassen, R., Hellerstein, D., Breneman, V., Williams, R., & You, C. (2020). *The fate of land in expiring Conservation Reserve Program contracts, 2013–16* (Report No. EIB-215). U.S. Department of Agriculture, Economic Research Service.

Cramton, P., Hellerstein, D., Higgins, N., Iovanna, R., López-Vargas, K., & Wallander, S. (2021). Improving the cost-effectiveness of the Conservation Reserve Program: A laboratory study. *Journal of Environmental Economics and Management*, *108*, 102439.

Dodson, C., McElroy, R., Gale, F., Hanson, K., & Carlin, T. (1994). *Gauging economic impacts as CRP contracts expire*. *Agricultural outlook*, U.S. Department of Agriculture, Economic Research Service.

Fleming, D.A. (2014). Slippage effects of land-based policies: Evaluating the Conservation Reserve Program using satellite imagery. *Papers in Regional Science*, *93*, S167–S178.

Hansen, L. (2007). Conservation reserve program: Environmental benefits update. *Agricultural and Resource Economics Review*, *36*(2), 267–280.

Heimlich, R.E. (2000). *Farm resource regions* (Report No. AIB-760). U.S. Department of Agriculture, Economic Research Service.

Hellerstein, D., Higgins, N.A., & Roberts, M. (2015). *Options for improving conservation programs: Insights from auction theory and economic experiments* (Report No. ERR-181). U.S. Department of Agriculture, Economic Research Service.

Hendricks, N.P., & Er, E. (2018). Changes in cropland area in the United States and the role of CRP. *Food Policy*, *75*, 15–23.

Kirwan, B., Lubowski, R.N., & Roberts, M.J. (2005). How cost-effective are land retirement auctions? Estimating the difference between payments and willingness to accept in the Conservation Reserve Program. *American Journal of Agricultural Economics*, *87*(5), 1239–1247.

Lark, T.J., Hendricks, N.P., Smith, A., Pates, N., Spawn-Lee, S.A., Bougie, M., Booth, E.G., Kucharik, C.J. & Gibbs, H.K. (2022). Environmental outcomes of the U.S. renewable fuel standard. *Proceedings of the National Academy of Sciences*, *119*(9), e2101084119.

Li, C., Moore, J.M., Acosta-Martínez, V., Fultz, L.M., & Kakarla, M. (2022). Conversion of Conservation Reserve Program land back to cropland: Changes in soil carbon and nitrogen dynamics during the first 5 years. *Journal of Soil and Water Conservation*, *77*(4), 333–346.

Miao, R., Feng, H., Hennessy, D.A., & Du, X. (2016). Assessing cost-effectiveness of the Conservation Reserve Program (CRP) and interactions between the CRP and crop insurance. *Land Economics*, *92*(4), 593–617.

Morefield, P.E., LeDuc, S.D., Clark, C.M., & Iovanna, R. (2016). Grasslands, wetlands, and agriculture: The fate of land expiring from the Conservation Reserve Program in the Midwestern United States. *Environmental Research Letters*, *11*(9), 094005.

Pratt, B., & Wallander, S. (2022). *Cover practice definitions and incentives in the Conservation Reserve Program* (Report No. EIB-233). U.S. Department of Agriculture, Economic Research Service.

Ribaudo, M. (1989). *Water quality benefits from the Conservation Reserve Program* (Report No. AER-606). U.S. Department of Agriculture, Economic Research Service.

Roberts, M.J., & Lubowski, R.N. (2007). Enduring impacts of land retirement policies: Evidence from the Conservation Reserve Program. *Land Economics*, *83*(4), 516–538.

Rosenberg, A.B., & Pratt, B. (2024). Land use impacts of the Conservation Reserve Program: An analysis of rejected offers. *American Journal of Agricultural Economics*, *106*(3), 1217–1240.

Smith, R.B. (1995). The conservation reserve program as a least-cost land retirement mechanism. *American Journal of Agricultural Economics*, *77*(1), 93–105.

Sullins, D.S., Bogaerts, M., Verheijen, B.H., Naugle, D.E., Griffiths, T., & Hagen, C.A. (2021). Increasing durability of voluntary conservation through strategic implementation of the Conservation Reserve Program. *Biological Conservation*, *259*, 109177.

U.S. Department of Agriculture, Farm Service Agency. (2021). *Conservation Reserve Enhancement Program, Fact Sheet – December 2021*. U.S. Department of Agriculture, Farm Service Agency, Washington, DC.

U.S. Department of Agriculture, Farm Service Agency. (2022). *Conservation Reserve Program, Monthly Summary – September 2022*. U.S. Department of Agriculture, Farm Service Agency, Washington, DC.

Wu, J. (2000). Slippage effects of the conservation reserve program. *American Journal of Agricultural Economics*, *82*(4), 979–992.

Appendix A: Values Corresponding With Figures in the Main Text

The following appendix provides values corresponding to the Sankey diagram (figure 2) and U.S. State-level figures in the main text and appendix (figures 10, E.2, 13, and E.3). Table A.1 presents a detailed breakdown of the share of acreage planted to a specific crop or land use before and after the 2016 General Signup among fields rejected from that enrollment period. The most common crop was wheat both before and after the Signup, and the share in each crop rose after rejection. Cropping was the most common non-CRP land use before and after rejection while grass was the next most common non-CRP land use before and after rejection. Notably, all non-CRP land uses increased in share of acreage after rejection.

Table A.1
Share of acreage by land use before and after the 2016 CRP General Signup, among fields affiliated with offers submitted to that Signup

	Fields rejected in 2016		Fields accepted in 2016	
	2013–16	2017–19	2013–16	2017–19
Wheat	10.6	13.7	8.14	0.07
Soybeans	7.83	8.85	3.18	0.01
Corn	6.21	7.74	1.67	0.01
Sorghum	1.02	1.28	0.65	0.00
Alfalfa	0.58	0.71	0.31	0.00
Barley	0.42	0.52	0.20	<0.01
Oats	0.25	0.28	0.07	<0.01
Other crops	2.41	4.63	3.10	0.06
Mixed forage	5.73	14.7	5.09	0.03
Grass	7.60	20.7	7.83	0.25
Idle	0.02	0.88	0.01	0.08
Fallow	6.42	9.73	5.35	0.15
Timber	0.02	0.58	0.01	<0.01
CRP	50.8	15.7	64.4	99.3

CRP=USDA's Conservation Reserve Program.

Note: Acreage shares are shown by crop planted or land use within each time period. An individual field may contribute to multiple categories, proportional to each land use or crop. Rejected fields include only those rejected and not able to enroll. Accepted fields include only those accepted and enrolled. Among accepted offers, non-CRP land uses stem from those fields that were enrolled and then exited.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting database.

Table A.2 provides the proportions of acres in each post-Signup land use among the rejected offers split out by State. Table A.3 also provides the proportions of acres in each post-Signup land use among the rejected offers split out by State but excludes offers with land that is subsequently in CRP through Continuous Signup. Table A.4 provides the potential acreages of each land use that could be retired per $100 in rental payments across all rejected offers split by State. Table A.5 provides a breakdown of the EBI scores of rejected offers by State. Table A.5 also provides totals for acreage offered and potential rents that could be paid among rejected offers by State. Finally, table A.6 provides proportions of acreage by intended use for post-Signup acres in grass and mixed forage among parcels with rejected offers.

Table A.2

Proportion of acres in land uses for rejected offers, after CRP Signup 49, by U.S. State

State	Corn	Soy-beans	Wheat	Other crops	Timber	Fallow or idle	Mixed forage	Grass	CRP
Alabama	0.0127	0.0174	0.0046	0.1420	0.4425	0.1009	0.0000	0.1690	0.1110
Arkansas	0.0000	0.0141	0.0000	0.0005	0.2552	0.2523	0.1898	0.0236	0.2644
Colorado	0.0718	0.0000	0.1245	0.0758	0.0000	0.1270	0.1988	0.2660	0.1361
Florida	0.0124	0.0000	0.0083	0.4689	0.0274	0.0758	0.0000	0.0290	0.3781
Georgia	0.0022	0.0287	0.0045	0.0933	0.0000	0.3870	0.0000	0.0165	0.4679
Idaho	0.0000	0.0000	0.1099	0.0585	0.0070	0.0715	0.0487	0.3494	0.3550
Illinois	0.1897	0.2519	0.0107	0.0149	0.0021	0.0169	0.0293	0.0552	0.4293
Indiana	0.1478	0.1955	0.0124	0.0054	0.0566	0.0505	0.0477	0.0716	0.4124
Iowa	0.2121	0.1901	0.0002	0.0410	0.0073	0.0024	0.0430	0.0231	0.4809
Kansas	0.1037	0.0588	0.1632	0.0942	0.0000	0.1112	0.0010	0.3748	0.0932
Kentucky	0.2388	0.2599	0.0568	0.0080	0.0000	0.0294	0.0408	0.0274	0.3391
Louisiana	0.0316	0.1423	0.0000	0.0728	0.2709	0.0196	0.0000	0.0000	0.4627
Michigan	0.1874	0.2119	0.0370	0.0264	0.0007	0.0353	0.0043	0.1350	0.3621
Minnesota	0.2835	0.3009	0.0397	0.0643	0.0132	0.0125	0.0462	0.0581	0.1817
Mississippi	0.0244	0.0946	0.0068	0.0554	0.1923	0.0104	0.0041	0.0645	0.5476
Missouri	0.1811	0.3957	0.0174	0.0184	0.0001	0.0118	0.1159	0.0308	0.2288
Montana	0.0003	0.0055	0.2714	0.0969	0.0000	0.1582	0.3934	0.0240	0.0503
Nebraska	0.1945	0.1381	0.0597	0.0567	0.0013	0.0582	0.0021	0.3225	0.1668
New Mexico	0.0000	0.0000	0.0515	0.0261	0.0000	0.0280	0.0000	0.5662	0.3282
New York	0.1496	0.0221	0.0115	0.0180	0.0000	0.1480	0.1753	0.4681	0.0073
North Carolina	0.0681	0.0921	0.0088	0.0390	0.1467	0.3794	0.0000	0.2001	0.0657
North Dakota	0.1134	0.2738	0.1606	0.1247	0.0001	0.0389	0.1689	0.0173	0.1024
Ohio	0.1724	0.3376	0.0390	0.0126	0.0068	0.0602	0.0679	0.0715	0.2320
Oklahoma	0.0082	0.0138	0.0961	0.0377	0.0007	0.0430	0.0026	0.7806	0.0172
Oregon	0.0013	0.0000	0.2698	0.0172	0.0000	0.2837	0.1813	0.2248	0.0218
South Carolina	0.0937	0.3046	0.0371	0.1264	0.3269	0.1113	0.0000	0.0000	0.0000
South Dakota	0.1349	0.1429	0.0423	0.1071	0.0015	0.0138	0.1716	0.1503	0.2356
Tennessee	0.1463	0.1670	0.0176	0.0200	0.0453	0.0121	0.0573	0.0723	0.4621
Texas	0.0050	0.0000	0.0618	0.1465	0.0000	0.0564	0.2335	0.3785	0.1182
Utah	0.0000	0.0000	0.1325	0.0766	0.0000	0.2530	0.0402	0.4872	0.0105
Washington	0.0008	0.0000	0.2900	0.0339	0.0004	0.2451	0.1329	0.0470	0.2501
Wisconsin	0.2538	0.1820	0.0156	0.0862	0.0326	0.0223	0.0540	0.1020	0.2516
Wyoming	0.0000	0.0000	0.0021	0.0016	0.0000	0.1111	0.4921	0.3605	0.0327

CRP=USDA's Conservation Reserve Program.

Note: This table corresponds with figure 10 in the report. The table shows proportions of acres in each post-Signup land use for rejected offers by U.S. State. The "CRP" category almost entirely includes Continuous Signup enrollments. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Table A.3

Proportion of acres in land uses for rejected offers after CRP Signup 49, by U.S. State (excluding Continuous CRP)

State	Corn	Soybeans	Wheat	Other crops	Timber	Fallow or idle	Mixed forage	Grass
Alabama	0.0143	0.0195	0.0051	0.1597	0.4977	0.1135	0.0000	0.1901
Arkansas	0.0000	0.0192	0.0000	0.0007	0.3469	0.3430	0.2581	0.0321
Colorado	0.0832	0.0000	0.1441	0.0877	0.0001	0.1470	0.2301	0.3079
Florida	0.0200	0.0000	0.0133	0.7541	0.0440	0.1219	0.0000	0.0467
Georgia	0.0041	0.0539	0.0085	0.1753	0.0000	0.7272	0.0000	0.0310
Idaho	0.0000	0.0000	0.1703	0.0908	0.0108	0.1108	0.0756	0.5417
Illinois	0.3323	0.4414	0.0188	0.0261	0.0037	0.0297	0.0513	0.0968
Indiana	0.2515	0.3328	0.0212	0.0091	0.0963	0.0859	0.0812	0.1219
Iowa	0.4085	0.3662	0.0004	0.0790	0.0140	0.0046	0.0829	0.0444
Kansas	0.1144	0.0648	0.1800	0.1039	0.0000	0.1226	0.0011	0.4133
Kentucky	0.3614	0.3932	0.0859	0.0121	0.0000	0.0444	0.0617	0.0414
Louisiana	0.0588	0.2649	0.0000	0.1355	0.5043	0.0366	0.0000	0.0000
Michigan	0.2938	0.3322	0.0580	0.0413	0.0011	0.0553	0.0067	0.2116
Minnesota	0.3464	0.3677	0.0485	0.0786	0.0161	0.0153	0.0564	0.0710
Mississippi	0.0540	0.2091	0.0149	0.1225	0.4250	0.0230	0.0090	0.1426
Missouri	0.2348	0.5131	0.0226	0.0238	0.0001	0.0153	0.1503	0.0399
Montana	0.0003	0.0058	0.2857	0.1020	0.0000	0.1666	0.4142	0.0253
Nebraska	0.2335	0.1658	0.0717	0.0681	0.0015	0.0699	0.0025	0.3871
New Mexico	0.0000	0.0000	0.0767	0.0388	0.0000	0.0416	0.0000	0.8428
New York	0.1507	0.0223	0.0116	0.0182	0.0000	0.1491	0.1765	0.4716
North Carolina	0.0729	0.0986	0.0094	0.0418	0.1570	0.4061	0.0000	0.2142
North Dakota	0.1263	0.3050	0.1789	0.1389	0.0001	0.0433	0.1882	0.0193
Ohio	0.2245	0.4396	0.0507	0.0164	0.0089	0.0784	0.0884	0.0931
Oklahoma	0.0084	0.0141	0.0977	0.0384	0.0007	0.0438	0.0026	0.7943
Oregon	0.0014	0.0000	0.2758	0.0175	0.0000	0.2900	0.1854	0.2298
South Carolina	0.0937	0.3046	0.0371	0.1264	0.3269	0.1113	0.0000	0.0000
South Dakota	0.1765	0.1869	0.0553	0.1401	0.0020	0.0180	0.2245	0.1966
Tennessee	0.2719	0.3105	0.0326	0.0372	0.0843	0.0225	0.1066	0.1344
Texas	0.0056	0.0000	0.0701	0.1662	0.0000	0.0640	0.2648	0.4292
Utah	0.0000	0.0000	0.1339	0.0774	0.0000	0.2557	0.0406	0.4924
Washington	0.0010	0.0000	0.3867	0.0452	0.0005	0.3268	0.1772	0.0627
Wisconsin	0.3391	0.2432	0.0209	0.1151	0.0436	0.0298	0.0721	0.1363
Wyoming	0.0000	0.0000	0.0022	0.0016	0.0000	0.1148	0.5087	0.3727

CRP=USDA's Conservation Reserve Program.

Note: This table corresponds with figure E.1 in the report. The table shows proportions of acres in each post-Signup land use for rejected offers by U.S. State. Fields going into Continuous Signup CRP are excluded. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Table A.4

Acres potentially retired per $100 spent on rejected offers, by U.S. State (excluding Continuous CRP)

State	Corn	Soy-beans	Wheat	Other crops	Timber	Fallow or idle	Mixed forage	Grass	Total acres
Alabama	0.0249	0.0340	0.0089	0.2779	0.8575	0.1976	0.0000	0.3309	1.7316
Arkansas	0.0000	0.0256	0.0000	0.0010	0.4638	0.4585	0.2989	0.0394	1.2872
Colorado	0.2322	0.0000	0.4102	0.2474	0.0002	0.4191	0.5932	0.8404	2.7426
Florida	0.0328	0.0000	0.0219	1.2371	0.0722	0.2001	0.0000	0.0766	1.6406
Georgia	0.0063	0.0830	0.0130	0.2588	0.0000	1.1185	0.0000	0.0477	1.5275
Idaho	0.0000	0.0000	0.3280	0.1762	0.0210	0.2116	0.1419	1.0493	1.9279
Illinois	0.1847	0.2439	0.0106	0.0146	0.0021	0.0162	0.0276	0.0506	0.5502
Indiana	0.1491	0.1996	0.0127	0.0055	0.0578	0.0497	0.0487	0.0710	0.5941
Iowa	0.1952	0.1676	0.0001	0.0379	0.0069	0.0023	0.0382	0.0193	0.4675
Kansas	0.1936	0.1098	0.3050	0.1751	0.0000	0.2075	0.0018	0.6932	1.6861
Kentucky	0.1905	0.2077	0.0457	0.0063	0.0000	0.0227	0.0309	0.0187	0.5225
Louisiana	0.0917	0.3991	0.0000	0.2113	0.7864	0.0105	0.0000	0.0000	1.4989
Michigan	0.2323	0.2636	0.0461	0.0348	0.0007	0.0373	0.0057	0.1562	0.7766
Minnesota	0.2099	0.2235	0.0301	0.0472	0.0101	0.0081	0.0317	0.0398	0.6004
Mississippi	0.0639	0.2530	0.0181	0.1483	0.5042	0.0274	0.0109	0.1557	1.1815
Missouri	0.1544	0.3345	0.0147	0.0156	0.0000	0.0098	0.0976	0.0247	0.6514
Montana	0.0009	0.0164	0.7884	0.2866	0.0001	0.4711	1.1422	0.0717	2.7774
Nebraska	0.2255	0.1574	0.0691	0.0638	0.0015	0.0647	0.0019	0.3153	0.8990
New Mexico	0.0000	0.0000	0.2164	0.1095	0.0000	0.1174	0.0000	2.3110	2.7543
New York	0.2060	0.0304	0.0159	0.0249	0.0000	0.2039	0.2414	0.6448	1.3673
North Carolina	0.0973	0.1317	0.0126	0.0558	0.2031	0.5424	0.0000	0.2861	1.3291
North Dakota	0.1806	0.4349	0.2537	0.1939	0.0002	0.0612	0.2531	0.0270	1.4046
Ohio	0.1673	0.3357	0.0389	0.0125	0.0063	0.0592	0.0655	0.0653	0.7507
Oklahoma	0.0205	0.0343	0.2383	0.0936	0.0017	0.1059	0.0064	1.9222	2.4229
Oregon	0.0018	0.0000	0.3674	0.0234	0.0000	0.3866	0.2467	0.3056	1.3316
South Carolina	0.2207	0.7174	0.0874	0.2976	0.7698	0.2622	0.0000	0.0000	2.3551
South Dakota	0.1793	0.1858	0.0535	0.1198	0.0021	0.0118	0.2026	0.1799	0.9347
Tennessee	0.2457	0.2586	0.0270	0.0330	0.0769	0.0202	0.0888	0.1105	0.8607
Texas	0.0159	0.0000	0.1971	0.4677	0.0000	0.1801	0.7370	1.1914	2.7892
Utah	0.0000	0.0000	0.3652	0.2111	0.0000	0.6971	0.0776	1.3426	2.6935
Washington	0.0016	0.0000	0.6068	0.0701	0.0008	0.5140	0.2730	0.0954	1.5618
Wisconsin	0.2314	0.1594	0.0143	0.0782	0.0306	0.0197	0.0491	0.0874	0.6702
Wyoming	0.0000	0.0000	0.0080	0.0059	0.0000	0.4241	1.8790	1.1272	3.4443

CRP=USDA's Conservation Reserve Program.

Note: This table corresponds with figure 12 in the report. The table shows acreage in each land use that could be retired per $100 in rental rates if offers rejected during the 2016 Signup were accepted by U.S. State. The number of acres potentially retired per $100 is calculated by dividing the total acres in each post-Signup land use by total offered annual rental payments of rejected offers for each State and multiplying this quotient by 100. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Table A.5

EBI components of rejected offers, by U.S. State (excluding Continuous CRP)

State	Total acres (in 1,000s)	Total potential payments (in $1,000)	EBI components						Total EBI
			N1	N2	N3	N4	N5	Cost	
Alabama	3.13	181.39	35.56	42.61	29.26	20.16	8.71	96.33	232.62
Arkansas	1.34	104.10	36.11	60.31	35.97	20.34	7.00	90.84	250.57
Colorado	84.50	3081.13	49.53	23.40	34.00	0.77	20.03	114.37	242.10
Florida	0.25	15.24	11.97	50.39	1.84	19.66	9.16	91.73	184.75
Georgia	0.70	46.09	66.33	78.13	4.09	22.40	9.94	90.30	271.20
Idaho	6.98	362.00	41.86	36.91	60.03	1.88	19.98	104.71	265.37
Illinois	19.62	3569.47	54.97	64.48	58.54	1.93	11.25	33.20	224.37
Indiana	1.95	328.57	65.21	73.73	49.92	7.27	4.13	33.77	234.02
Iowa	18.71	3998.25	56.15	57.67	80.72	11.81	18.02	11.73	236.10
Kansas	117.84	6988.09	58.27	37.67	23.83	11.32	18.55	96.71	246.35
Kentucky	3.98	761.86	57.04	72.46	63.65	7.45	3.64	21.18	225.41
Louisiana	0.68	45.10	37.43	42.10	7.69	19.48	7.52	98.79	213.01
Michigan	3.75	483.41	72.23	74.87	3.55	3.29	17.88	60.89	232.71
Minnesota	21.61	3601.55	72.43	64.61	17.14	13.52	18.12	37.67	223.49
Mississippi	4.32	365.54	28.24	61.89	32.84	17.22	7.75	94.34	242.29
Missouri	54.96	8444.92	55.81	64.03	64.27	1.62	15.83	41.86	243.41
Montana	123.96	4463.32	62.68	18.76	30.05	2.26	14.41	110.28	238.44
Nebraska	47.75	5310.15	60.65	42.61	33.43	7.26	16.87	66.48	227.30
New Mexico	2.30	83.47	25.80	38.57	72.46	0.00	18.66	108.93	264.43
New York	1.08	79.65	35.48	72.96	11.87	1.68	3.36	88.34	213.69
North Carolina	0.26	19.86	19.92	77.02	31.26	10.03	6.34	87.90	232.47
North Dakota	58.11	4138.08	61.14	35.74	17.31	1.63	15.94	89.06	220.82
Ohio	2.83	377.78	72.31	70.62	8.77	6.60	8.21	63.44	229.97
Oklahoma	35.09	1448.06	50.07	42.42	18.70	0.56	18.67	110.92	241.35
Oregon	76.51	5745.09	45.57	52.32	34.64	4.51	22.59	98.54	258.17
South Carolina	0.36	15.33	45.43	41.15	27.76	15.71	7.69	106.58	244.32
South Dakota	22.66	2423.65	69.92	43.64	14.84	2.61	13.63	67.62	212.26
Tennessee	2.15	249.81	53.67	52.63	52.86	4.01	3.94	62.57	229.68
Texas	128.19	4596.25	52.61	25.57	24.98	0.11	21.87	114.35	239.49
Utah	6.68	247.93	60.33	53.04	9.73	0.00	23.99	113.58	260.67
Washington	74.80	4790.93	46.07	56.39	34.73	0.08	24.66	101.57	263.50
Wisconsin	7.97	1191.32	49.39	69.34	39.20	4.03	10.44	51.72	224.12
Wyoming	6.08	176.67	11.39	14.68	58.50	0.11	18.23	119.89	222.81

CRP=USDA's Conservation Reserve Program. EBI=Environmental Benefits Index.

Note: This table corresponds with figure E.2 in the report. The table decomposes EBI scores for all rejected offers from the 2016 Signup by U.S. State. All EBI values are acreage-weighted averages for offers from the relevant State. The "Cost" component of EBI scores is based on the proposed rental payments for offers. This component will be lower for offers with higher rental rates, all things being equal. The rest of the EBI score is composed of the estimated environmental contributions of offers based on either the inherent qualities of the land being offered or on the practices being proposed in the offer. This remainder is made up of scores for impacts on air quality, enduring benefits, erosion, water quality, and wildlife habitat. N1 is the wildlife factor. N2 is the factor for water quality benefits from reduced erosion, runoff, and leaching. N3 is the erosion factor. N4 is the enduring benefits factor. N5 is the fac-

tor for air quality benefits from reduced wind erosion. N6 is the cost factor. The total EBI is the sum of N1 through N5, plus the Cost factor. In the first two columns of the table are total acres and total potential payments for rejected offers, respectively. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency CRP offer data.

Table A.6

Intended uses of acreage in grass and mixed forage during 2017 through 2019, returning applicants rejected from the 2016 CRP General Signup

	Fields with any prior CRP		Fields with CRP expiring in 2016	
	Grass	Mixed forage	Grass	Mixed forage
Grazing	50.7	50.1	48.4	54.3
Forage	9.62	26.5	11.6	23.4
Left standing	37.1	19.8	37.2	18.7
All other uses	1.19	1.51	1.24	1.29
Percent of total	27.3	19.3	26.2	17.5

CRP=USDA's Conservation Reserve Program.

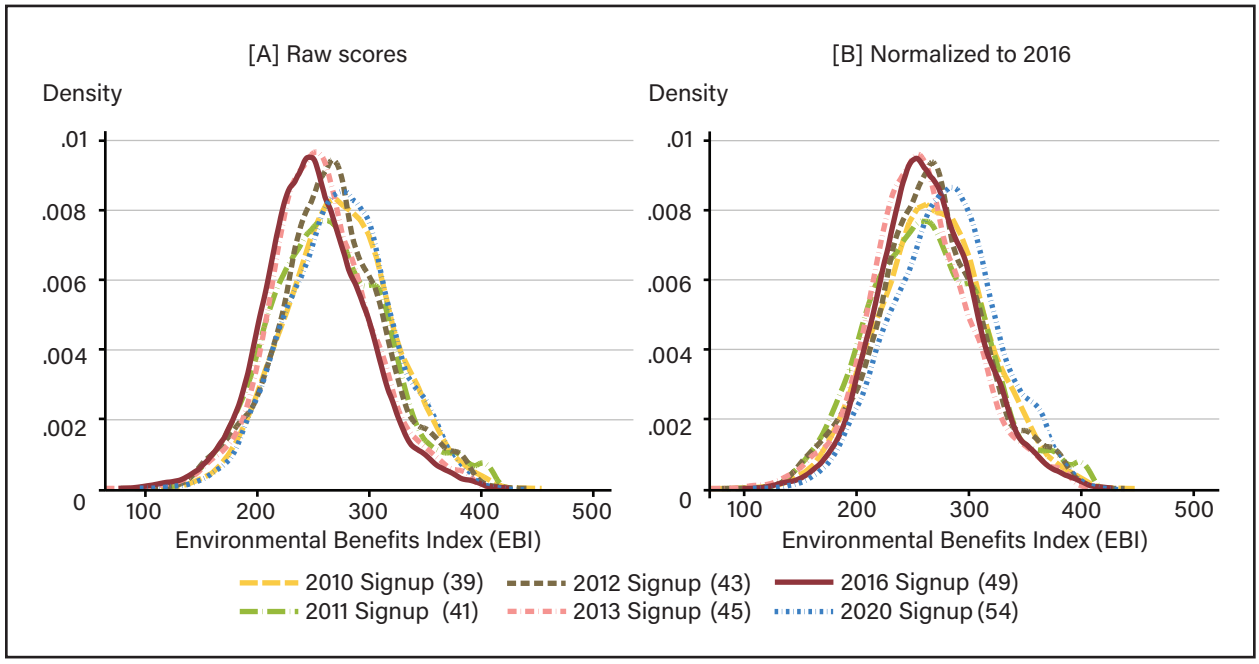
Note: Acreage shares are shown by intended use within the broader crop planted. An individual field may contribute to multiple categories, proportional to each use. The share of acreage in grass or mixed forage, (in total) is shown in the final row for context. Fields with any prior CRP are those fields offered to and rejected from the 2016 General Signup that had CRP prior to the 2017 crop year. Fields with CRP expiring in 2016 were offered to and rejected from the 2016 General Signup, and the fields' CRP contract expired at the end of the 2016 crop year. Column totals may differ from 100 percent due to rounding.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Appendix B: Comparisons Across General Signups

Figure B.1 illustrates the full distribution of EBI scores for offers submitted to each General Signup from 2010 through 2020. As shown in panel A, the distribution of EBI scores in 2016 was lower than in all other General Signups from 2010 through 2020. Notably, the EBI formula was changed for 2020 to increase points for the same rental rate, and rental rates were changing during this period. Panel B normalizes EBI scores to account for national rental rate changes and the ways in which the EBI did or did not account for these changes. In this context, the 2016 General Signup offer distribution is particularly similar to the 2013 distribution.

Figure B.1
Distribution of observed offer scores, 2010–20



Note: Kernel density plots of offers by Environmental Benefits Index (EBI) score for General Signups in 2010, 2011, 2012, 2013, 2016, and 2020. Density estimation uses an Epanechnikov kernel. Panel A plots the density for the actual EBI scores of offers in each Signup. Panel B plots the density for EBI scores normalized to account for national time trends in rental rates and the ways in which the EBI did or did not adjust for these trends at the time.

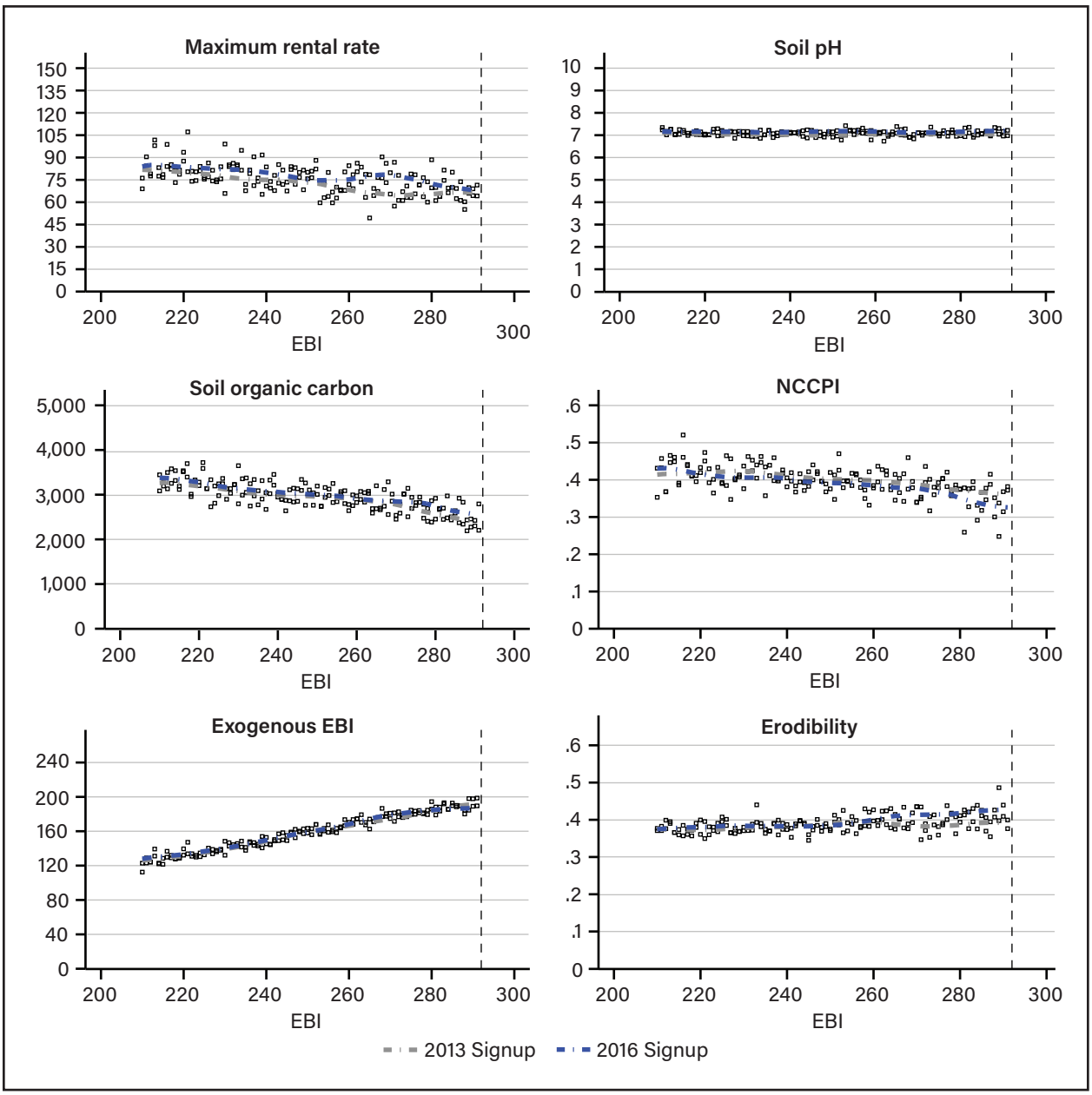
Source: USDA, Economic Research Service using data from USDA, Farm Service Agency, Conservation Reserve Program offer and contracts data, 2010, 2011, 2012, 2013, 2016, and 2020 General Signups.

Figure B.2 makes comparisons of several field-level characteristics for offers made in Signups 45 and 49. The figure shows the average values for six different field-level characteristics for each EBI level across the range of EBI values for rejected offers in 2016. These values include maximum rental rates, soil pH, soil organic carbon, the National Commodity Crop Productivity Index, exogenous EBI, and erodibility. Maximum rental rates and exogenous EBI scores come from offer information, where the exogenous EBI is the total EBI excluding the points rewarded for rental rate discounts and practice choices. The rest of the variables come from USDA, Natural Resources Conservation Service Soil Survey Geographic database.

It is clear from figure B.2 that (for the most part) these Signups have similar levels of each variable across a range of EBI levels despite the differences discussed between these Signups in table 1. When combined with the information from figure B.1, which shows the EBI distributions to be similar, the information in B.2 implies that the sets of offers between the Signups are similar. This finding gives further confidence that land-use impacts will be similar for offers at similar points in the EBI distribution for different Signups.

Figure B.2

Average values of field characteristics by EBI for the 2013 and 2016 CRP General Signups



NCCPI=National Commodity Crop Productivity Index. SSURGO=Natural Resources Conservation Service Soil Survey Geographic database. EBI=Environmental Benefits Index. pH=potential of hydrogen. CRP=USDA's Conservation Reserve Program.

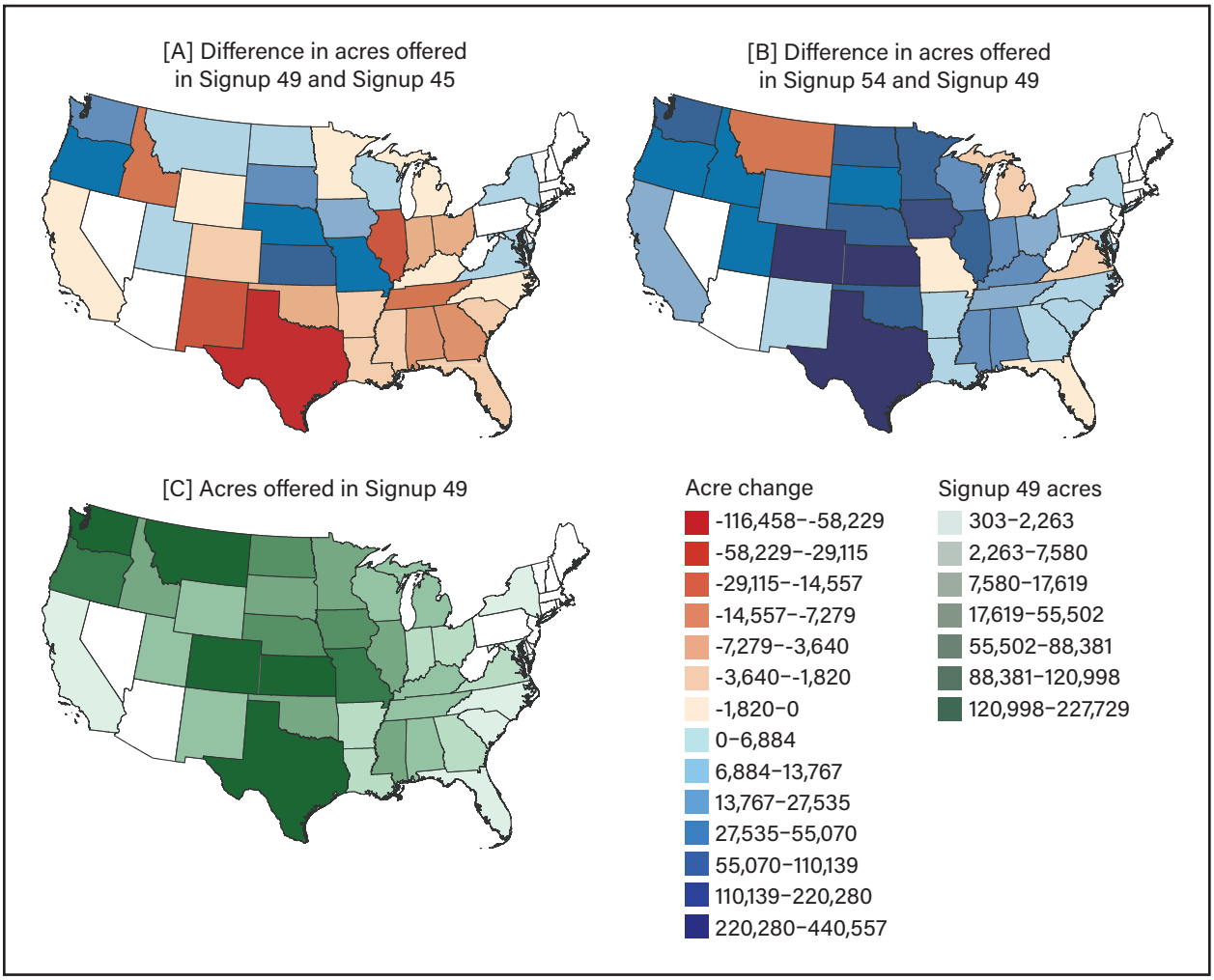
Note: This figure compares field-level characteristics for offers made in Signups 45 and 49 in 2013 and 2016, respectively. This comparison includes maximum rental rates and exogenous EBI scores associated with offers from USDA, FSA offer data. Exogenous EBI scores involve all EBI points, except those for rental rate discounts and practice choice. The figure also includes comparisons of soil pH, soil organic carbon (0 to 20 centimeters), the National Commodity Crop Productivity Index, and the erodibility factor from the NRCS SSURGO database. For each characteristic, values were averaged for each EBI level and Signup and graphed, including local linear trends of these averages. Only offers with EBI scores below 292 (the 2016 EBI cutoff) and above 209 (the 2013 EBI cutoff) were included.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency CRP offer and contracts data, 2013 and 2016 General Signups and USDA, Natural Resources Conservation Service SSURGO database.

In general, as we saw in table 1, there were differences across Signups in overall acreage enrolled. Although much of these differences likely resulted from changes in the acreage cap and gaps between Signups, the differences may also result from market factors. For example, Lark et al. (2022) attributed shifts in CRP enrollment to the renewable fuel standards. Figure B.3 shows the acres offered in the 2016 Signup (panel C),

as well as changes in acres offered across space from Signups 45 (in 2013) to 49 (in 2016) and from Signups 49 to 54 (in 2020). Panel C shows the highest amount of offers in Colorado, Kansas, Montana, Texas, and Washington. From 2013 to 2016, there were large increases in offered acreage in Oregon, Nebraska, Missouri, Kansas, and Washington, and large decreases in Idaho, Illinois, Texas, and New Mexico. From 2016 to 2020, there were increases in offered acreage in most States. Only Montana had a large decrease in offered acreage.

Figure B.3
Distribution of offered acreage in Signup 49 and differences with CRP Signups 45 and 54



CRP=USDA's Conservation Reserve Program.

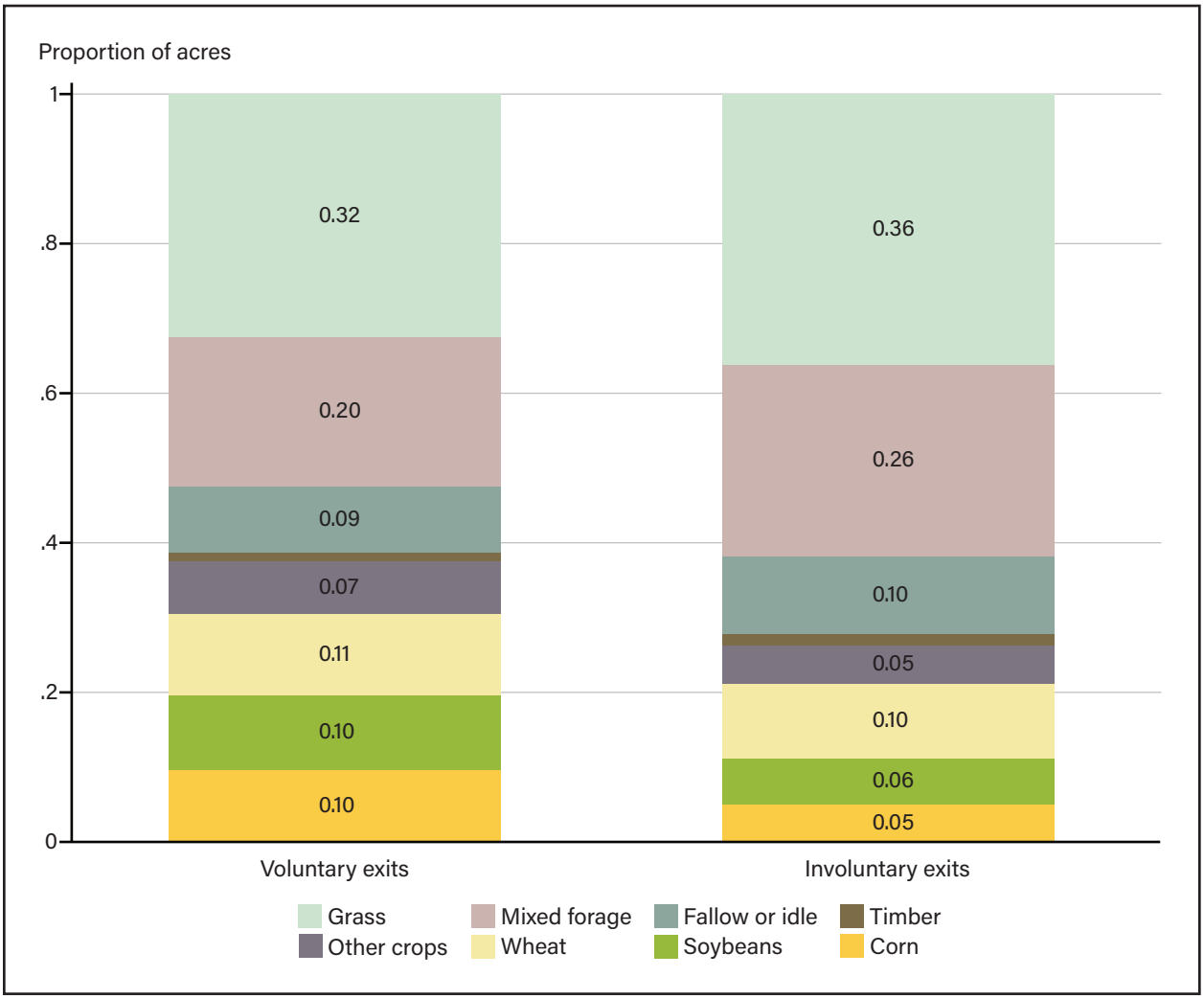
Note: Panels A and B illustrate the difference in acreage offered to CRP between successive General Signups. Panel A presents the difference between acreage offered to Signup 49 in 2016 and Signup 45 in 2013 by State. Panel B presents the difference between acreage offered to Signup 54 in 2020 and Signup 49 in 2016 by State. Increases over time are shown in blue and decreases in red. Panel C presents the spatial distribution of offers in Signup 49. Alaska and Hawaii are visually omitted from all panels, as there were no fields offered in Signup 49 from these States. However, there were 10,148 acres offered in Alaska in Signup 54. States in white are omitted due to either insufficient or no offers submitted in 2012, 2016, or 2020.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency CRP offer data, General Signups 45, 49, and 54 (2013, 2016, and 2020).

Appendix C: Comparing Land-Use Choices of Voluntary and Involuntary Exits From the CRP

Figure C.1 replicates figure 14 from the main text but excludes those fields that ultimately did enroll in CRP through the Continuous Signup. Removing the fields that enrolled in CRP provides a more direct analysis of voluntary and involuntary exits, as all of this acreage is really exiting the program. Note that voluntary exits (fields with expiring CRP acreage in 2016 that made no offer in 2016 and did not enroll in CRP by 2019) are statistically more likely to plant commodity crops than involuntary exits, which are fields with expiring CRP acreage in 2016 that made an offer in 2016 but were not accepted and did not enroll in CRP by 2019. Despite this, the difference in the proportion cropped does not fully support a hypothesis that voluntary exits primarily leave to plant crops, as over half of the acreage voluntarily leaving the program at this juncture was in grass or forage between 2017 and 2019.

Figure C.1
Involuntary exits from CRP and nonoffers (voluntary exits) with General CRP practice expiring in 2016



CRP=USDA's Conservation Resource Program.

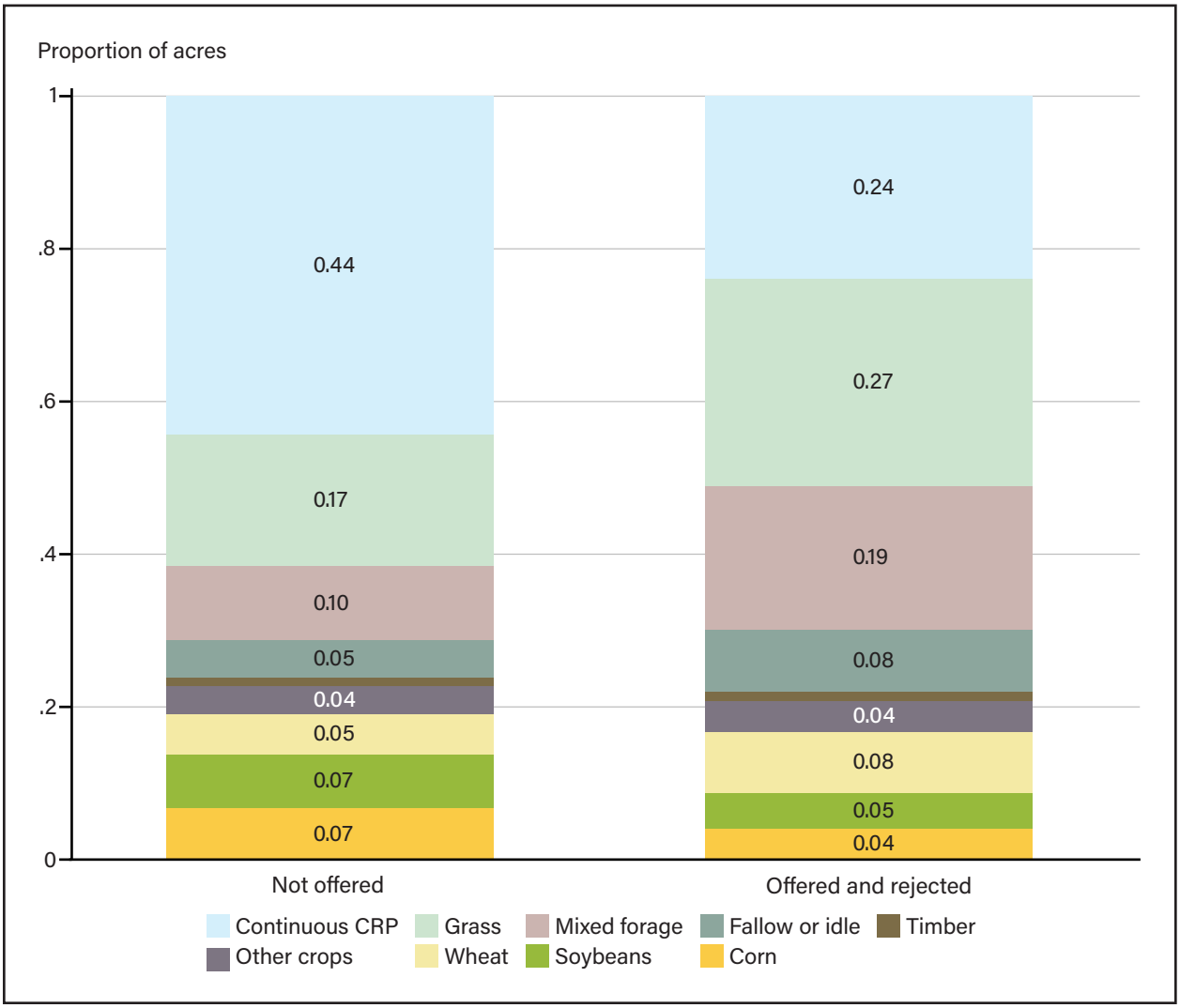
Note: Post-Signup (2017–19) land use is weighted by acreage of fields, including only those fields with an expiring CRP contract in 2016 and no CRP enrollment in 2017 through 2019. Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. Voluntary exits are defined within that population as fields without an offer to the 2016 General Signup. By contrast, involuntary exits are defined, within the expiring contract population, as fields with an offer

to the 2016 General Signup that was rejected and no subsequent CRP enrollment in 2017 through 2019. An individual field may contribute to more than one land-use category, with the appropriate fraction apportioned to each category. Expiring CRP is restricted to conservation practices (CPs) found in General Signup contracts: introduced grasses (CP1), native grasses (CP2), existing grasses (CP10), tree planting (CP3), hardwood tree planting (CP3A), existing trees (CP11), legacy hardwood trees (CP32), wildlife habitat (CP4D), wildlife food plots (CP12), rare and declining habitat (CP25), and pollinator habitat (CP42).

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer and contract data.

Figures C.2 and C.3 provide corollaries to figures 9 (in the report) and C.1 but include all CRP land expiring in 2016, not only that land enrolled via General Signup. As figure C.2 shows, including expiring Continuous Signup contracts increased the post-Signup proportion in Continuous Signup. This finding reflects the fact that many of these expiring Continuous Signup contracts simply elect to reenroll in the Continuous Signup. Figure C.3 provides a clearer depiction of the land-use choices of voluntary and involuntary exits from the CRP, including exits from both Continuous and General Signup contracts. The figure shows that voluntary exits were much more likely to go into crops after exiting CRP, with a slightly stronger difference than in figure C.1, potentially driven by differences in the ability to enter the Continuous Signup.

Figure C.2
Post-2016 land use of fields with CRP expiring in 2016, by offer status and excluding 2016 General Signup enrollments

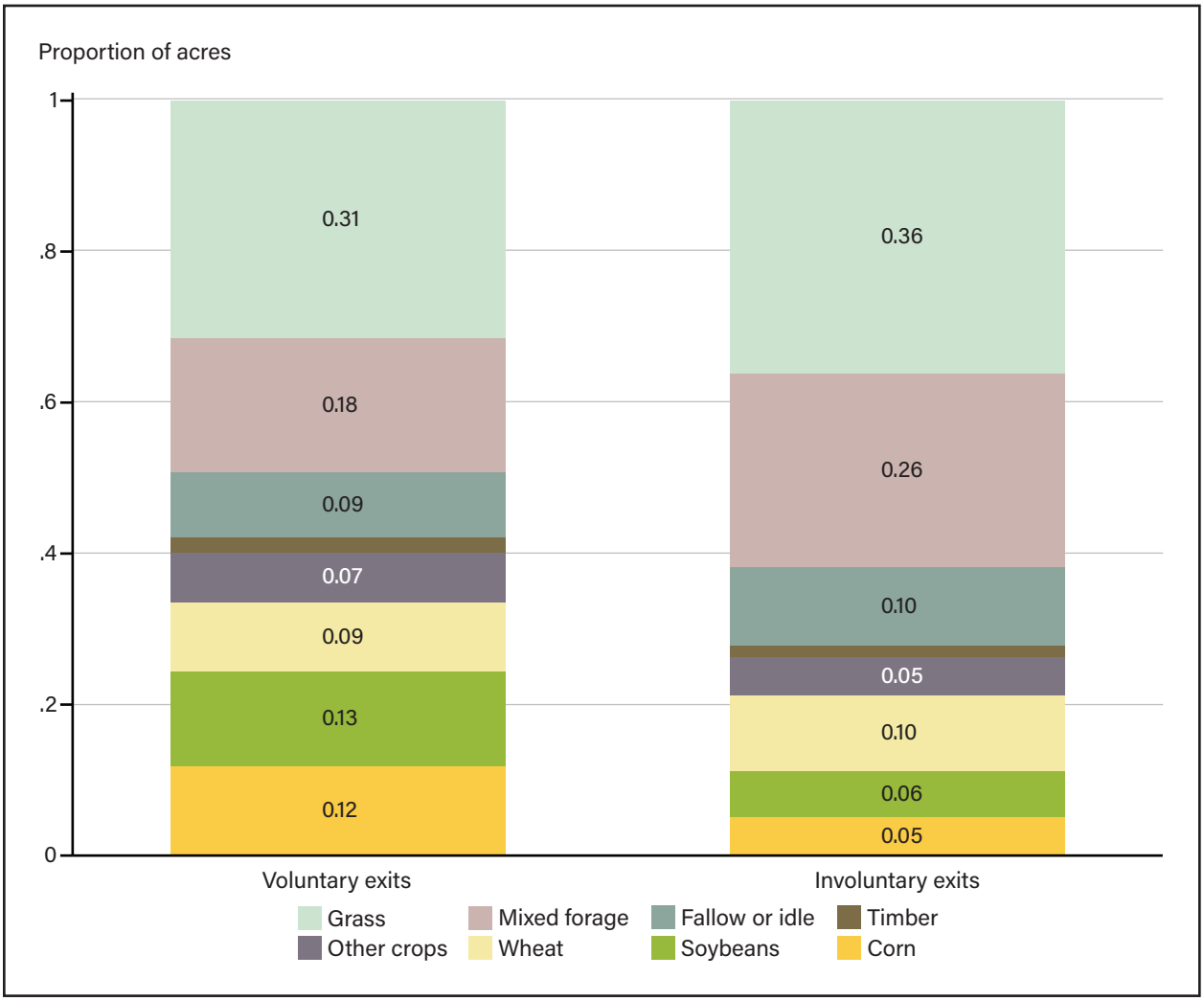


CRP=USDA's Conservation Reserve Program.

Note: Post-Signup (2017–19) land use is weighted by acreage of fields, including only those fields with an expiring CRP contract in 2016. Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. An individual field may contribute to more than one land-use category, with the appropriate fraction apportioned to each category. Fields "Not offered" made no offer to the 2016 General Signup. Fields that are "Offered and rejected" made an unsuccessful offer in the 2016 General Signup. Acreage in Continuous Signup CRP may have enrolled with an initial contract year of 2017, 2018, or 2019. For context, the 2016 General Signup would involve an initial contract year of 2017.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer and contract data.

Figure C.3
Involuntary exits from CRP and voluntary exits with CRP expiring in 2016



CRP=USDA's Conservation Reserve Program.

Note: Post-Signup (2017–19) land use is weighted by acreage of fields, including only those fields with an expiring CRP contract in 2016 and no CRP enrollment in 2017 through 2019. Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. Voluntary exits are defined, within that population, as fields without an offer to the 2016 General Signup. By contrast, involuntary exits are defined, within the expiring contract population, as fields with an offer to the 2016 General Signup that was rejected and had no subsequent CRP enrollment in 2017 through 2019. An individual field may contribute to more than one land-use category, with the appropriate fraction apportioned to each category.

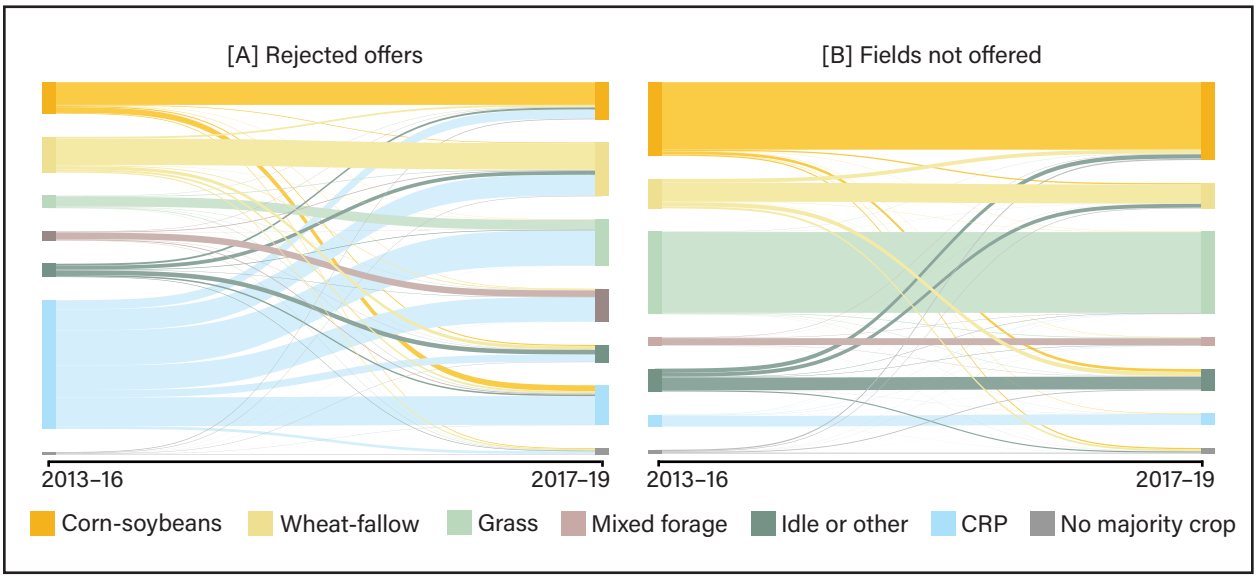
Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer and contract data.

Appendix D: Comparing Rejected Offers and Nonoffered Fields

Expanding on the discussion of voluntary and involuntary exits, the authors also compared rejected offers to fields that were not offered to the 2016 General Signup. In addition to connecting the crop plantings data for offered fields, we included crop plantings data for nonoffered fields in the continental United States. Figure D.1 illustrates these land-use transitions, presenting rejected offers in panel A and fields not offered in panel B. Notably, the vast majority of fields not offered in the 2016 General Signup were in the same land use in both periods.

There were two primary ways in which the land-use transitions of fields associated with rejected offers differed substantially from fields not offered. First, as described elsewhere, these rejected offers were largely enrolled in the CRP before transitioning to non-CRP land uses after the 2016 General Signup. By contrast, those fields not offered in 2016 and engaged in the CRP prior to the Signup primarily persisted in the CRP. Second, among fields with crops between 2013 and 2016, even those fields rejected from the 2016 General Signup were more likely to enter CRP through Continuous Signup than those fields not offering to the General Signup. Presumably, those landowners offering to the General Signup were fundamentally more interested in CRP enrollment, regardless of land use.

Figure D.1
Land-use transitions among all fields, rejected offers and fields not offered in 2016



Note: Each panel contains one of two subpopulations of all fields. Panel A includes those fields with an offer rejected in 2016 and no subsequent General Signup contract. Panel B includes those fields that did not offer to CRP in 2016. The total set of fields is more than 11 million.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and Conservation Reserve Program (CRP) offer data.

In order to more specifically examine the differences in land-use trajectory, we conducted a matching exercise using each field's land use history, productivity potential, and county location. Specifically, we matched each field associated with a rejected offer to nonoffering fields using caliper matching. The match was based on the fraction of acre-years from 2013 through 2016 in each intended use category for a given field and the average national commodity crop productivity index (NCCPI) for a field. In order to be considered a match for a given offered field, a nonoffered field must have had a share in each category and NCCPI that was within 10 percentage points of the values for the offered field. Furthermore, fields could only be matched if they were in the same county as the field associated with the rejected offer and if each field had the same set of intended uses at any time during 2013 through 2016. Among eligible nonoffered fields, the match was

chosen at random. In practice, this means that fields with a history of CRP and grain production would only be matched to fields in the same county that had a history of CRP and grain production with no forage, grazing, or other uses. The result of this stringent process was a very balanced sample, but the process also excluded 76 percent of fields with rejected offers.[18] A large majority (74 percent) of unmatched fields were those with a history of primarily CRP land cover.

Table D.1 presents eight separate regressions of land-use outcomes in 2017 through 2019 on an indicator of whether a field was offered to the 2016 General Signup, controlling for land use in 2013 through 2016. This sample includes only fields with rejected offers and nonoffered fields matched to those fields with rejected offers. All regressions included fixed effects for the match group, and standard errors were clustered by match group. The coefficients represented the statistical difference in subsequent land use between otherwise comparable fields, depending on whether the field was offered to the 2016 General Signup. CRP land use was the omitted category.

Table D.1 shows that offered fields were statistically more likely to engage in timber and mixed forage systems. Despite these statistically significant differences, the magnitude of the differences were small relative to the baseline. The largest difference was for mixed forage, with an effect of 1.13 percentage points on a baseline of 4.62 percent. All other effects were smaller than one percentage point, ranging from 0.018 percentage points to 0.735 percentage points.

Table D.1
Comparison of post-2016 land use of fields between rejected offers and nonoffered fields

Panel A	**(1) Corn**	**(2) Soybeans**	**(3) Wheat**	**(4) Other crops**
Offered	-0.00735 (0.00507)	0.00414 (0.00420)	-0.00642 (0.00461)	-0.00478 (0.00509)
Pre 2016 land use controls	Y	Y	Y	Y
Match-group fixed effects	Y	Y	Y	Y
Nonoffered mean	0.2712	0.2631	0.1617	0.1175
R-squared	0.789	0.832	0.824	0.668
Observations	18,217	18,217	18,217	18,217
Panel B	**(1) Timber**	**(2) Idle or fallow**	**(3) Mixed forage**	**(4) Grass**
Offered	0.000179*** (0.0000638)	0.00343 (0.00357)	0.0113*** (0.00245)	-0.00148 (0.00183)
Pre 2016 land use controls	Y	Y	Y	Y
Match-group fixed effects	Y	Y	Y	Y
Nonoffered mean	<0.0001	0.0700	0.0462	0.0700
R-squared	0.451	0.787	0.887	0.940
Observations	18,217	18,217	18,217	18,217

Y=Yes.

* p < 0.10, ** p < 0.05, *** p < 0.01

Note: Each column represents a separate regression of the relevant post-2016 outcome on whether a field was offered, controlling for pre-2016 land use and match-group fixed effects. Standard errors in parentheses are clustered by match group but estimated independently within each regression.

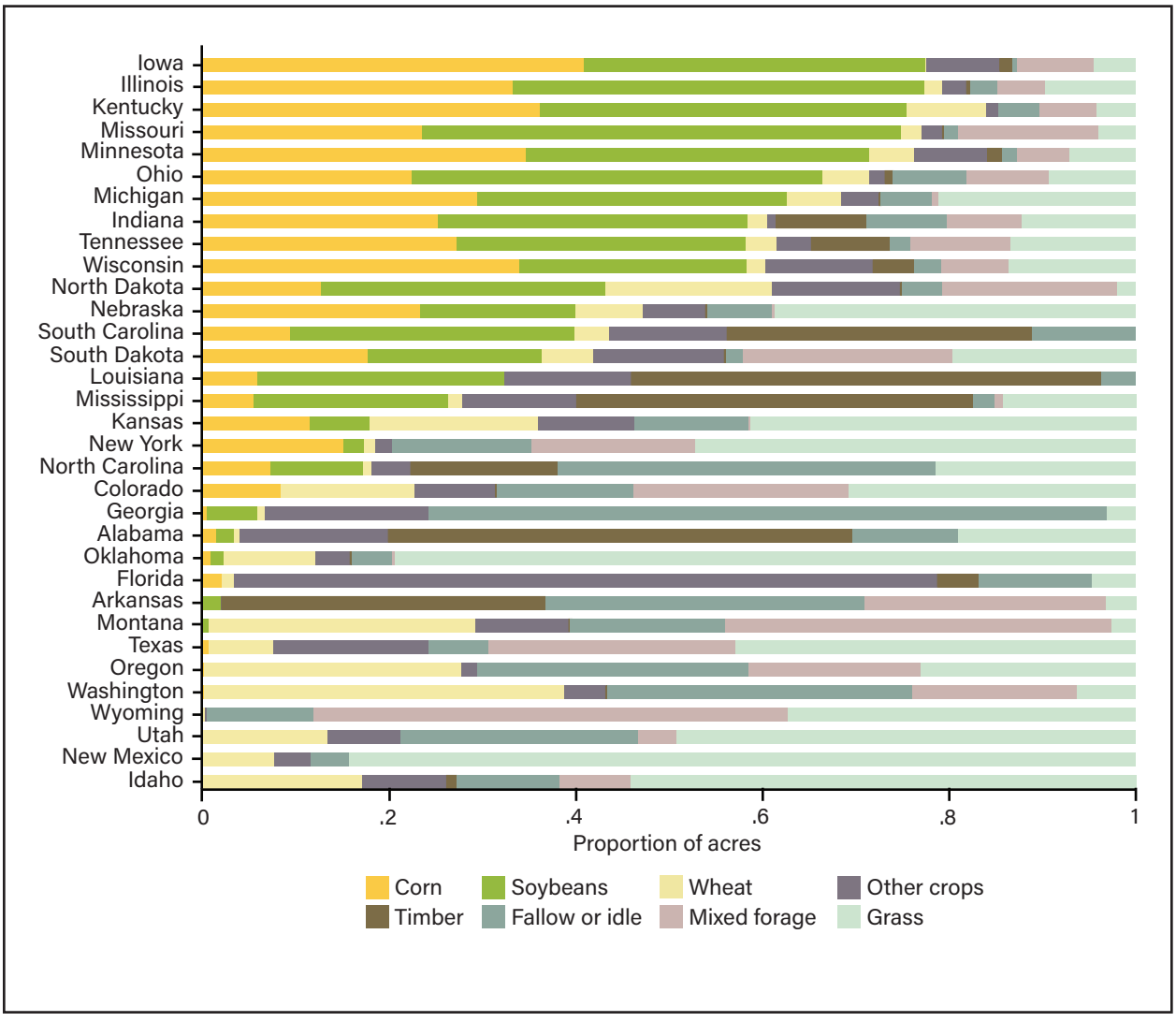
Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Conservation Reserve Program (CRP) offer data and Crop Acreage Reporting database.

[18] Specifically, there are 35,792 fields linked to a rejected offer. Of these, 8,672 are matched to at least 1 nonoffering field. This sample excludes 27,120 fields. Excluding rejected offers that ultimately receive a General Signup contract, there are 35,594 fields linked to a rejected offer without a contract. Of these, 8,664 are matched to at least 1 nonoffering field. This sample excludes 26,930 fields.

Appendix E: Spatial Comparison of Land-Use Impacts

Figure E.1 provides a clearer picture of how landowners with rejected offers that did not subsequently enroll into CRP used their land. Even though States like Illinois, Iowa, and Missouri had high proportions of land going into Continuous Signup, the proportion of land in corn and soybeans in these States was very high for those landowners that did not enroll into CRP. Kansas and North Dakota had large proportions of land in wheat production after being rejected. Several States in the South had a large proportion in timber—including Louisiana, South Carolina, Mississippi, North Carolina, Alabama, and Arkansas—even though timber represents a low proportion of overall acreage for rejected offers. Values of proportions in the figure are provided in table A.3.

Figure E.1
Proportion of acres in land uses for rejected offers, after Signup 49, by U.S. State (excluding Continuous CRP)



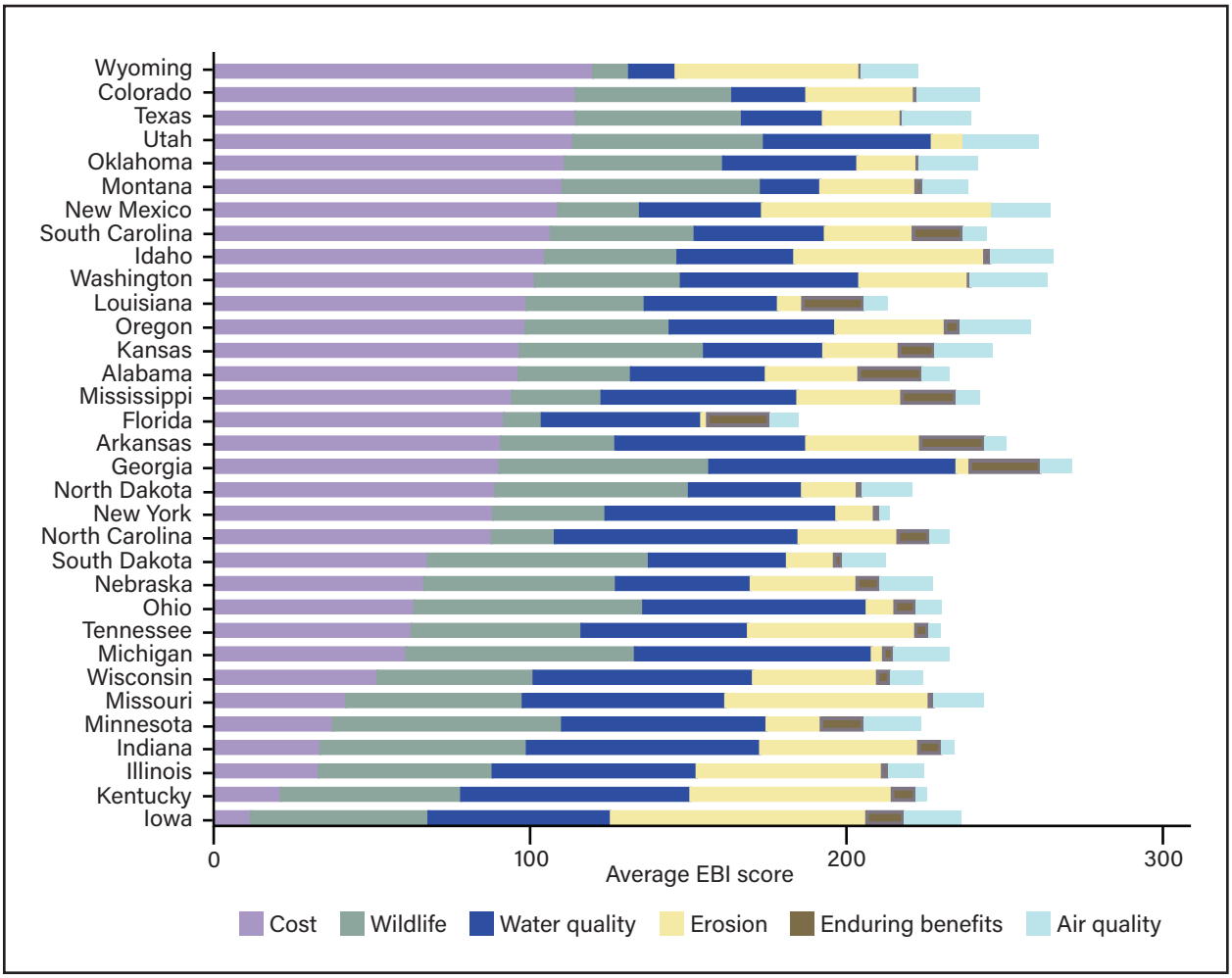
CRP=USDA's Conservation Reserve Program.

Note: This figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by U.S. State. Bar segment widths (in the horizontal dimension) reflect the proportion of offered acreage in each land use within a State. Fields going into Continuous Signup CRP are excluded. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and CRP offer data.

Figure E.2 shows how EBI scores and their components varied across States. In general, States that had higher rental rates had lower cost components of their EBI scores, shown in red in the figure. The figure also shows the average scores of the other EBI components (each of which corresponds with the main goals of the CRP) most prominently, including water quality, erosion, and wildlife. For States with offers that had lower cost components, the other components of EBI scores tended to be higher. This result was likely due to multiple factors. First, in order to justify an offer, landowners in these States need to have high scoring offers. These offers either have high-inherent EBI scores or more aggressive offers with high EBI practices. Second, it may be that offers from these States tend to have higher Environmental EBI scores, even without considering which landowners make offers. Values of proportions in the figure are provided in table A.5.

Figure E.2
EBI components of rejected offers, by U.S. State (excluding Continuous CRP)



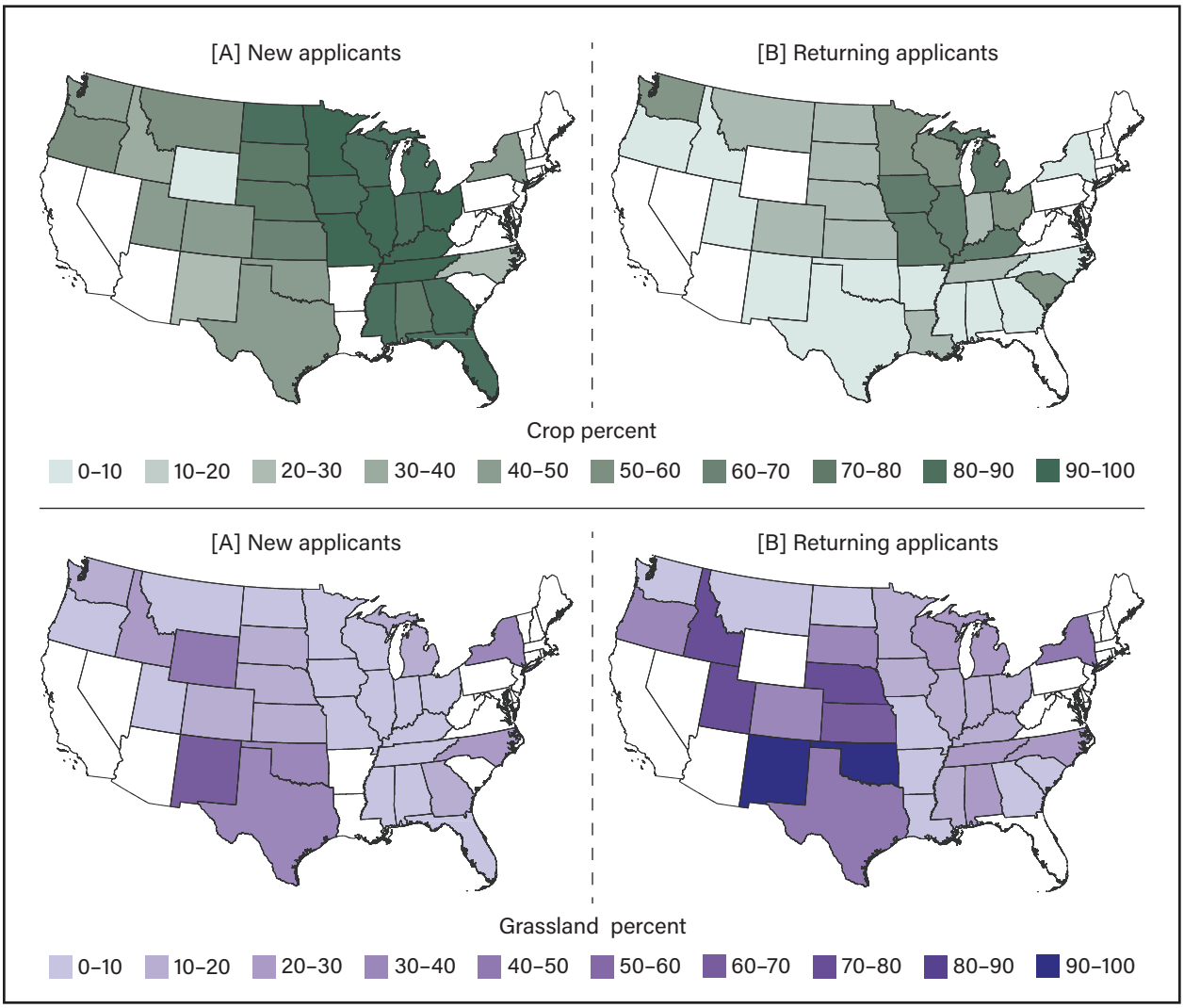
CRP=USDA's Conservation Reserve Program. EBI=Environmental Benefits Index.

Note: This figure decomposes EBI scores for all rejected offers from the 2016 Signup by U.S. State. The "Cost" component of EBI scores is based on the proposed rental payments for offers. This component will be lower for offers with higher rental rates, all things being equal. The rest of the EBI score comprises the estimated environmental contributions of offers based on either the inherent qualities of the land being offered or on the practices being proposed in the offer. This score is made up of scores for impacts on air quality, enduring benefits, erosion, water quality, and wildlife habitat. States are ordered by the cost component of the EBI, with States having the highest cost scores ranked first. Not all States are included in the analysis. Some States are omitted due to either insufficient or no offers submitted in 2016, or lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency CRP offer data.

Finally, figure E.3 provides the proportions of rejected acres that were in crop acreage and grassland after rejection, for returning and new applicants separately. The maps exclude offers that were enrolled in CRP through the Continuous Signup. The figure reflects results from figure 7 in the report, which showed that new applicants tended to have more crop acreage than returning applicants. Figure E.3 also reflects figure 7 in that much of the grassland occurring after rejection was from returning applicants. This figure also implies that the profitability of crop conversion varied considerably. Specifically, among returning applicants, landowners in the Midwest were much more likely to go into crops after rejection, implying that the persistence of CRP cover varies across space.

Figure E.3
Crop and grassland percentages during 2017 through 2019 among fields rejected from the 2016 General Signup

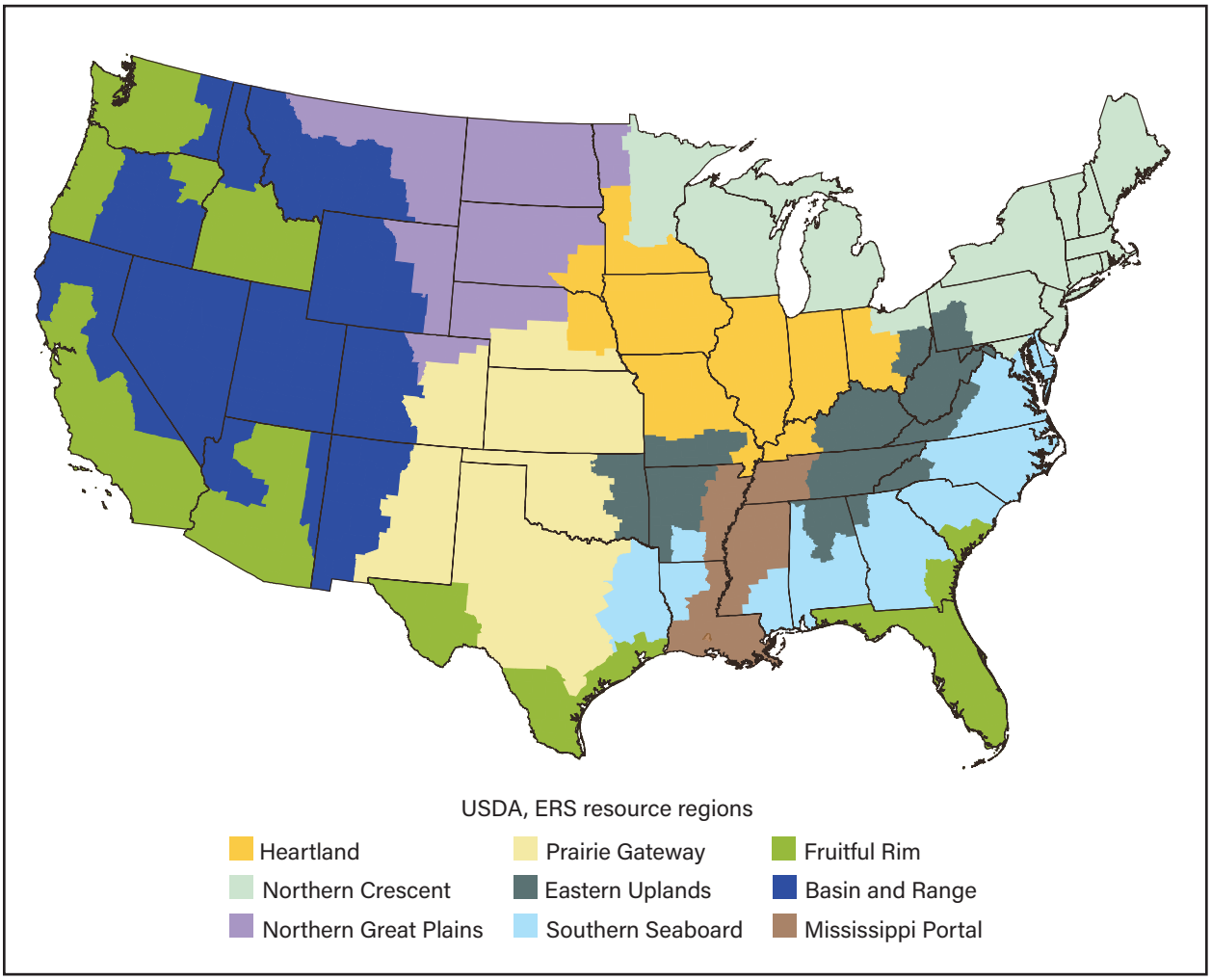


Note: Each panel illustrates the percentage of crop acreage (top row) or grassland (bottom row) acres offered to and rejected from the 2016 General Signup by State. Column A shows the percentage in crop acreage (top) or grassland (bottom) for new applicants, and column B shows the percentage in crop acreage (top) or grassland (bottom) for returning applicants. Alaska and Hawaii are visually omitted from all panels, as there were no fields offered in Signup 49 from these States. States in white are omitted due to either insufficient or no offers submitted in 2016, or a lack of observations after linking offers to land use data.

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and USDA's Conservation Reserve Program (CRP) offer data.

Figure E.4 illustrates the USDA, ERS farm resource regions, as referenced in the main report text for figure 13. Each U.S. county is assigned to a single resource region, with regions defined by agricultural production characteristics. For more information regarding the USDA, ERS farm resource regions, see Heimlich (2000).

Figure E.4
USDA, Economic Research Service resource regions



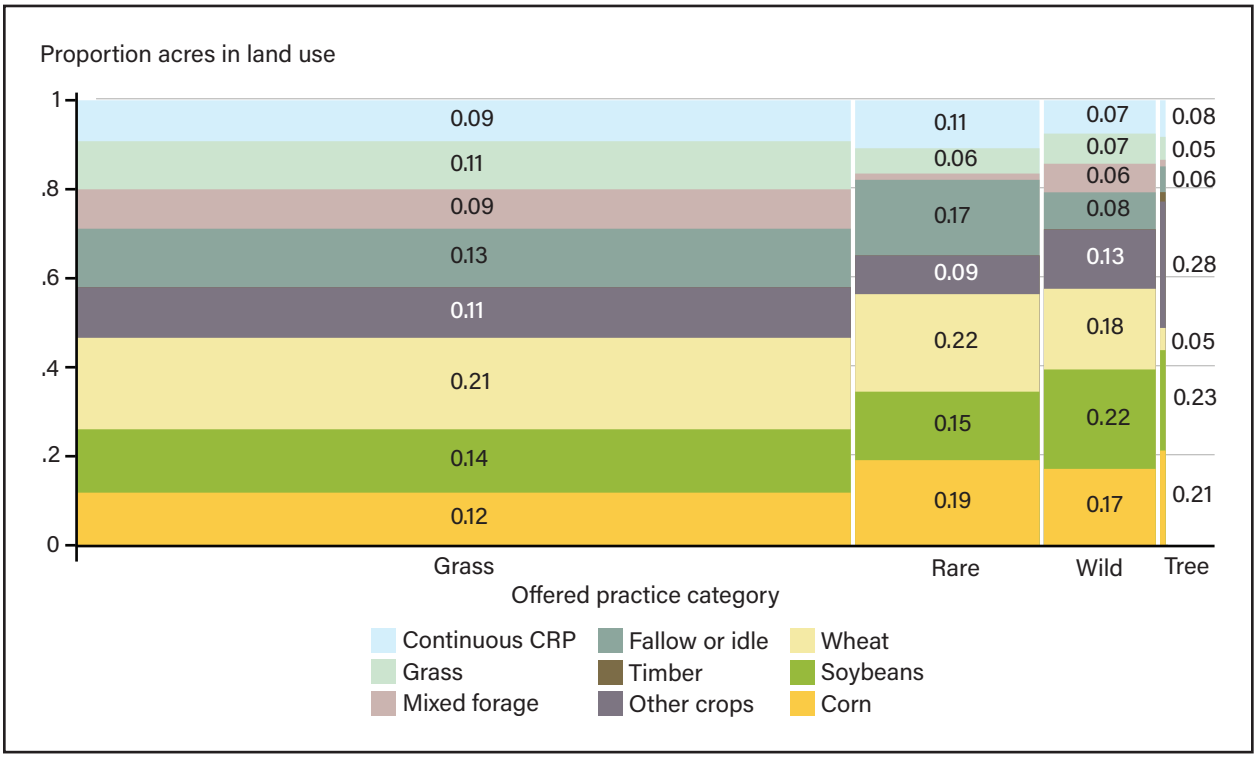
Note: The map illustrates the county assignments of the USDA, Economic Research Service farm resource regions. Alaska and Hawaii are visually omitted, as there were no fields offered in Signup 49 from these States.

Source: USDA, Economic Research Service using Heimlich, R.E. (2000). *Farm resource regions.* AIB-760, U.S. Department of Agriculture, Economic Research Service.

Appendix F: Proportion of Acres in Land Uses by Practice Category and Prior CRP Status

Figures F.1 through F.3 provide added detail to figure 14 from the main text. These appendix figures split out the proportions of acreage in each land-use outcome by offered practice for each of three prior CRP statuses. Figure F.1 includes offered acreage that was not in CRP at all from 2013 through 2016, that is, new applicants. Figure F.2 includes offered acreage that had CRP land that expired from 2013 through 2015. Finally, figure F.3 includes offered acreage that had CRP land that expired in 2016. The first outcome was that there were notable differences in the proportions of crop acreage between the group with no prior CRP land and the two groups with expiring CRP land. Second, it is also worth noting that 2016 expiring land was the only group among the three with significant land offering tree practices. Notably, within this last group, most of the rejected land offering a tree practice subsequently went into timber usage (35 percent) or went back into CRP through the Continuous Signup (47 percent).

Figure F.1
Proportion of acres in land uses by practice category of 2016 General Signup rejected offers, for fields with no prior CRP land

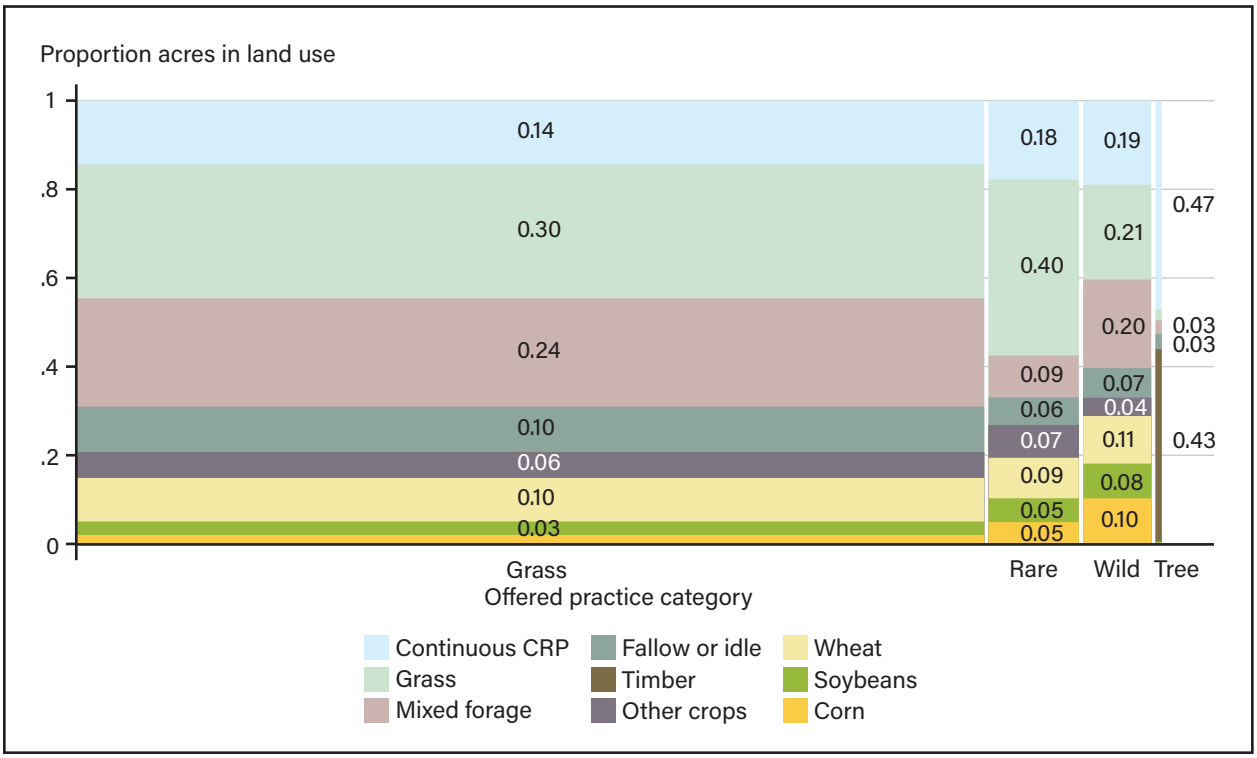


Note: This figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by offered practice category (horizontal axis). Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. This figure only includes offers that had no land in CRP from 2013 through 2016. Bar widths for each practice category (in the horizontal dimension) reflect the proportion of total offered acreage in each offered category. For example, the majority of rejected acreage had offered to implement a grass practice. Bar segment heights (in the vertical dimension) reflect the proportion of acres, within offered practice category, in a given land use or crop. The grass practice category includes "Introduced grasses" and "Native grasses." The rare practice category includes "Rare and declining habitat" and "Pollinator habitat." The wild practice category includes "Wildlife habitat." The tree practice category includes "Tree planting" and "Hardwood tree planting."

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and USDA's Conservation Reserve Program (CRP) offer data.

Figure F.2

Proportion of acres in land uses by practice category of 2016 General Signup rejected offers, for fields with CRP land expiring before 2016

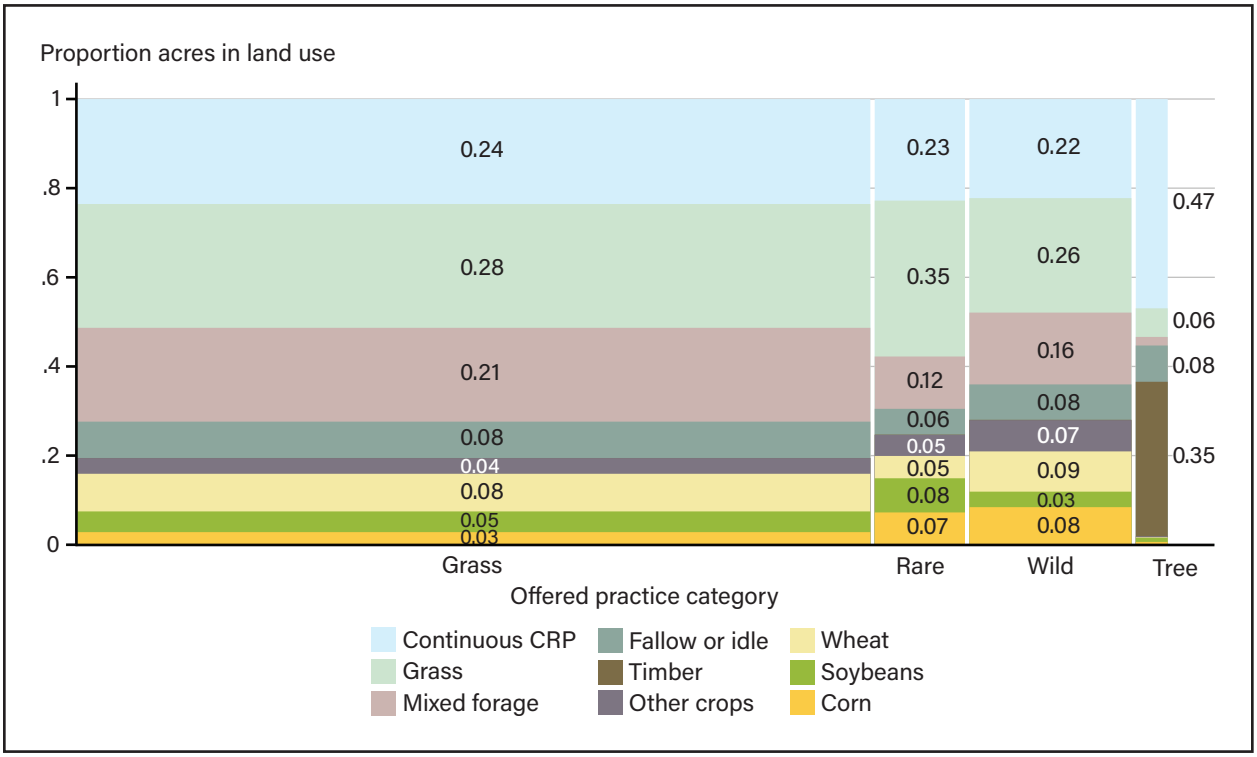


Note: This figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by offered practice category (horizontal axis). Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. This figure only includes offers that had land in CRP expiring between 2013 and 2015. Bar widths for each practice category (in the horizontal dimension) reflect the proportion of total offered acreage in each offered category. For example, the majority of rejected acreage had offered to implement a grass practice. Bar segment heights (in the vertical dimension) reflect the proportion of acres, within offered practice category, in a given land use or crop. The grass practice category includes "Introduced grasses" and "Native grasses." The rare practice category includes "Rare and declining habitat" and "Pollinator habitat." The wild practice category includes "Wildlife habitat." The tree practice category includes "Tree planting" and "Hardwood tree planting."

Source: USDA, Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and USDA, Conservation Reserve Program (CRP) offer data.

Figure F.3

Proportion of acres in land uses by practice category of 2016 General Signup rejected offers, for fields with CRP land expiring in 2016



Note: This figure shows proportions of acres in each post-Signup (2017–19) land use (delineated by color) for rejected offers by offered practice category (horizontal axis). Specific values for the proportion of acres in each post-Signup land use are reported in the figure. However, values under 0.03 are not shown due to lack of space. Proportions across categories add to 1, but reported values may not due to omitted values or rounding. This figure only includes offers that had land in CRP expiring in 2016. Bar widths for each practice category (in the horizontal dimension) reflect the proportion of total offered acreage in each offered category. For example, the majority of rejected acreage had offered to implement a grass practice. Bar segment heights (in the vertical dimension) reflect the proportion of acres, within offered practice category, in a given land use or crop. The grass practice category includes "Introduced grasses" and "Native grasses." The rare practice category includes "Rare and declining habitat" and "Pollinator habitat." The wild practice category includes "Wildlife habitat." The tree practice category includes "Tree planting" and "Hardwood tree planting."

Source: USDA Economic Research Service analysis of USDA, Farm Service Agency Crop Acreage Reporting data and USDA's Conservation Reserve Program (CRP) offer data.