NRCS EQIP and CSP IPM Programs

IPM Implementation Trends, Cost Effectiveness, and Recommendations for Optimizing NRCS Investments in Conservation

Compiled by the NRCS & IPM Working Group

July 2014

INTRODUCTION

There are multiple opportunities for Integrated Pest Management (IPM) within the suite of programs offered by the Natural Resources Conservation Service (NRCS). The NRCS Environmental Quality Incentives Program (EQIP) 595 practice standard provides growers with access to technical assistance and cost-share payments to implement IPM. Although 595 receives a relatively small portion of total EQIP funding allocations, IPM practices impact several million acres each year, producing substantial environmental benefits. IPM activities are also funded under the NRCS Conservation Stewardship Program (CSP), which promotes advanced conservation efforts by providing support to producers to maintain and improve existing conservation practices and adopt additional conservation activities. This report provides an analysis of recent trends in EQIP IPM participation, economic benefits associated with IPM implementation and the potential for existing NRCS IPM programs to synergize with complementary NRCS programs and practices, such as USDA's pollinator protection initiatives announced in spring 2014.

THE NRCS & IPM WORKING GROUP: GROWER INCENTIVES FOR IPM

This report was compiled with input from the NRCS & IPM Working Group, whose mission is to raise awareness of opportunities for grower adoption of IPM through collaboration between NRCS personnel, university extension, industry and state lead agencies. The group's recent accomplishments include development of the IPM Credential Exam certification for agriculture consultants in partnership with the National Alliance of Independent Crop Consultants. Additional outreach provided by the group includes educational brochures and assessment tools for IPM, presentations on NRCS regional training webinars and facilitation of monthly conference calls with working group members. The Group has grown to nearly 140 professionals nationally, creating an uncommon level of collaboration between NRCS staff and separate IPM stakeholders that fills an important disconnect that directly addresses current impediments to IPM adoption. If you would like to learn more about the Working Group, please visit our website at http://nrcs.ipm.msu.edu/.

DATA USED

The data used in this analysis was provided by the Resource Economics, Analysis and Policy Division of the NRCS (REAP) from the NRCS ProTracts database and obtained from the NRCS 2008 Farm Bill Report (FY 2009 – 2012).

NRCS IPM TRENDS

Nationally, the number of land unit acres impacted by the EQIP 595 practice standard has decreased by about 1.4 million from 2009 to 2012. The number of 595 contracts on those acres has also decreased over the same time period (Figure 2).

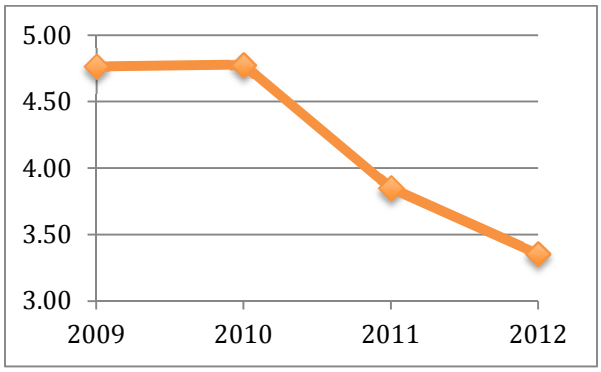

Figure 1: Total number of land unit acres impacted by 595 practice contracts, in millions
(Source: 2008 Farm Bill Report)

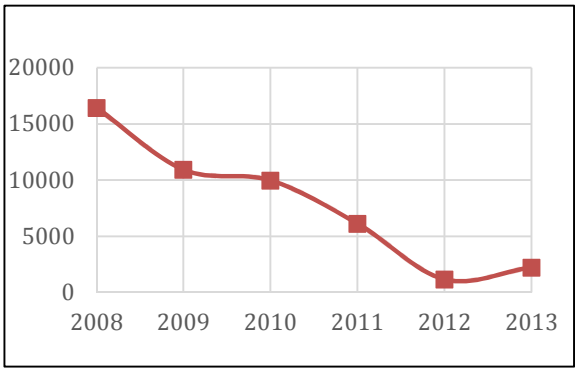

Figure 2: Number of 595 practice contracts
(Source: NRCS ProTracts Database)

Interest in IPM under NRCS CSP appears to be a strong, with contract numbers for high level IPM and IPM in organic increasing over recent years. 2013 CSP contract numbers indicate 1,138 high level IPM enhancements implemented nationally.

EVALUATING ECONOMIC BENEFITS OF IPM

Because they cannot be easily estimated and firm data is not available, economic benefits of 595 practices were not included in the most recent NRCS benefit-cost analysis (BCA) of EQIP programs. The BCA does, however, utilize available data to look at economic benefits due to reduced soil erosion, animal waste management, grazing land productivity, irrigation water use, air quality, fertilizer use, wildlife habitat, energy use, and carbon sequestration. Firm data is not available to demonstrate how NRCS EQIP IPM practices contribute to the overall cost effectiveness of these and other conservation categories, indicating a significant need to support the reporting of cost/benefit data related to NRCS IPM practice implementation.

Although economic data specific to NRCS IPM programs is not available, IPM is widely recognized as cost-effective, with economic benefits stemming from reduced pesticide losses from runoff and leaching, the reduction of unnecessary pesticide applications, and reduced

energy use. IPM Voice, a non-profit that works to advocate IPM and increased public and policymaker awareness of IPM has collected several examples of economic benefits of IPM across the U.S, listed in Appendix A.

Figure 3: Percentage of land unit acres under EQIP IPM accounting for different conservation practice categories (Source: 2008 Farm Bill Report)

	Cropland Soil Quality Practices	Forest Land Conservation Practices	Grazing Land Conservation Practices	Water Quality Practices	Percentage of Total EQIP Land Unit Acres Impacted by IPM
2009	14.29	7.86	4.14	14.25	6.14
2010	13.56	9.96	3.94	15.27	5.96
2011	14.50	4.58	3.02	11.42	5.04
2012	12.86	4.46	2.42	8.97	4.12

Only a handful of crops represent the majority of the contracts granted from 2008-2013 in the North Central Region (Figure 4 and 5). In fact, 90% of all 595 contracts went toward six types of crops (corn, wheat, forage/hay, no crops (wildlife habitat and threatened/endangered species), trees and soybeans). Sixteen other crops made up the remaining 10% of 595 contracts.

Number of 595 Contracts	
Crop	**2008**
Corn	2926
Wheat	708
No Crops	687
Forage/Hay	563
Trees	393
Soybeans	360
Fruits	111
Other Crop	74
Berries	57
Grapes	38
Cotton	25
Sugar Beets	21
Rice	19
Grass Seed	16
Oats	15
Vegetables	15
Oil Seed	13
Barley	12
Potatoes	6
Sorghum	5
Ginseng	0
Ornamental Plants	0
Sod	0

Number of 595 Contracts	
Crop	**2009**
Corn	2010
Forage/Hay	721
No Crops	627
Wheat	381
Trees	370
Soybeans	222
Vegetables	115
Fruits	109
Other Crop	62
Berries	45
Sugar Beets	32
Barley	30
Oats	20
Ginseng	9
Oil Seed	7
Cotton	3
Potatoes	3
Sorghum	3
Grapes	0
Grass Seed	0
Ornamental Plants	0
Rice	0
Sod	0

Number of 595 Contracts	
Crop	**2010**
Corn	1620
Forage/Hay	649
Trees	467
Wheat	377
Other Crop	247
Soybeans	239
Vegetables	238
Fruits	114
No Crops	104
Berries	97
Barley	36
Grapes	25
Sugar Beets	15
Oil Seed	6
Potatoes	5
Sod	5
Oats	4
Cotton	3
Ginseng	0
Grass Seed	0
Ornamental Plants	0
Rice	0
Sorghum	0

Figure 4: Crops with 595 practice contracts 2008-2010 (Source: NRCS ProTracts Database)

Number of 595 Contracts	
Crop	**2011**
Corn	1046
Forage/Hay	283
No Crops	179
Vegetables	159
Soybeans	116
Wheat	116
Fruits	85
Berries	33
Other Crop	25
Sugar Beets	21
Trees	10
Grapes	9
Grass Seed	1
Oats	1
Barley	0
Cotton	0
Ginseng	0
Oil Seed	0
Ornamental Plants	0
Potatoes	0
Rice	0
Sod	0
Sorghum	0

Number of 595 Contracts	
Crop	**2012**
Corn	232
Vegetables	83
Wheat	32
Fruits	24
Berries	22
Forage/Hay	17
Soybeans	16
Ornamental Plants	3
Grapes	2
No Crops	2
Other Crop	2
Sod	2
Sugar Beets	2
Barley	0
Cotton	0
Ginseng	0
Grass Seed	0
Oats	0
Oil Seed	0
Potatoes	0
Rice	0
Sorghum	0
Trees	0

Number of 595 Contracts	
Crop	**2013**
Corn	620
Vegetables	106
Wheat	60
Soybeans	55
Berries	51
Fruits	45
Forage/Hay	18
No Crops	12
Other Crop	9
Sugar Beets	9
Grapes	6
Trees	6
Ornamental Plants	4
Barley	3
Sod	3
Cotton	0
Ginseng	0
Grass Seed	0
Oats	0
Oil Seed	0
Potatoes	0
Rice	0
Sorghum	0

Figure 5: Crops with 595 practice contracts 2011-2013 (Source: NRCS ProTracts Database)

SYNERGY OF NRCS PROGRAMS TO PROTECT POLLINATORS

In spring 2014, the USDA NRCS announced an addition of nearly $3 million to EQIP to provide technical assistance for farmers interested in helping improve pollinator health. The funding is focused on five Midwestern states: Michigan, Minnesota, North Dakota, South Dakota and Wisconsin. As of April 2014, 610 EQIP applications within the five states were being considered for funding, most coming from Michigan and Wisconsin. Another $8 million in incentives was recently added to the Conservation Reserve Program (CRP) in the same five states to support the development of honey bee habitat.

Pesticide exposure has been identified as a key stressor impacting honey bee health. Several neonicotinoid pesticides are highly toxic to bees and recent research suggests that pesticide exposure may make bees more susceptible to parasites and pathogens. IPM practices are known to improve pest control while minimizing impacts on beneficial species, including key pollinators. Fundamental components of IPM that can benefit pollinators include using low toxicity pesticides when possible, minimizing spray drift to non-target crops (including wildlife habitat), scouting to inform pesticide applications and utilizing alternative pest management strategies like mechanical and cultural controls. Considering the economic impact of pollinators (providing more than $15 billion in increased crop value each year) and that more than half of commercially managed honey bees are located in these five states

over summer months, there is a significant opportunity to optimize the impacts of existing NRCS IPM programs to benefit pollinators and enhance the value of the USDA's $11 million investment in pollinator health.

Looking at IPM implementation figures within the five Midwestern states, there is an opportunity for existing NRCS IPM programs to complement the new pollinator protection initiatives.

ADDITIONAL RECOMMENDATIONS

Stronger communication between state and local offices

- Growers in some states have found that although their state has allocated NRCS funding to IPM practices, contract opportunities are not offered at the county level. NRCS should focus on improving communication and collaboration between regional, state, and county levels to meet local demand for IPM support.

Require EQIP IPM projects to provide cost effectiveness data

- Requiring participants to provide at least a narrative discussion about the cost effectiveness of implemented practices could help the NRCS assess the costs and benefits associated with IPM practices and optimize use of funding resources. NRCS could offer technical assistance to participants to help effectively estimate cost effectiveness.

Recognize multiple resource benefits of IPM

- IPM contributes to improved soil quality, water quality, air quality, human safety and environmental health, including pollinator health. Prioritizing and ranking IPM practices relative to their impact on multiple resources will reflect the program's ability to synergize with other practices and increase the likelihood of IPM applications being funded and increased IPM implementation.

Appendix A: National IPM Success Stories

- In a survey of 682 NEWA* users reported that they save, on average, **$19,500** a year in spray costs and prevent, on average, $264,000 a year in crop loss as a direct result of using NEWA pest forecast models. *NEWA stands for "Network for Environment and Weather Applications" and is a weather-station-based forecasting system for the Northeast established by New York State IPM program and the Northeast IPM Center.
- The University of Florida IPM program developed a system of using the UV-reflective mulch on tomato fields in 2000. This system reduced the incidence of tomato spotted wilt virus by as much as 45 percent, boosting farm income by about $1,000 per acre.
- Estimates from Cucurbit PIPE participants suggest that during 2009, an epidemic year for downy mildew, cucurbit producers used PIPE data to target fungicide applications and protect crop yields, saving $24 million dollars in fungicides not applied.
- Georgia peach growers in $6-10 million dollars per year in reduced losses to brown rot disease by using real-time fungicide resistance management programs.
- Alabama surveys indicated IPM adoption saves an average of $5,680 per vegetable farm.
- It is estimated that wheat growers in Kentucky gained a net savings of $25.00/acre by following UK recommendations for controlling a modest infestation of three Italian ryegrass plants. Without following the UK recommendations for managing ryegrass, it is estimated the economic loss to growers, in yield loss alone, would exceed $41.00/acre.
- Tennessee cotton growers estimated IPM practices provide an average $27 per acre value.
- The Virginia Potato Disease Advisory helped growers protect 6,000 acres of potatoes from diseases while eliminating five fungicide applications, constituting a savings of $300,000 in unnecessary inputs – about $50 acre.
- Eliminating one fungicide spray for apple scab early in the growing season saves about $50 per acre.

Appendix A: EQIP 595 contracts by state and crop

The following pie charts represent the number of 595 practice standards, by crop, for each state in the North Central region from 2008-2013:

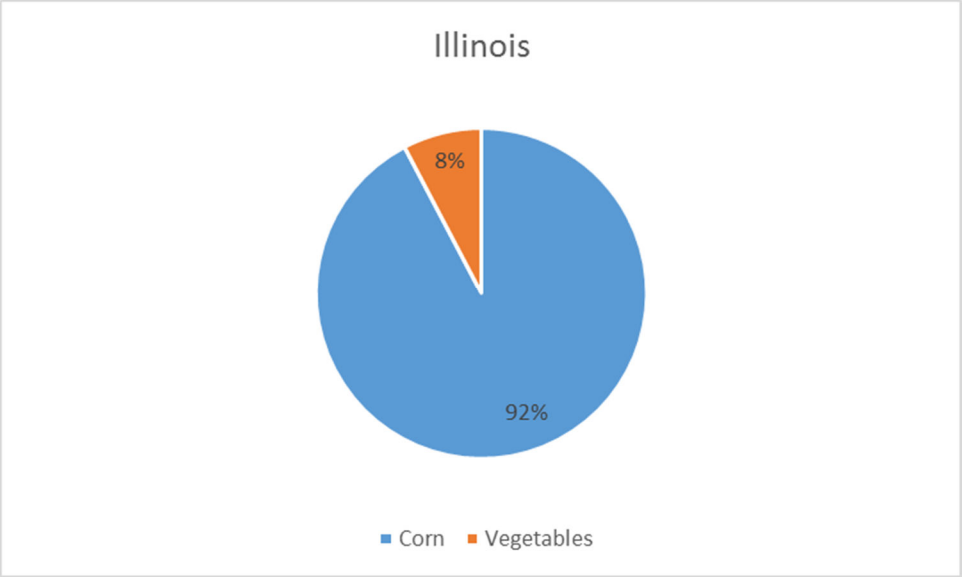

Figure 4. Illinois, number of EQIP 595 contracts, by crop from 2008-2013

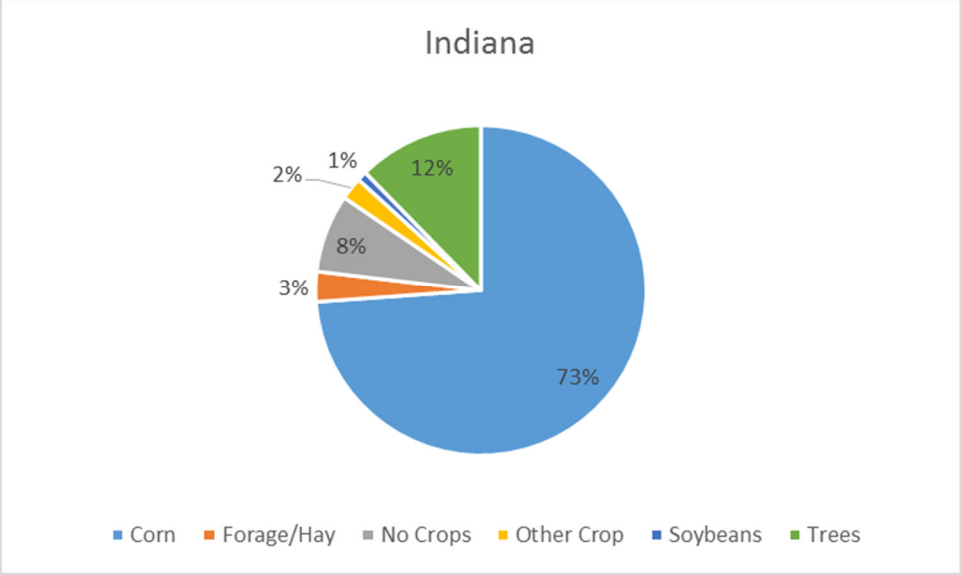

Figure 5. Indiana, number of EQIP 595 contracts, by crop from 2008-2013

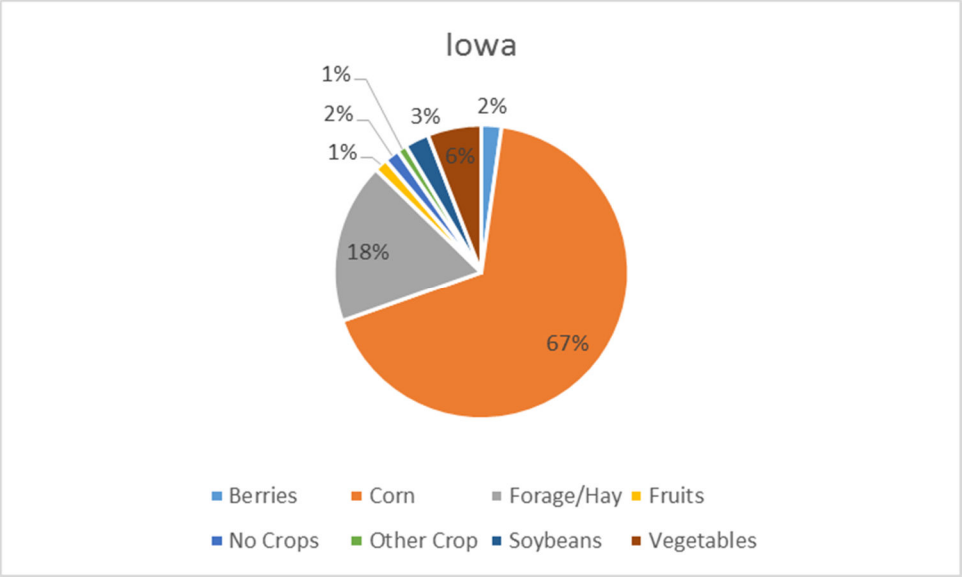

Figure 6: Iowa, number of EQIP 595 contracts, by crop from 2008-2013

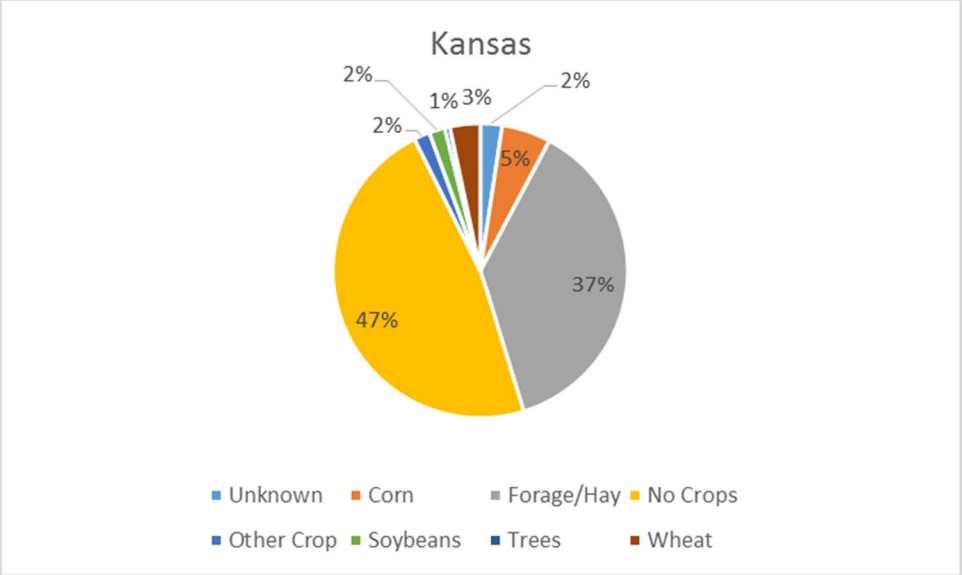

Figure 7: Kansas, number of EQIP 595 contracts, by crop from 2008-2013

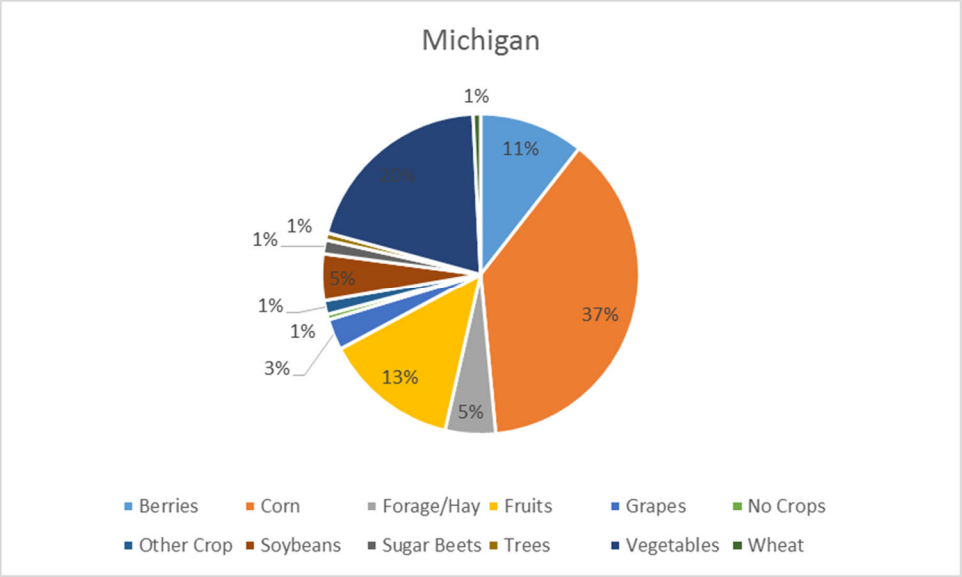

Figure 8: Michigan, number of EQIP 595 contracts, by crop from 2008-2013

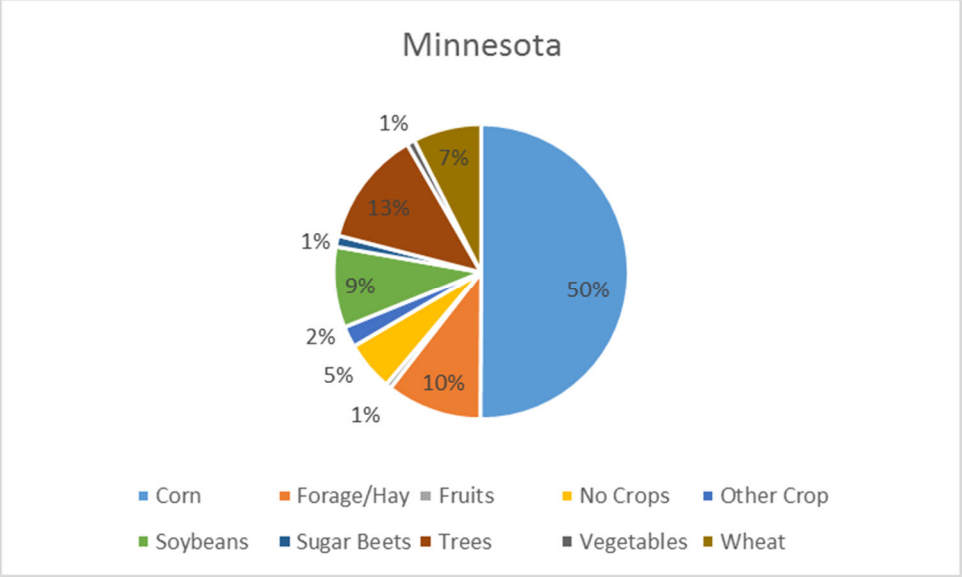

Figure 9: Minnesota, number of EQIP 595 contracts, by crop from 2008-2013

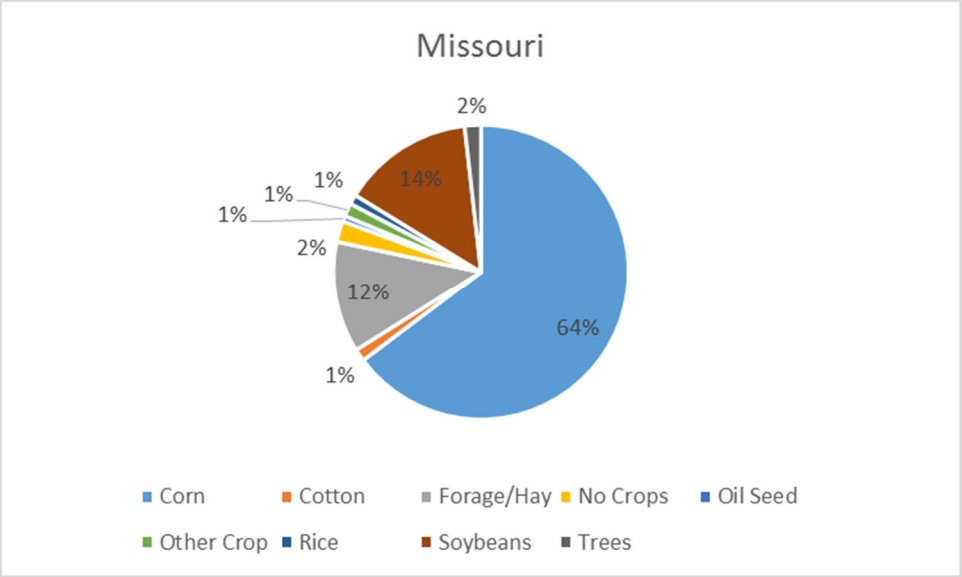

Figure 10: Missouri, number of 595 practice standards, by crop from 2008-2013

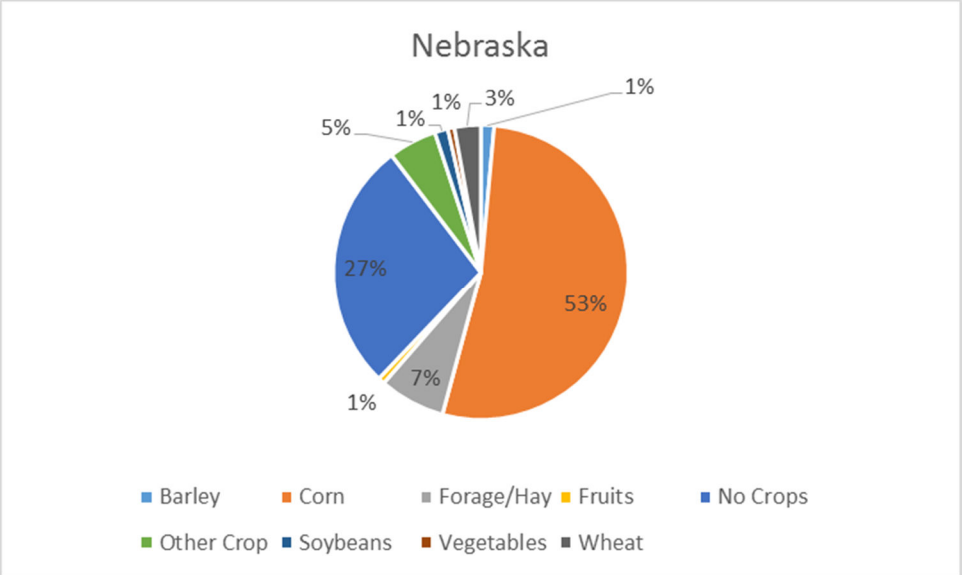

Figure 11: Nebraska, number of EQIP 595 contracts, by crop from 2008-2013

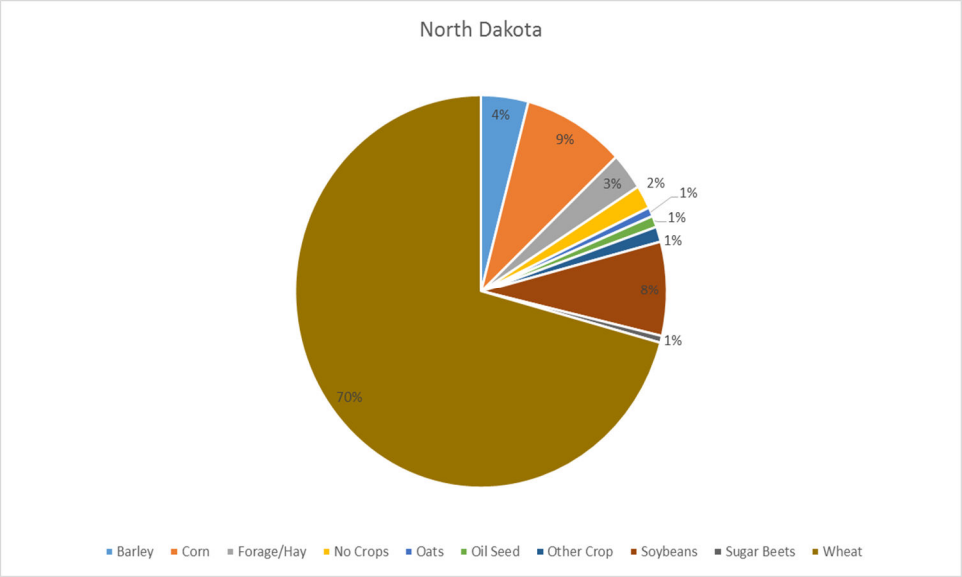

Figure 12: North Dakota, number of EQIP 595 contracts, by crop from 2008-2013

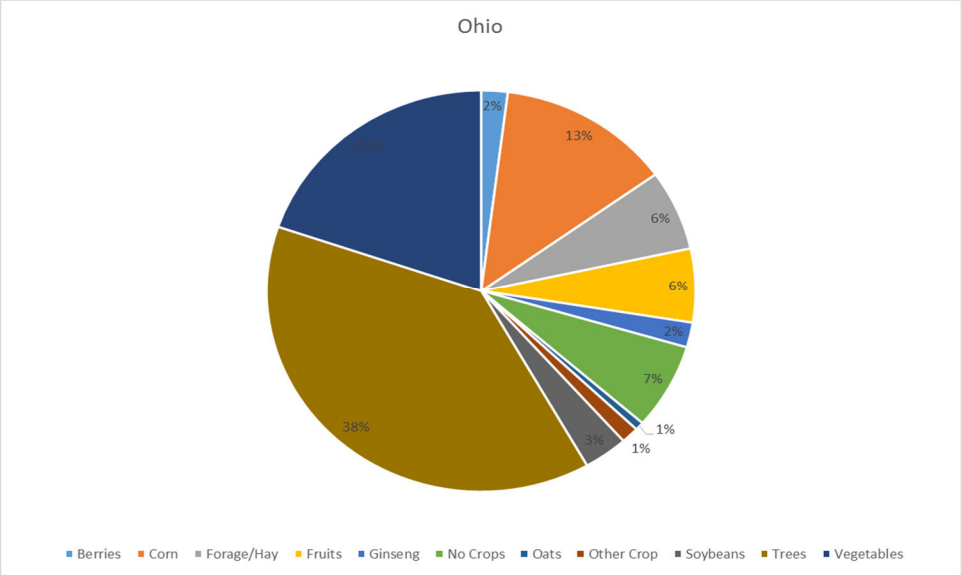

Figure 13: Ohio, number of EQIP 595 contracts, by crop from **2008-2013**

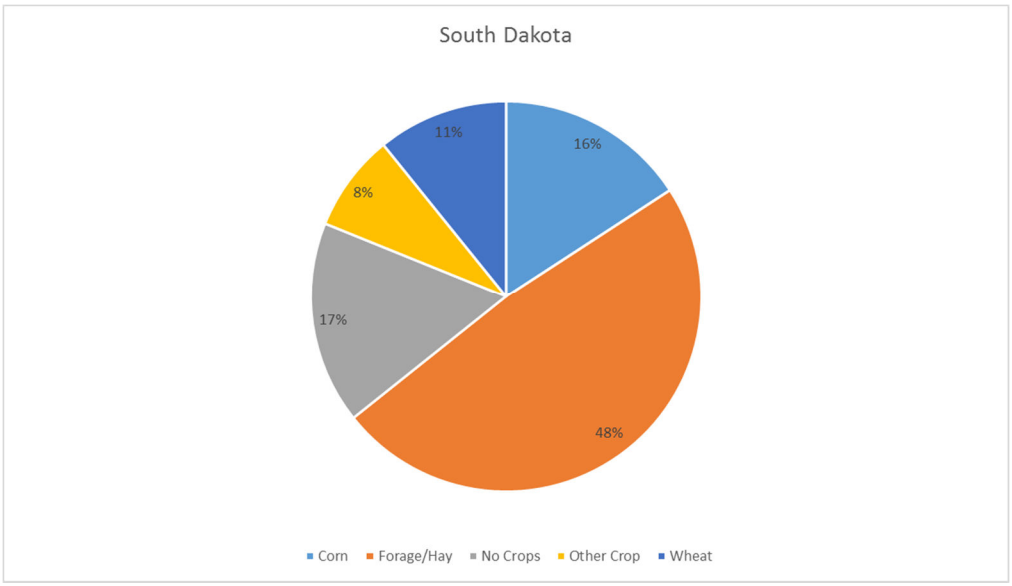

Figure 14: South Dakota, number of EQIP 595 contracts, by crop from 2008-2013

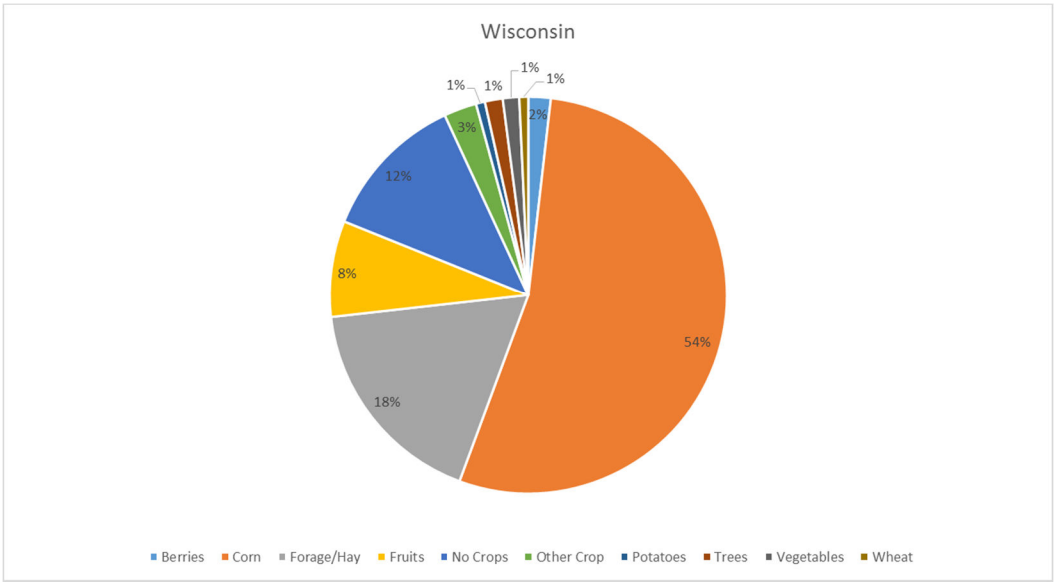

Figure 15: Wisconsin, number of EQIP 595 contracts, by crop from 2008-2013