

# IOWA COVER CROP – CROP INSURANCE DEMO PROJECT

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## Water Quality Initiative

The **Iowa Water Quality Initiative (WQI)** is the action plan for the **Iowa Nutrient Reduction Strategy (NRS)** established in 2013. The WQI improves water quality through a collaborative, science- and research-based approach that is evaluated and reported by a team of independent researchers from multiple institutions, led by Iowa State University. This comprehensive approach allows farmers and cities alike to adopt conservation practices that fit their unique needs, lands, and budgets.

# Strategy Practices

## Iowa Water Quality Initiative

Nitrogen moves primarily as nitrate-N with water

	Practice	Comments	% Nitrate-N Reduction <sup>a</sup>	% Corn Yield Change <sup>b</sup>
			Average (SD) <sup>c</sup>	Average (SD) <sup>c</sup>
Nitrogen Management	Timing	Moving from fall to spring pre-plant application	6 (25)	4 (16)
		Spring pre-plant/sidress 40-60 split Compared to fall-applied	5 (28)	10 (7)
		Sidress – Compared to pre-plant application	7 (37)	0 (3)
		Sidress – Soil test based compared to pre-plant	4 (20)	13 (22)**
	Source	Liquid swine manure compared to spring-applied fertilizer	4 (11)	0 (13)
		Poultry manure compared to spring-applied fertilizer	-3 (20)	-2 (14)
	Nitrogen Application Rate	Nitrogen rate at the MRTN (0.10 N:corn price rate) compared to current estimated application rate. (ISU Corn Nitrogen Rate Calculator – <a href="http://extension.agron.iastate.edu/soilfertility/nrate.aspx">http://extension.agron.iastate.edu/soilfertility/nrate.aspx</a> can be used to estimate MRTN but this would change Nitrate-N concentration reduction)	10	-1
	Nitrification Inhibitors	Nitrapyrin in fall – Compared to fall-applied without Nitrapyrin	9 (19)	6 (22)
	Cover Crops	Rye	31 (29)	-6 (7)
		Oat	28 (2)	-5 (1)
Living Mulches	e.g. Kura clover – Nitrate-N reduction from one site	11 (16)	-9 (32)	
Land Use	Perennial	Energy Crops – Compared to spring-applied fertilizer	72 (23)	
	Extended Rotations	Land Retirement (CRP) – Compared to spring-applied fertilizer	85 (9)	
	Grazed Pastures	At least 2 years of alfalfa in a 4 or 5 year rotation	42 (12)	7 (7)
Edge-of-Field	Drainage Water Mgmt.	No impact on concentration	33 (32)	
	Shallow Drainage	No impact on concentration	32 (15)	
	Wetlands	Targeted water quality	52	
	Bioreactors		43 (21)	
	Buffers	Only for water that interacts with the active zone below the buffer. This would only be a fraction of all water that makes it to a stream.	91 (20)	
	Saturated Buffers	Divert fraction of tile drainage into riparian buffer to remove Nitrate-N by denitrification.	50 (13)	

Phosphorus moves primarily with eroded soil

	Practice	Comments	% P Load Reduction <sup>a</sup>	% Corn Yield Change <sup>b</sup>
			Average (SD) <sup>c</sup>	Average (SD) <sup>c</sup>
Phosphorus Management Practices	Phosphorus Application	Applying P based on crop removal – Assuming optimal STP level and P incorporation	0.6 <sup>d</sup>	0
		Soil-Test P – No P applied until STP drops to optimum	17 <sup>e</sup>	0
	Source of Phosphorus	Liquid swine, dairy, and poultry manure compared to commercial fertilizer – Runoff shortly after application	46 (45)	-1 (13)
		Beef manure compared to commercial fertilizer – Runoff shortly after application	46 (96)	
	Placement of Phosphorus	Broadcast incorporated within 1 week compared to no incorporation, same tillage	36 (27)	0
		With seed or knifed bands compared to surface application, no incorporation	24 (46)	0
	Cover Crops	Winter rye	29 (37)	-6 (7)
	Tillage	Conservation till – chisel plowing compared to moldboard plowing	33 (49)	0 (6)
No till compared to chisel plowing		90 (17)	-6 (8)	
Land Use Change	Perennial Vegetation	Energy Crops	34 (34)	
		Land Retirement (CRP)	75	
		Grazed pastures	59 (42)	
Erosion Control and Edge-of-Field Practices	Terraces		77 (19)	
		Buffers	58 (32)	
		Control	85	

## Cover Crops

- Reduce soil erosion
- Improve soil structure & permeability
- Suppress weeds
- Scavenge residual nitrogen
- Average of 28-31% reduction in N concentration and 29% reduction in P loss



Source: CleanWaterIowa.org

## Cover Crops in Iowa

- Interest and use in cover crops is grown in recent years.
- From ~9,000 acres in 2009 to over 300,000 acres in 2016 (only through state/fed programs)
- Need millions of acres to achieve water quality and soil health benefits, in addition to all other practices
- Have learned a lot in recent years, but still a steep learning curve for farmers and landowners



### Current Public Sector program overview:

- *Programs traditionally administered through the local SWCD/NRCS offices*
- *Funding is limited and done through a separate sign-up process*
- *More cost-share will put more pressure on already strained office staff.*
- *Need to encourage long-term, continuous cover crop use and cost-share models are primarily designed to support first time or early-stage users.*
- *Typically incentivizes or rewards new and/or early adopters.*
- *Looking only through the lens of cost share fails to account for individuals taking initiative on their own.*

## Iowa Cover Crop – Crop Insurance Demonstration Project



### Why crop insurance?

- *Networks reach nearly every farm operation in Iowa.*
- *Engages producers and landowners, incentivizes cover crops for landowners.*
- *Works with crop insurance programs to encourage cover crop usage.*
- *Provides additional mechanism to encourage long-term cover crop usage beyond traditional state/fed programs.*
- *Works within existing program and participation processes.*
- *Providing a subsidy discount for cover crop users through existing invoicing/structure could address the streamlined, cost-effective measures farmers/landowners and agencies are looking for.*

For program information go to: [www.cleanwateriowa.org/covercroptdemo](http://www.cleanwateriowa.org/covercroptdemo)

Apply at [www.cleanwateriowa.org/covercroptdemo](http://www.cleanwateriowa.org/covercroptdemo) or [www.surveymonkey.com/r/covercroptdemo](http://www.surveymonkey.com/r/covercroptdemo)

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# Questions?

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