

NURTURING GROWTH IN CONSERVATION

MARYLAND AGRICULTURAL WATER QUALITY COST-SHARE PROGRAM | ANNUAL REPORT 2020



MACS



MESSAGE FROM THE SECRETARY

At the Maryland Department of Agriculture (MDA), preserving our natural resources is a top priority, even in challenging times. That certainly proved to be the case in 2020. Despite the public health emergency brought on by COVID-19, the Maryland Agricultural Water Quality Cost-Share (MACS) Program never missed a step in its mission to help farmers finance conservation practices on their farms to protect water quality in local streams, rivers and the Chesapeake Bay.

During the year, MACS provided Maryland farmers with \$32.8 million in cost-share grants to plant cover crops, transport manure away from areas with high soil phosphorus levels and install best management practices (BMPs) on their farms to improve barnyard management, control soil erosion and protect local streams.

Helping farmers comply with environmental regulations and meet Chesapeake Bay cleanup goals remain at the heart of our work. A new menu of state-of-the-art conservation drainage practices was introduced this year to help farmers on the Eastern Shore and other low-lying areas improve water quality while sustaining crop production. The new practice is expected to help Maryland

meet its nutrient reduction targets for the Chesapeake Bay and its tributaries.

During the year, MACS streamlined its grant application process to make it faster and easier for farmers to haul manure away from areas with high soil phosphorus levels. In FY20, more than 300,000 tons of manure were hauled to farms and businesses that could use the product safely. This represents a 24% increase over 2019 and an 85% increase from five years ago.

Our cover crop program also proved that it could roll with the punches. To

help protect the health and safety of farmers and soil conservation district personnel, the program switched to a mail-in application process. Throughout the spring, MACS staff took advantage of the latest technology to certify cover crop fields planted the previous fall using satellite imagery. By the end of the fiscal year, the program had certified 488,214 acres of cover crops planted during the 2019-2020 planting season, a 35% increase in acreage over last year despite poor field conditions at planting time.

Throughout the spring and summer, MACS staff continued to process farmer applications to install a wide range of capital projects including livestock fencing, animal waste storage structures, heavy use areas, and other barnyard management and soil erosion practices.

Please read on to learn how MACS continues to nurture growth in conservation...during good times, bad times, and everything in between.

AT A GLANCE...
In FY20 MACS helped farmers:

- Install more than 375 conservation practices on their farms to protect water quality
- Plant nearly half a million acres of protective cover crops on their fields
- Transport more than 300,000 tons of manure away from areas with high soil phosphorus levels

Joseph Bartenfelder
Joe Bartenfelder
Maryland Agriculture Secretary

NURTURING A CLEANER CHESAPEAKE BAY

MACS helps Maryland farmers finance water quality improvement projects on their farms, invest in sustainable agricultural practices, and comply with federal, state, and local environmental requirements.

Since 1984, the program has provided thousands of farmers with conservation grants that cover up to 87.5% of the cost to install more than 30 BMPs on their farms to control erosion, manage nutrients, and protect

water quality. This year, MACS introduced a suite of conservation drainage management practices to its menu of eligible BMPs. The new practices will help Eastern Shore farmers install new technologies, buffers, and wetlands in low lying areas to reduce sediment and nutrient losses from crop fields and help Maryland meet its Chesapeake Bay cleanup goals.

MACS HELPS FARMERS PROTECT THE CHESAPEAKE BAY...

Farmers who received our grants invested approximately \$650,00 of their own money into projects that will prevent:

- 3.5 million pounds of nitrogen,
- 24,500 pounds of phosphorus, and
- 13,150 tons of soil from entering Maryland waterways.

CHESAPEAKE BAY MILESTONE PROGRESS

MACS is a key feature of Maryland's Watershed Implementation Plan to restore clean water in the Chesapeake Bay and its tributaries by 2025. The program is delivered by the state's 24 soil conservation districts with technical guidance

from U.S .Department of Agriculture's Natural Resources Conservation Service. Grants are used to help farmers install conservation practices on their farms that meet the clean water goals of the Chesapeake

Bay Total Maximum Daily Load. The chart shows MACS-supported practices that are expected to further reduce nitrogen and phosphorus runoff into waterways and help Maryland meet its nutrient reduction targets.

CHESAPEAKE BAY CLEAN-UP PROGRESS THROUGH JULY 2020*

Best Management Practice	2025 Goal	2020-2021 Milestone Target	2020 Progress	Percentage of Milestone
Cover Crops	478,391 acres	478,391 acres	488,214 acres	102%
Manure Transported (<i>Alternative Use or Out of Watershed</i>)	97,366 tons	97,366 tons	59,367 tons	61%
Exclusion Fencing (acres of buffers)	1,867 acres	1,262 acres	803 acres	64%
Grass Buffers	43,706 acres	34,587 acres	29,482 acres	85%
Off-Stream Watering Without Fencing	2,730 acres	12,730 acres	39,365 acres	309%
Retirement of Highly Erodible Land	33,171 acres	27,355 acres	30,658 acres	112%
Streamside Forest Buffers	20,274 acres	17,818 acres	15,589 acres	87%
Waste Storage Structures Livestock**	99,654 animal units	84,105 animal units	73,236 animal units	87%
Waste Storage Structures Poultry**	1,798,116 animal units	1,629,748 animal units	1,730,307 animal units	106%
Wetland Restoration	13,620 acres	10,172 acres	8,675 acres	85%

*Progress for cover crops and manure transport reflects state funding only. Progress toward other BMPs includes multiple funding sources.

**One animal unit = 1,000 lbs. of live animal weight.

2020 FUNDING SUMMARY

In FY20, MACS provided Maryland farmers with approximately \$32.8 million in cost-share grants to install 2,157 capital and special conservation projects on their farms to prevent soil erosion, manage crop nutrients, and protect water quality. Grants cover up to 87.5% of the cost to install more than 30 eligible BMPs, including cover crops, grassed waterways, manure storage structures, and stream protection practices. Farmers who received these grants invested \$647,083 of their own money into projects that will prevent an estimated 3.5 million pounds of nitrogen, 24,480 pounds of phosphorus, and 13,148 tons of soil from entering Maryland waterways.

Low Interest Loans for Agricultural Conservation (LILAC) provide startup funds to help farmers get a project up and running. These loans are guaranteed by the Maryland Water Quality Revolving Loan Fund, and are typically offered at below market rates at participating lending institutions statewide. In FY20, MACS processed \$448,300 in LILAC loans for farmers. Loans were used to finance manure handling and conservation equipment, no-till equipment, and construction costs to install BMPs.

PROGRAM SUMMARY | FY20

CAPITAL PROJECTS	NUMBER OF PROJECTS	FUNDS
Total Approved from State Funds	315	\$ 6,992,530

Capital Projects Completed		
CREP Projects with State Funds	30	\$ 174,038
All Other Projects with State Funds	240	\$ 4,292,609
With Federal Funds	10	\$ 62,940
Total Capital Projects Completed	280	\$ 4,529,587

Special Projects Completed		
Cover Crops	1,469	\$26,605,823
Manure Transport ¹	357	\$ 1,382,822
Manure Injection	51	\$ 369,056
Total Special Projects Completed	1,877	\$28,357,701
Total Capital & Special Projects Completed	2,157	\$32,887,288²

ENVIRONMENTAL BENEFITS	NITROGEN	PHOSPHORUS
Estimated Pounds of Nutrients Removed by Capital Projects	119,858	20,574
Estimated Pounds of Nutrients Removed by Cover Crops	3,368,677	3,906
	Tons of Soil	Acres of Land
Tons of Soil Saved Per Year ³	13,148	4,158
Manure Managed Daily with Animal Waste Storage Structures	Tons of Manure	Animal Units ⁴
Poultry Manure Managed Daily	692	31,689
Dairy Manure Managed Daily	64	1,489
Beef Manure Managed Daily	118	4,047
Other Animal Manure Managed Daily	433	686
Total Animal Manure Managed Daily	1,307	37,911

¹ Does not include poultry company matching funds (\$455,681)

² Includes approximately \$13.8 million in special funds from the Chesapeake and Atlantic Coastal Bays Trust Fund

³ Based on the Revised Universal Soil Loss Equation (RUSLE)

⁴ One animal unit = 1,000 lbs. of live animal weight

Note: Nutrient reduction figures are based on the best information available and are consistent with the latest Chesapeake Bay Model.



CAPITAL PROJECTS

The majority of the conservation projects funded by MACS are financed through the capital program by the sale of general obligation bonds. In FY20, MACS provided farmers with \$4.5 million to install 280 conservation projects on their farms. These projects contained 368 individual BMPs, up from 266 practices installed the year before.

The majority of projects installed contain BMPs that improve barnyard and manure management, control soil erosion and protect local streams. The top ten practices installed during the year include grassed waterways (93), heavy use areas (46), livestock exclusion fencing (40), lined waterways (24), water facilities for livestock (23), waste storage structures (22), roof runoff systems (18), grade stabilization structures (15), and animal mortality composters (11). Roofs and covers, riparian forest buffers, and conservation cover round out the top ten list with (10) on-farm installations each. *Please see the center spread for a complete list of BMPs installed with capital funds during FY20.*

SOIL CONSERVATION DISTRICT SUMMARY FOR CAPITAL PROJECTS FY20

DISTRICT	COMPLETED PROJECTS	MACS PAYMENT
Allegany	1	\$ 1,619
Anne Arundel	1	\$ 2,750
Baltimore County	5	\$ 63,296
Calvert	3	\$ 23,115
Caroline	5	\$ 234,809
Carroll	62	\$ 633,456
Catoctin	13	\$ 114,620
Cecil	7	\$ 233,027
Charles	2	\$ 40,870
Dorchester	2	\$ 55,837
Frederick	41	\$ 625,273
Garrett	3	\$ 14,264
Harford	12	\$ 90,906
Howard	5	\$ 62,986
Kent	21	\$ 102,157
Montgomery	2	\$ 21,139
Prince George's	5	\$ 50,314
Queen Anne's	35	\$ 583,119
Somerset	3	\$ 158,620
St. Mary's	5	\$ 79,960
Talbot	10	\$ 179,023
Washington County	21	\$ 286,816
Wicomico	7	\$ 344,735
Worcester	9	\$ 526,877
Total	280	\$4,529,588

COMPLETED MACS COST-SHARED PRACTICES BY DISTRICT | FY20

PRACTICE	ALLEGANY	ANNE ARUNDEL	BALTIMORE COUNTY	CALVERT	CAROLINE	CARROLL	CATOCTIN	CECIL	CHARLES	DORCHESTER	FREDERICK
Animal Mortality Facility								1			
Conservation Cover						3					1
Contour Farming											
Contour Orchard											
Critical Area Planting	1		1						1		
Diversion								1			
Fencing		1	1			6	6				5
Field Border											
Filter Strip						2					
Forage & Biomass Planting			1								
Vegetated Treatment Area											
Grade Stabilization Structure								3			
Grassed Waterway			2			15	6		1		24
Heavy Use Area Protection	1				5	13	3	2		1	2
Lined Waterway or Outlet								3	1		
Livestock Pipeline											
Riparian Forest Buffer						1					1
Riparian Herbaceous Cover											
Roofs and Covers						5	1				2
Roof Runoff Structure			2			4	1				5
Sediment Basin											
Sediment Control Pond				1					1		
Spring Development						1					
Stream Crossing						4					1
Strip Cropping, Contour											
Strip Cropping, Field											
Terrace System								2			
Waste Storage Structure			1			6					2
Waste Treatment Lagoon											
Wastewater Treatment Strip											
Water Control Structure											
Water Well						1					
Watering Facility	1					8					3
Wetland Restoration										1	
Total	3	1	5	4	5	69	17	12	4	2	46



	GARRETT	HARFORD	HOWARD	KENT	MONTGOMERY	PRINCE GEORGE'S	QUEEN ANNE'S	ST. MARY'S	SOMERSET	TALBOT	WASHINGTON COUNTY	WICOMICO	WORCESTER	TOTAL FY2020	CUMULATIVE FY'88-20
						1		1			3	5	11	1,054	
			4			2							10	709	
													0	47	
													0	2	
	1				1		3		1				9	900	
						4			1				6	541	
1	5				3	1	1			10			40	1,409	
					1								1	13	
			1		1								4	22	
													1	8	
													0	1,692	
	1	1	1			8			1				15	1,942	
	2	4	14	2		14			7	2			93	5,193	
	3				2	3	2	2		1	2	4	46	1,185	
	2			1		10			6	1			24	481	
													0	2	
										8			10	1,559	
						1							1	218	
						1	1						10	42	
1	1					2	2						18	825	
													0	51	
			1				1						4	1,117	
													1	1,197	
	1	1								2			9	548	
													0	61	
													0	72	
													2	92	
						2	1	1			5	4	22	2,379	
													0	15	
													0	45	
						1							1	46	
					1								2	202	
1	4	1			1					4			23	2,163	
			1						3				5	45	
3	20	7	22	3	10	50	11	4	19	28	10	13	368	25,877	

SPECIAL PROJECT GRANTS

MACS receives special funding from the Chesapeake Bay Restoration Fund and the Chesapeake and Atlantic Coastal Bays Trust Fund to finance highly valued BMPs included in Maryland's cleanup plan for the Chesapeake Bay. These include the state's popular Cover Crop Program and the contract signing incentive payment for the Conservation Reserve Enhancement Program (CREP), a federal-state partnership program that provides incentives to farmers to protect environmentally sensitive land. Portions of the Manure Transport Program, certain BMPs, and grants to help farmers inject manure into the soil are financed with special funds.

Cover Crop Program

The Cover Crop Program is the largest and most popular cost-share program offered by MACS. It provides farmers with grants to help offset seed, labor, and equipment costs associated with planting fall cover crops to control erosion, recycle unused plant nutrients, build healthy soils, and protect water quality in the Chesapeake Bay and its tributaries. During the 2019-2020 planting season, Maryland farmers planted 488,214 acres of cover crops statewide using \$26,598,431 in MACS cost-share grants. This year's cover crop planting was 35% larger than last year, despite excessive rainfall and poor field conditions at planting time.

COVER CROP PROGRAM 2019-2020

DISTRICT	CONTRACTS	FALL CERTIFIED ACRES	MACS PAYMENT
Allegany	8	549	\$ 43,276
Anne Arundel	27	4,311	\$ 278,108
Baltimore County	36	10,448	\$ 587,222
Calvert	16	2,713	\$ 147,224
Caroline	124	39,713	\$ 2,125,061
Carroll	110	25,883	\$ 1,447,452
Cecil	74	18,986	\$ 1,073,553
Charles	34	6,718	\$ 382,195
Dorchester	105	45,065	\$ 2,158,062
Frederick & Catoclin	158	31,987	\$ 1,820,332
Garrett	21	1,181	\$ 95,261
Harford	65	14,031	\$ 855,070
Howard	15	2,175	\$ 137,413
Kent	101	59,958	\$ 3,340,051
Montgomery	31	18,148	\$ 745,953
Prince George's	17	3,108	\$ 196,514
Queen Anne's	136	64,091	\$ 3,495,287
St. Mary's	56	10,194	\$ 461,214
Somerset	36	11,899	\$ 594,870
Talbot	85	51,583	\$ 2,840,988
Washington County	72	11,578	\$ 677,490
Wicomico	80	22,467	\$ 1,285,053
Worcester	62	31,428	\$ 1,810,782
Total	1,469	488,214	\$26,598,431

Cover crops provide recently harvested fields with a living, protective cover from erosion and nutrient runoff over the winter months.



Heavy use area pads protect groundwater resources and local streams from runoff during chicken house cleanouts.

MEET THE RHODES—

Maryland's Next Generation of Chicken Farmers

When Ryan and Rachel Rhodes bought a chicken and grain farm five years ago, life got awfully busy in a hurry. Guided by science, a fierce love of their industry, and a deep desire to protect the health of the birds and natural resources under their care, the Rhodes have taken chicken farming to the next level.

"The first priority was to ensure the health and quality of life of the 570,000 broilers that we planned to raise each year without the use of antibiotics," explained Ryan, who grew up on his family's nearby chicken farm and holds a degree in agriculture from University of Maryland Eastern Shore.

"We installed an energy efficient LED lighting system and windows to give our birds natural light," he said.

"It was a big ticket item," says Rachel, an Extension Educator who holds an MS in Environmental

Policy. "But in the long run it's better for the birds and the environment."

Managing the manure produced by their broilers was the next agenda item. To protect nearby streams from nutrient runoff, they applied for cost-share grants from MACS to install heavy use area pads at the entrances to their chicken houses and in front of the manure storage building.

"The concrete pads help us quickly and easily clean up any litter that escapes when baby chickens arrive or when fully-grown chickens leave," said Ryan. "They also help protect water quality during cleanouts, which is a big deal."

"Without cost-share funding from MACS this environmental upgrade would have been nearly impossible," adds Rachel.

"We have a long list of government regulations that we follow," she said. "But we always try to do the



right thing to protect the natural resources that we all depend on."

The Rhodes use a windrow system to compost litter generated between cleanouts at their chicken houses. After a few years, the litter is removed, tested for nutrient content and used as a crop fertilizer by neighboring farmers with acceptable soil phosphorus levels.

To further protect water quality, the Rhodes plant cover crops in their grain fields each fall with the help of MACS grants. They also installed native plant buffers next to their chicken houses to improve air quality and provide food and cover for pollinators.

"Environmental sustainability guides everything that we do," said Rachel.

MANURE TRANSPORT PROGRAM

Established by the Water Quality Improvement Act of 1998, Maryland's Manure Transport Program provides cost-share grants to help poultry, dairy, beef and other livestock producers haul manure away from areas with high soil phosphorus levels to other farms or alternative use facilities that can use the product safely. The program experienced exceptional growth in FY20 as farmers continue to transition to Maryland's Phosphorus Management Tool regulations.

During the year, the program provided Maryland farmers with a record \$1,382,822 in grants to transport 309,374 tons of manure to approved farms and businesses. Delmarva poultry companies provided \$455,681 in matching funds to transport poultry manure, bringing the total amount of financial support provided through the transport program to \$1,838,503.

Livestock manure (dairy, beef and swine) comprised 73% of the manure transported. Dairy farmers

typically use the grants to haul manure away from the barnyard area to distant fields with acceptable phosphorus levels. If soil phosphorus levels are elevated on the distant fields, the manure is hauled to other farms.

Poultry litter comprised the remaining 27% of the manure transported. Of that amount, 65% was trucked to alternative use facilities with the remaining 35% land-applied to crops as a fertilizer on qualifying fields.

MANURE TRANSPORT PROGRAM PAYMENT SUMMARY

FISCAL YEAR	ACTUAL TONS TRANSPORTED	MACS PAYMENT	POULTRY COMPANIES COST-SHARE PAYMENT*	TOTAL FUNDS ISSUED
1999	1,896	\$ 17,992	\$ 17,992	\$ 35,984
2000	13,366	\$ 111,464	\$ 111,464	\$ 222,928
2001	20,477	\$ 195,559	\$ 195,559	\$ 391,118
2002	47,481	\$ 434,610	\$ 420,395	\$ 855,005
2003	28,556	\$ 233,444	\$ 229,645	\$ 463,089
2004	40,755	\$ 295,356	\$ 285,806	\$ 581,162
2005	36,329	\$ 239,196	\$ 200,113	\$ 439,309
2006	69,009	\$ 380,694	\$ 293,728	\$ 674,422
2007	99,297	\$ 490,011	\$ 356,955	\$ 846,966
2008	99,817	\$ 520,357	\$ 370,985	\$ 891,342
2009	119,892	\$ 663,177	\$ 504,024	\$ 1,167,201
2010	80,899	\$ 469,398	\$ 402,846	\$ 872,244
2011	61,150	\$ 354,011	\$ 294,383	\$ 648,394
2012	35,554	\$ 297,587	\$ 283,951	\$ 581,538
2013	52,481	\$ 377,007	\$ 339,252	\$ 716,259
2014	118,995	\$ 608,259	\$ 419,929	\$ 1,028,188
2015	167,237	\$ 851,304	\$ 409,548	\$ 1,260,852
2016	213,151	\$ 954,300	\$ 447,882	\$ 1,402,182
2017	241,941	\$ 1,174,690	\$ 453,038	\$ 1,627,728
2018	249,421	\$ 1,020,910	\$ 453,876	\$ 1,474,786
2019	249,840	\$ 1,070,479	\$ 373,875	\$ 1,444,353
2020	309,374	\$ 1,382,822	\$ 455,681	\$ 1,838,503
Total	2,356,918	\$12,142,627	\$7,320,927	\$19,463,553

*Dairy, beef and other non-poultry livestock producers do not receive matching funds from poultry companies.

Manure Transport Program changes for FY20:

- Regulations were updated to help farmers comply with Phosphorus Management Tool requirements.
- The program’s cost-share cap was raised to \$22.50/ton.
- A new *Haul Now, Apply Later option* was introduced to allow farmers to submit applications and claims for payment together, after the load has been hauled.
- Applications and claims for payment forms were posted to the website for on-demand access by farmers.
- Corn, non-legume hay, and soybeans were approved to receive manure transported through the Fast Track program.

Grants for Liquid Manure Injection

Injecting manure into the soil, instead of spreading it on top, helps prevent nutrient runoff, reduces odors, and preserves beneficial surface residue. In FY20, 51 farmers were awarded \$369,056 in cost-share grants to offset operating costs associated with this practice.



The Conservation Reserve Enhancement Program is making a difference for Maryland’s streams, wetlands and wildlife.

Conservation Reserve Enhancement Program

Now in its 23rd year, Maryland’s Conservation Reserve Enhancement Program (CREP) has helped thousands of Maryland landowners plant streamside buffers, establish wetlands, protect highly erodible land and create wildlife habitat on their properties. CREP is a state-federal conservation partnership that pays landowners annual rental payments to take environmentally sensitive land out of production and install conservation practices that protect water quality and provide wildlife habitat. Rental contracts range from 10 to 15 years for this voluntary program.

MACS provides CREP landowners with cost-share grants to install livestock exclusion fencing, water troughs, stream crossings, buffers, wetlands, and other BMPs on land enrolled in CREP. During the fiscal year, MACS provided landowners with \$174,038 in grants to install 30 CREP-related projects. Special funds are used to award a \$100 per acre signing bonus to landowners who enroll or re-enroll land in the program. In FY20, landowners received \$209,752 in signing bonuses during a shortened acreage enrollment period.

CREP PROJECTS COMPLETED BY DISTRICT | FY20

DISTRICT	COMPLETED PROJECTS	MACS PAYMENT
Carroll	6	\$ 7,815
Catoctin	1	\$ 3,026
Dorchester	1	\$ 7,231
Frederick	3	\$ 20,618
Kent	4	\$ 4,426
Queen Anne's	3	\$ 10,170
Talbot	2	\$ 38,366
Washington County	10	\$ 82,386
Total	30	\$174,038

