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South Saskatchewan Regional Plan Strategy 3.17 Reporting

3.17 Develop and facilitate the continued voluntary adoption of *Beneficial Management Practices that demonstrate agriculture and agri-food sector commitment to environmental stewardship.*

Implementation of programs such as the Environmental Farm Plan and/or Federal-Provincial-Territorial agricultural policy frameworks (i.e., Growing Forward 2) helps producers identify environmental risks associated with their operations and encourages the adoption of Beneficial Management Practices (BMP) to address those risks. Continued extension, education and publication of information (including BMP manuals) increases awareness and provides many resources for private landowners who may be interested in implementing BMPs.

Alberta Agriculture and Forestry (AF) supports Beneficial Management Practices (BMPs) through grant programs under Federal-Provincial-Territorial initiatives and tracks the implementation of BMPs by a biannual Environmentally Sustainable Agriculture Tracking Survey.

Environmentally Sustainable Agriculture Tracking Survey

The Environmentally Sustainable Agriculture (ESA) Tracking Survey is conducted every two years for the purpose of providing data for AF's Performance Measure 3a (from AF's 2016-2019 Business Plan) – which is defined as *'the average percentage of improved environmentally sustainable agriculture practices adopted by producers'* – and as an information source for AF program and service decision makers. The most recent survey was completed in 2018 and the survey completed prior that was in 2016. The 2016 provincial adoption score average was 53 per cent and remained approximately the same in 2018. Table 1 compiles the 2014, 2016 and 2018 survey results showing scores on adoption of ESA practices by agricultural producers.

A total of 40 ESA practices, that could be used to address soil conservation, water quality, grazing management, wildlife habitat conservation, energy and climate change (adaptation), manure management, agricultural waste management, as well as planning approaches regarding sustainable agriculture, were used to derive the result for this measure. An eligible ESA practice for the base calculation is based on farm type, farm site characteristics and operation practices. The percentage of all eligible environmentally sustainable agricultural practices adopted by each respondent is multiplied by a weighting factor to generate a weighted adoption score for each respondent. Practices which achieve a high level of adoption (90+ per cent) are removed from subsequent surveys as the focus is on continuous improvement.

The survey targets 500 respondents from five regions across Alberta (South, Central, Northwest, Northeast and Peace). The survey regions do not directly align with the LUF regions although there is a good portion that overlaps. Sample sizes in some regions are too small which limits the relevance of the results by LUF regions. Thus, these scores are to be interpreted with caution when assigned under LUF regions.

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Table 1: Bi-annual Environmentally Sustainable Agriculture Tracking Survey Scores (per cent) by Land Use Framework Region

Year	Province/Region	Number of Respondents	Focus Area							
			Soil Conservation	Water Quality & Quantity	Grazing Management	Wildlife Habitat Conservation	Manure Management	Agricultural Waste Management	Energy and Climate Change	General Practices
2014	Alberta	500	21	75	70	70	76	41	23	44
2016	Alberta	500	21.8	74.1	70.9	73	69.4	53.4	16	42.4
	South Saskatchewan.	142	37	79	75	52	66	36	19	53
2018	Alberta	500	27.7	74.7	69.6	73.9	71.1	51.6	15	36
	South Saskatchewan.	146	30.7	73.5	69.9	61	70.1	55.4	15.5	39.7
	Red Deer	52	26.1	79.7	63.3	82.3	73.5	42.4	14.4	36.5
	North Saskatchewan	147	25.4	74.1	75	77.8	70.5	49.9	13.3	32.6
	Upper Athabasca	51	20	77.4	73	83.3	73.4	45.4	12.8	40.1
	Upper Peace	44	32.7	75	70.7	81.8	56.9	58.2	19.6	31
	Lower Athabasca	77	19.7	76.6	69	83.4	75.3	49.2	13.3	35.4
	Lower Peace	78	35.9	69.2	67.7	74.4	63.5	66.5	19.9	34.1

Source: AF Environmental Stewardship Branch

In the 2018 survey that obtained data on 2017 farming practices, 146 respondents were identified as part of the South Saskatchewan Region (SSR). The SSR showed an overall adoption score of 52.6 per cent, similar to the provincial average. The adoption score for soil conservation practices was 31 per cent, slightly higher than the provincial average of 28 per cent. In the area of general practices, which includes BMPs such as using variable rate technology, environmental farm plan, soil sampling and using trees for agriculture purposes, the SSR was 40 per cent compared to the provincial average of 36 per cent. Agricultural waste management score in the SSR was also higher than the provincial average. Practices related to water quality and quantity (score 73.5), grazing management (score 70), manure management (score

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70), energy and climate change (score 15.5) in the SSR were more or less same as the provincial average (Table 1). Practices related to wildlife habitat conservation were lower in the SSR at 61 per cent versus 74 per cent provincial average.

The adoption score presents an average adoption of eligible practices. This methodology off-sets the focus areas achieving highly adopted practices (80 per cent or greater) with focus areas that have low adoption (less than 50 per cent). The focus areas with lower results are often influenced in part by regional variability in environmental condition, limited rural agricultural product disposal sites or lower awareness of new and emerging technologies. AF focuses research and extension capacity and incentive-based programming towards improving the adoption of environmentally sustainable agricultural practices in areas with lower scores.

Federal-Provincial-Territorial Environmental Stewardship Grant Programs

The Federal-Provincial-Territorial Policy Framework - Growing Forward 2 (GF2) - ended in March 2018 and was followed by the Canadian Agricultural Partnership (CAP, 2018-2022). GF2 was a five-year federal and provincial funding partnership that delivered provincially appropriate programs on a cost-shared basis. These programs were delivered by provinces and territories to meet regional needs.

The GF2 Environmental Stewardship Grant Program was a producer-focused, voluntary grant program that shared cost with the producers in adopting BMPs to support environmental stewardship throughout the Province. Table 2 describes the projects completed during the GF2 duration (2013-2018) and their impact in the South Saskatchewan Region.

Table 2: Beneficial Management Practices Projects completed in the South Saskatchewan Region under the Growing Forward 2 Environmental Stewardship Grant Program

Project Description	Impact of BMP Implementation	Benefit of BMP Implementation
Innovative Stewardship Solutions (100)	1 project - built in-stream crossing to help livestock cross wet areas safely and quickly while avoiding riparian and aquatic impacts and meeting regulatory requirements.	Constructed crossings help to maintain or improve water quality, maintain bank stability and reduce the amount of time cattle spend in the waterbody.
Riparian Area Fencing and Management (101)	67 projects containing 33,404 acres including 44 wetlands, 82 ponds/lakes, 231 creeks/rivers and 59 dugouts**. Each count representing an instance where a water body/source is now being	Managing livestock around riparian areas provides protection for aquatic life, riparian vegetation and wildlife habitat, and water quality.

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	<p>better managed as land owners may border the same water source.</p> <p>**This number will be higher pending the final report updates.</p>	
<p>Year-Round/Summer Watering Systems (102)</p>	<p>110 projects where 81,165 acres with 32,335 animals, 50 wetlands, 56 ponds/lakes, 55 creeks/rivers and 170 dugouts are now better managed. Each count represents an instance where a water body/source is now being better managed as land owners may border the same water source.</p>	<p>Remote watering systems reduce the build-up and off-site transport of manure nutrients and pathogens, providing greater protection of water sources and riparian areas.</p>
<p>Portable Shelters and windbreaks (103)</p>	<p>103 projects where 36,926 animals are now benefiting from these shelters/windbreaks.</p>	<p>Properly placed portable shelters and windbreaks help minimize the impact of livestock on the environment by reducing livestock density and spreading out feeding and bedding areas in the winter months. This approach decreases manure nutrient build-up and protects water sources and sensitive areas.</p>
<p>Improved Manure Storage Facilities (201)</p>	<p>1 project allowing better management of the manure of 65 animals</p>	<p>Increasing manure storage capacity so applicants can better plan manure application, protect groundwater and surface water by properly locating and constructing a manure storage facility, improves air quality by reducing the number of times the manure is handled as well as minimizes odors and flies.</p>
<p>Livestock Facility Runoff Control (202)</p>	<p>5 projects where new runoff controls are now impacting 935 animals. 1 wetland, 2 ponds/lakes, 3 creeks/rivers and 0 dugouts are benefiting from improved control. Each count representing an instance where a water body/source is now being better managed as land owners may border the same water source.</p>	<p>Runoff controls improve water quality by decreasing the amount of sediment, pathogens and contaminants that enter the water system, decreases the amount of clean water entering the livestock facility, prevents soil erosion, and potentially improves herd health.</p>

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<p>Livestock Facility and Permanent Wintering Site Relocation (203)</p>	<p>10 projects where 1,688 livestock (predominantly cattle) have been moved to a minimum distance of 100m from water bodies (4 wetlands, 1 pond/lake, 7 creek/rivers, 2 dugouts and 1 well). Each count represents an instance where a water body/source is now being better managed as land owners may border the same water source.</p>	<p>Improved water quality by reducing sedimentation, pathogens and contaminants, reduced stream bank degradation and minimized potential health problems for the herd.</p>
<p>Improved Pesticide Management (301)</p>	<p>With 60 projects, 621,140 acres now better managed with a minimum of 229 wetlands, 105 ponds/lakes, 45 creeks/rivers and 125 dugouts better protected from pesticides. Each count represents an instance where a water body/source is now being better managed as land owners may border the same water source.</p>	<p>The risks of spills during loading, double application in overlap areas and pesticide application to non-targeted areas, due to drift, are always present.</p>
<p>Improved Nutrient Management (301A)</p>	<p>Through 23 projects, this technology is being used on 114,120 acres per year and is helping protect 72 wetlands, 81 ponds/lakes, 34 creeks/rivers and 50 dugouts. Each count represents an instance where a water body/source is now being better managed as land owners may border the same water source.</p>	<p>Fertilizer can pose a risk to the environment if over-applied. With today's wider equipment, double application occurs on a significant area on overlap at field borders and when applying around obstructions such as trees and wetlands. Sectional control systems for seed drills or fertilizer applicators can reduce double application of fertilizer in overlap areas.</p>
<p>Fuel Storage (302)</p>	<p>52 projects with 52 fuel tanks safely contain 25,600 gallons and 692,291 liters. The older model fuel tanks containing 28,600 gallons and 157,770 liters have been decommissioned. Each count represents an instance where a water body/source is now being better</p>	<p>Reduce the risk of leaks and spills that would contaminate surface water, improve the efficiency of fueling equipment, reduce the evaporation of fuel associated with single wall tanks, enhance the appearance of the farmstead, improve the safety of handling fuel and the fueling of equipment, and provide better monitoring of fuel use.</p>

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	managed as land owners may border the same water source.	
Used Oil Storage (303)	2 projects where 2,400 Gallons of used oil are now more safely stored.	Prevents used oil and its more toxic contents from entering surface water; provides the raw product for making recycled engine oil and lubricants; removes oil, containers and filters from the farm; improve the safety on the farm; and has potential to earn a small return on investment.
Agricultural Plastics Waste Management (304)	6 projects -19,500 lbs. of grain bags and silage plastic were better contained as a result of this project.	Rolling and compacting agricultural sheet plastics allows for more convenient and safe storage on farm prior to transporting to a recycling site or licensed landfill. This practice will eliminate the need to dispose of plastics on farm.

Part two of the GF2 Environmental Stewardship Grant Program supported BMPs specific to confined-feeding operations. The projects completed in the South Saskatchewan Region are listed in Table 3. These BMPs are capital intensive and required significant contributions from producers.

Table 3: Confined Feeding Operations Specific Beneficial Management Practices Projects Completed in the South Saskatchewan Region under the Growing Forward 2 Environmental Stewardship Grant Program

Project Description	Total BMPs	Benefit of BMP Implementation
Innovative Environmental Solutions for Confined Feeding Operations (400)	6	<p>Results may vary depending on specifics of the project. Some examples include:</p> <ul style="list-style-type: none"> • Installation of an automatic pump system for a manure transfer tank to ensure timely pump out and to prevent overflow • Installation of lagoon aeration and underground pipeline to irrigation • Fly ash amended concrete 30 per cent of feedlot pens (finish 18 of 25 pens) • Installation of twin feed line in grower/finisher barn to reduce wash frequency and wash water going into lagoon. Estimate one month's worth of capacity gain • Place compacted gravel to cover high traffic areas of feedlot pens as a pen amendment to improve surface water management.

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Engineering investigation and/or feasibility assessment (401)	10	To help producers collect site information and evaluate potential solutions to improve manure management or address an environmental issue.
Construction or upgrade of a surface water management system (402)	14	To protect water quality by installing or upgrading surface water control systems to better divert clean water and increase management of runoff from existing livestock facilities
Improved Manure Storage Facilities (404)	12	To protect water quality by reducing the risk of storage overflow or by eliminating the need for winter spreading of manure. <ul style="list-style-type: none"> - increase the capacity of an existing manure storage facility, or - construct an additional storage facility. <p>To relocate or improve a storage facility that poses a significant risk to water quality</p>
Relocation of a Confined Feeding Operation (405)	6	Relocation of facilities (such as cattle pens) away from stream banks, lake shores or other areas that could pose a risk to water quality
Manure Treatment – Solid/liquid Separation System (406)	1	Solid/liquid separation of manure reduces the volume of manure to be transported and results in more efficient use of manure nutrients.
Manure Treatment – Composting (407)	3	Composting of manure reduces the volume to be transported, and results in more efficient use of manure nutrients
Improved Land Application of Manure (408)	10	To adopt technologies that result in more efficient nutrient use and decrease nutrient loss through run-off and volatilization. To adopt management practices that improve recordkeeping, nutrient management and compliance with the <i>Agricultural Operations Practices Act</i> .