Practice-based or outcome-based		Outcome-based							
Tools / Data sources		**Cool Farm Tool**	**Feedprint**	**Holos**	**Field to Market ® FieldPrint**	**Canadian Field Print Calculator**	**Canadian Crop Carbon Footprint Lookup Tool**	**Egg Farmers of Alberta Environmental Footprinter**	**Nutrient Tracking Tool**
General information									
Objective		To help growers measure and understand on-farm greenhouse gas emissions	To gain an understanding of GHG emissions generated by animal feed supply chains over their complete life cycle as well as from feed utilization To use results to assist in strategic management (sourcing feed materials, change compound feed composition, affect upstream production) to reduce GHG emissions To help organizations report on corporate responsibility	To estimate GHG emissions and help users identify ways to reduce farm emissions	To evaluate the environmental performance of corn, cotton, rice, wheat, potato and soybean production in the United States. To assess how their management choices are impacting both the environment and their production efficiency	- To meet the market demand for information on sustainable production - To enable producers to see their individual performance on sustainability impact areas in comparison to (1) regional averages, (2) his own farm over time and (3) his own farm under alternative management scenarios	To demonstrate compliance with the GHG emissions requirements of the EU Renewable Energy Directive To provide the carbon footprint associated with the production of 1 tonne of crop in the Prairie Provinces of Canada	To establish a credible and transparent environmental profile of egg production in Alberta accounting for current farming practices	To facilitate the trading of nutrient (nitrogen and phosphorous) credits to reduce water pollution To estimate on-farm nitrogen and phosphorus losses and assess the credit generating capacity from agricultural management practices To help farmers determine the most cost-effective conservation practice alternatives
Developers/Authors		Unilever and researchers at the University of Aberdeen (UK)	Wageningen University and Blonk Milieu Adv	Agriculture and Agrifood Canada (AAFC)	Keystone Alliance for Sustainable Agriculture	Serecon	Agriculture and Agrifood Canada (AAFC) and Canola Council of Canada	Groupe AGÉCO (formely Quantis)	TIAER (Tarleton State University) with funding from the USDA-NRCS Conservation Innovation Grants program and various state agencies (enhanced version of the Nutrient Trading Tool developed by USDA and World Resources Institute, 2006)
Latest update		2014	2015	2015	2016	2015	2014	2013	2014
Format	Online calculator or questionnaire	Yes (and has a specific tool for potatoes)	No	No	Yes - https://www.fieldtomarket.org/calc	No	No	Yes - private access	Yes
	Offline tool (e.g. Excel tool)	Yes - Excel version is still available for download and offline use	Yes - software to download	Yes - software to download	No	Yes	Yes - Excel file to downlo	Yes - possibility to get the tool on a usb key	No
Cost (tool and data)		Free for farmers Annual fees for large corporate or SME (3,000 pounds to 7,500 pounds per year) Fee-paying features such as saving analytical results	Free	Free	Free	Free (at the moment, available to producers in pilot workshops)	Free	Free - for Alberta Egg pr	Free
Geographical applicability		International	Europe	Canada	USA	Prairie Provinces and Ontario	Canada (Prairies)	Alberta	USA
Current/past users		Canadian Pulse Growers Association, Heinz, Unilever, PepsiCo, Marks & Spencer, Sysco	several EU and international initiatives	Dairy Farmers of Canada, Canola Council of Canada, Canada Beef	Cargill, Bunge, General Mills, Kellogg, McDonald's Corp, CocaCola, Unilever and Walmart	Participants of the initiative: Canadian Canola Growers Association, Canadian Association of Agri-Retailers, Pulse Canada, General Mills, Grain Farmers of Ontario, Enns Brothers, Prairie Oat Growers Association, Syngenta, Manitoba Pulse Growers Association, Farmers Edge, CropLife Canada, AgriTrend, Canadian Fertilizer Institute, Ducks Unlimited Canada	Cargill	Alberta egg farmers	unknown
Website		https://www.coolfarmtool.org/CoolFarmTool	http://webapplicaties.wur.nl/software/feedprint/	http://www.agr.gc.ca/eng/science-and-innovation/science-publications-and-resources/holos/?id=1349181297838	https://www.fieldtomarket.org/calculator	http://www.serecon.ca/resources/calc	http://www.canolacouncil.org/media/560794/cropcflookup_1.0.xlsx	n/a	http://nn.tarleton.edu/nttWeb082014/(S(ptlhfca2qjtljdpvjh40b40r))/Default.aspx

Practice-based or outcome-based		Outcome-based			Practice-based	Practice-based and Outcome based
Tools / Data sources		**Alberta Irrigation Management Model (AIMM)**	**Stewardship Index for Speciality Crops - Metric Calculator**	**WEBs GIS tool**	**Sustainability Assessment of Food and Agriculture (SAFA) Tool**	**Dairy Farms +**
General information						
Objective		To assist irrigation producers with their irrigation scheduling decisions (simulates the growing conditions and crop water use for 52 different crops)	"to advance both optimal production and strong environmental protection by offering a suite of science-driven metrics empowering producers to measure on-farm practices (i.e. water use, nitrogen use, etc.) accurately and consistently. Metric data give consumers, food buyers, and producers a common language for discussing the impact of farming practices – and the meaningful stewardship activities of U.S. farmers"	To evaluate the economic costs, water quantity and quality benefits and cost effectiveness of agricultural BMPs across a watershed. The tool, which was designed to be user-friendly for farmers, watershed managers and other conservation practitioners also allows to identify and target key areas with the highest potential impacts.	"SAFA results are intended to be used as a guide for how to improve system sustainability, such as; to present an internal assessment of sustainability management; to facilitate learning and strategic planning; or to harmonize communication between stakeholders, mainly business-to-business communication"	To help dairy farmers understand the benefits of regionalized best management practices and identify the ones that they are or are not yet implementing To allow dairy farmers to benchmark themselves with other producers in Canada and in the province To provide environmental footprint results that farmers can compare with provincial and national averages
Developers/Authors		Alberta Agriculture and Forestry	SISC Coordinating Council organizations	University of Guelph, Canadian Water Network, Agriculture and Agri-Food Canada, Ontario Ministry of Agriculture, Food and Rural Affairs	Food and Agriculture Organization of the United Nations (FAO)	Groupe AGÉCO (with the participation of Dairy Research Cluster, Dairy Farmers of Canada, Agriculture and Agri-Food Canada, Canadian Dairy Network and Canadian Dairy Commission)
Latest update		2015	2013	2015	2014	2016
Format	Online calculator or questionnaire	No	No	Yes - to be developed	No	Yes
	Offline tool (e.g. Excel tool)	Yes - software to download http://agriculture.alberta.ca/acis/imcin/aimm.jsp	Yes - Excel sheet to download http://www.stewardshipindex.org/metric_calculator.php	Yes - open source tool	Yes - Software to download http://www.fao.org/nr/sustainability/sustainability-assessments-safa	No
Cost (tool and data)		Free	Free	Free - however a data sharing agreement may need to be set up for some data related to water quantity and quality flow that are collected by watershed agencies	Free	Free for all dairy farmers: access to all of the sections of the tool) Free for other users (without a producer number): access to BMP database only (no access to the questionnaire or other sections of the tool)
Geographical applicability		Alberta	USA	Only applied to a case study (Gully Creek, ON) but "has the potential to be transferred to other watersheds" and "should be expanded to include more BMPs for use in other watershed across Canada"	International	Canada
Current/past users		unknown	unknown	At the pilot stage for one watershed	unknown	n/a
Website		http://agriculture.alberta.ca/acis/imcin/aimm.jsp	http://www.stewardshipindex.org/metric_calculator.php	http://www.agr.gc.ca/eng/?id=1285354752471	http://www.fao.org/3/a-i4113e.pdf	dairyfarmsplus.ca

Practice-based or outcome-based		Data sources									ASSESSMENT	
Tools / Data sources		**AgroClimatic Information Service (ACIS)**	**Water Quality in Alberta's Irrigation Districts**	**Agricultural Water Survey (AWS)**	**Assessment of Environmental Sustainability in Alberta's Agricultural Watersheds Project**	**Manure application effects on soil and groundwater quality under irrigation in southern Alberta**	**Relationships between Soil and Runoff Phosphorus in Small Alberta Watershed**	**Trends in residual soil nitrogen for agricultural land in Canada, 1981-2006**	**The National Soil DataBase (NSDB)**	**Environmental Sustainability of Canadian Agriculture**	**Tools**	**Data**
General information												
Objective		"interactive tool that helps producers, farm consultants, and researchers to see Alberta weather forecasts, browse over 10000 maps of Alberta weather and Alberta climate related information, and access near real time station data from over 350 meteorological stations operating in the province of Alberta"	"Alberta Agriculture and Rural Development and its partners (Irrigation Council, Alberta Irrigation Projects Association and Agriculture and and Agri-Food Canada) initiated a five-year study (2011-2015) to assess the water quality of Alberta's irrigation districts. Approximately 90 sites within the 13 irrigation districts are sampled four times per year during the irrigation season. Samples are analyzed for up to 160 water quality parameters including nutrients, salts, metals, pathogens and pesticides."	"The Agricultural Water Survey is conducted to gather information on irrigation water use, irrigation methods and practices, and sources and quality of water used for agricultural purposes on Canadian farms. The results will help farm operators, governments and the Canadian public gain a better understanding of the demand for water and how it is used on Canadian farms."	"to assess temporal and spatial patterns in water quality in watersheds with agricultural activity. Twenty-three watersheds were selected to encompass the range of agricultural intensities throughout the province including low agricultural intensity watersheds, watersheds already subject to high intensity farming, watersheds with the potential for intensified agriculture, and those draining irrigation return flows."	- "to determine the effects of repeated application of cattle manure on soil quality, shallow groundwater quality, and crop production on two soil types under irrigated conditions - based on the results, to make appropriate recommendations for the management of manure application on land to minimize or prevent detrimental effects on soil and groundwater resources"	- to determine the field-scale relationship between soil-test phosphorus (STP) and runoff total phosphorus (TP) and dissolved reactive phosphorus (DRP) from field-sized catchments or "microwatersheds" under spring snowmelt and summer rainfall conditions in Alberta - to compare the relationship with the Edge-of-field Phosphorus Export Model (EFPEM) for DRP (Wright et al. 2003)	- Determine the annual residual soil nitrogen (RSN) using the Canadian Agricultural Nitrogen Budget model (CANB v3.0) and develop a RSN indicator to provide an "estimate of the amount of "unused" nitrogen that remains in the soil at the end of the cropping season"	- Provides soil, landscape and climatic data for all of Canada - "serves as the national archive for land resources information that was collected by federal and provincial field surveys, or created by land data analysis projects"	- To develop "a set of science-based agri-environmental indicators that integrate information on soils, climate and topography with statistics on land use and crop and livestock management practices" (indicators: soil, water and air quality, farm land management and resource use efficiency in the food and beverage industry) - To provide "valuable information on the environmental risks and conditions in agriculture and how these change over time" - To develop indicators that are "sensitive to the considerable differences in conditions and in the commodity mix across Canada"		
Developers/Authors		Alberta Agriculture and Forestry (Environmental Stewardship Division)	Irrigation and Farm Water Division, Alberta Agriculture and Forestry	Statistics Canada	Water Resources Branch, Alberta Agriculture and Rural Development	Alberta Agriculture, Food and Rural Development	Irrigation Branch, Alberta Agriculture, Food and Rural Development	Drury et al. (Agriculture and Agri-Food Canada)	Agriculture and Agri-Food Canada	Agriculture and Agri-Food Canada		
Latest update		Up-to-date (2016)	2015	2015	2008	2003	2006	2011	2013	2010		
Format	Online calculator or questionnaire	Online tool	Online report (http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr14080/$FILE/wq_2014_summary_report.pdf)	Online tables	Online report (http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr12914/$FILE/vol3_aesa_waterqualitymonitoringproject_rtw.pdf)	Online report (http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr15466/$FILE/manure_study_final_report.pdf)	Online report (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.543.9218&rep=rep1&type=pdf)	Online report (http://www.biodivcanada.ca/6766C997-7AA7-402F-82E8-8AE9EA37519C/4317No.15_Residual%20Soil%20Nitrogen_Jun2012_E.pdf)	Online files (http://sis.agr.gc.ca/cansis/nsdb/index.html)	Online report (http://publications.gc.ca/collections/collection_2011/agr/A22-201-2010-eng.pdf)		
	Offline tool (e.g. Excel tool)											
Cost (tool and data)		Free	Free	Free	Free	Free	Free	Free	Free	Free		
Geographical applicability		Alberta	Alberta	Canada	Alberta	Southern Alberta	Alberta	Canada	Canada	Canada		
Current/past users												
Website		http://agriculture.alberta.ca/acis/about.jsp	http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr14080	http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5145	http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr12914/$FILE/vol3_aesa_waterqualitymonitoringproject_rtw.pdf	http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/irr15466	http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.543.9218&rep=rep1&type=pdf	Report: http://www.biodivcanada.ca/6766C997-7AA7-402F-82E8-8AE9EA37519C/4317No.15_Residual%20Soil%20Nitrogen_Jun2012_E.pdf	http://sis.agr.gc.ca/cansis/nsdb/index.html	http://publications.gc.ca/collections/collection_2011/agr/A22-201-2010-eng.pdf		