| Authors and year*a* | Region | Animal types | Manure type | Methods | GHG types |
| --- | --- | --- | --- | --- | --- |
| British Columbia | | | | | |
| Zhang et al., 2013 | BC | Dairy Cattle, Poultry, Swine | Liquid | MX | CH₄, N₂O |
| Maltais-Landry et al., 2018 | BC | Horse, Poultry | Solid | OB | CO₂, CH₄, N₂O |
| Mirmasoudi et al., 2019 | BC | Beef Cattle | Solid | MD | CH₄, N₂O |
| Wang et al., 2021 | BC | Dairy Cattle, Poultry | Liquid | MX | CO₂, CH₄, N₂O |
| Zhang et al., 2021 | BC | Dairy Cattle | Liquid, Solid | MX | CH₄, N₂O |
| VanderZaag and Baldé, 2022 | BC | Dairy Cattle | Liquid | OB | CH₄ |
| Feng et al., 2023 | BC | Dairy Cattle | Liquid | MD | CH₄, N₂O |
| Alberta | | | | | |
| Hao et al., 2001 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Hao et al., 2004 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Sommer et al., 2004 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Clark et al., 2005 | AB | Swine | Liquid | OB | CO₂, CH₄, N₂O |
| Hao et al., 2005 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Hao et al., 2007 | AB | Beef Cattle | Liquid | OB | CO₂, CH₄, N₂O |
| Hao, 2007 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Xu et al., 2007 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Xu et al., 2007 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| McDonald et al., 2008 | AB | Dairy Cattle, Poultry, Swine | Liquid, Solid | OB | CH₄ |
| Hao et al., 2009 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Beauchemin et al., 2010 | AB | Beef Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Gilroyed et al., 2010 | AB | Beef Cattle | Liquid | OB | CO₂, CH₄ |
| Flesch et al., 2011 | AB | Beef Cattle | Liquid, Solid | OB | CH₄ |
| Hao et al., 2011 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Hao et al., 2011 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Hao et al., 2011 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Basarab et al., 2012 | AB | Beef Cattle | Liquid, Solid | MX | CH₄, N₂O |
| McGinn and Beauchemin, 2012 | AB | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Flesch et al., 2013 | AB | Swine | Liquid | OB | CH₄ |
| Hunerberg et al., 2014 | AB | Beef Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Lee et al., 2016 | AB | Beef Cattle | Liquid | OB | CO₂, CH₄, N₂O |
| Withey et al., 2016 | AB | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Hao and Larney, 2017 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Alvarez-Hess et al., 2019 | AB | Dairy Cattle | Solid | MX | CO₂, CH₄, N₂O |
| Dimitrov and Wang, 2019 | AB | Beef Cattle, Dairy Cattle, Poultry, Sheep, Swine | Liquid, Solid | MD | CH₄, N₂O |
| McGinn et al., 2019 | AB | Beef Cattle | Liquid, Solid | OB | CH₄ |
| Owens et al., 2020 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Romero et al., 2022 | AB | Beef Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Wedwitschka et al., 2022 | AB | Dairy Cattle | Solid | OB | CH₄ |
| Saskatchewan | | | | | |
| Laguë et al., 2005 | SK | Swine | Liquid | OB | CO₂, CH₄, N₂O |
| Huang and Guo, 2019 | SK | Poultry | Solid | OB | CO₂, CH₄, N₂O |
| Chen et al., 2020 | SK | Beef Cattle | Liquid, Solid | MX | CO₂, CH₄, N₂O |
| Manitoba | | | | | |
| Boadi et al., 2004 | MB | Beef Cattle | Liquid, Solid | OB | CO₂, CH₄, N₂O |
| Huang et al., 2010 | MB | Swine | Liquid | OB, MD | CO₂, CH₄ |
| Stewart et al., 2014 | MB | Beef Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Alemu et al., 2016 | MB | Beef Cattle | Liquid, Solid | MD | CO₂, CH₄, N₂O |
| Alemu et al., 2016 | MB | Dairy Cattle, Swine | Liquid, Solid | MX | CH₄, N₂O |
| Flores-Orozco et al., 2020 | MB | Dairy Cattle | Liquid | OB, MD | CO₂, CH₄ |
| VanderZaag et al., 2022 | MB | Swine | Liquid | OB | CH₄ |
| Ontario | | | | | |
| Kinsman et al., 1995 | ON | Dairy Cattle | Liquid, Solid | OB | CO₂, CH₄ |
| Brown et al., 2000 | ON | Dairy Cattle | Solid | OB | N₂O |
| Kaharabata et al., 2000 | ON | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Brown et al., 2002 | ON | Dairy Cattle | Solid | OB | N₂O |
| Thompson et al., 2004 | ON | Swine | Liquid | OB | CH₄, N₂O |
| Pattey et al., 2005 | ON | Beef Cattle, Dairy Cattle | Liquid, Solid | OB | CO₂, CH₄, N₂O |
| Park et al., 2006 | ON | Swine | Liquid | OB | CH₄ |
| Wagner-Riddle et al., 2006 | ON | Swine | Liquid | OB | CH₄, N₂O |
| Gao et al., 2008 | ON | NA | Liquid, Solid | OB | CH₄ |
| Park and Wagner-Riddle, 2010 | ON | Swine | Liquid | OB | CH₄, N₂O |
| Park et al., 2010 | ON | Swine | Liquid | OB | CH₄ |
| Roumeliotis et al., 2010 | ON | Poultry | Liquid | OB | CH₄ |
| VanderZaag et al., 2011 | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Jayasundara and Wagner-Riddle, 2014 | ON | Dairy Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Ngwabie et al., 2014 | ON | Dairy Cattle | Liquid, Solid | OB, MD | CO₂, CH₄, N₂O |
| VanderZaag et al., 2014 | ON | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Baldé et al., 2016a | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Baldé et al., 2016b | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Baldé et al., 2016c | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Fillingham et al., 2017 | ON | Dairy Cattle | Solid | OB | CO₂, CH₄, N₂O |
| Guest et al., 2017 | ON | Dairy Cattle | Liquid, Solid | MX | CO₂, CH₄, N₂O |
| Habtewold et al., 2018 | ON | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Kariyapperuma et al., 2018 | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Maldaner et al., 2018 | ON | Dairy Cattle | Liquid | OB | CH₄ |
| VanderZaag et al., 2018 | ON | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Hoseeini Koupaie et al., 2019 | ON | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| VanderZaag et al., 2019 | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Boh and Clark, 2020 | ON | Beef Cattle, Dairy Cattle, Poultry, Sheep, Swine | Liquid, Solid | MD | N₂O |
| Debruyn et al., 2020 | ON | Dairy Cattle | Liquid | OB | CH₄ |
| Johannesson et al., 2020 | ON | Dairy Cattle, Poultry | Liquid, Solid | OB | CH₄ |
| Adghim et al., 2021 | ON | Poultry | Solid | OB | CH₄ |
| Arias et al., 2021 | ON | Swine | Liquid, Solid | OB | CO₂, CH₄ |
| Bhatt and Abbassi, 2022 | ON | Sheep | Solid | MX | CH₄, N₂O |
| Adghim et al., 2023 | ON | Poultry | Solid | OB | CH₄ |
| Quebec | | | | | |
| Massé et al., 1996 | QC | Swine | Liquid | OB | CH₄ |
| Kaharabata et al., 1998 | QC | Dairy Cattle, Swine | Liquid | OB | CH₄ |
| Massé and Droste, 2000 | QC | Swine | Liquid | MD | CH₄ |
| Massé et al., 2000 | QC | Swine | Liquid, Solid | OB | CH₄ |
| Massé et al., 2003 | QC | Dairy Cattle, Swine | Liquid | OB | CH₄ |
| Massé et al., 2003 | QC | Swine | Liquid | OB | CO₂, CH₄ |
| Nohra et al., 2003 | QC | Swine | Liquid | OB | CH₄ |
| Massé et al., 2008 | QC | Dairy Cattle | Liquid | MD | CH₄ |
| Fournel et al., 2012 | QC | Poultry | Liquid | OB | CO₂, CH₄, N₂O |
| Frigon et al., 2012 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Girard et al., 2012 | QC | Swine | Liquid | OB | CH₄ |
| Xia et al., 2012 | QC | Swine | Liquid | OB | CO₂, CH₄ |
| Barret et al., 2013 | QC | Dairy Cattle, Swine | Liquid | OB | CH₄ |
| Giard et al., 2013 | QC | Swine | Liquid | OB | CO₂, CH₄ |
| Massé et al., 2013 | QC | Swine | Liquid | OB | CH₄ |
| Saady and Massé, 2013 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Massé et al., 2014 | QC | Swine | Liquid | OB | CO₂, CH₄ |
| Tartakovsky et al., 2014 | QC | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Massé and Saady, 2015 | QC | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Saady and Massé, 2015 | QC | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Massé et al., 2016 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Saady and Massé, 2016 | QC | Dairy Cattle | Liquid | OB | CO₂, CH₄ |
| Guyader et al., 2017 | QC | Dairy Cattle | Solid | MX | CH₄, N₂O |
| Little et al., 2017 | QC | Dairy Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Fedrizzi et al., 2018 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Benchaar and Hassanat, 2019 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Fournel et al., 2019 | QC | Dairy Cattle | Liquid, Solid | MD | CO₂, CH₄, N₂O |
| Hassanat and Benchaar, 2019 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| McVoitte and Clark, 2019 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Rajagopal et al., 2019 | QC | Dairy Cattle | Liquid | OB | CH₄ |
| Benchaar and Hassanat, 2020 | QC | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Létourneau et al., 2020 | QC | Swine | Solid | OB | CO₂, CH₄, N₂O |
| Benchaar and Hassanat, 2021 | QC | Dairy Cattle | Liquid, Solid | OB | CH₄ |
| Mahato et al., 2022 | QC | Poultry | Liquid, Solid | OB | CO₂, CH₄ |
| Mahato et al., 2023 | QC | Poultry | Solid | OB | CO₂, CH₄ |
| Nova Scotia | | | | | |
| VanderZaag et al., 2009 | NS | Dairy Cattle | Liquid | OB | CO₂, CH₄, N₂O |
| VanderZaag et al., 2010 | NS | Dairy Cattle | Liquid | OB | CO₂, CH₄, N₂O |
| VanderZaag et al., 2010 | NS | Dairy Cattle | Liquid | OB | CO₂, CH₄, N₂O |
| Wood et al., 2012 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Wood et al., 2013 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Wood et al., 2014 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Le Riche et al., 2016 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Ngwabie et al., 2016 | NS | Dairy Cattle | Liquid | OB | CH₄ |
| Riche et al., 2016 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Habtewold et al., 2017 | NS | Dairy Cattle | Liquid | OB | CH₄ |
| Sokolov et al., 2019 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Sokolov et al., 2019 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Le Riche et al., 2020 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Sokolov et al., 2020 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Sokolov et al., 2021 | NS | Dairy Cattle | Liquid | OB | CH₄, N₂O |
| Sokolov et al., 2021 | NS | Dairy Cattle | Liquid | OB | CH₄ |
| Multiple | | | | | |
| Cluett et al., 2020 | AB, ON | Dairy Cattle | Liquid | OB | CH₄ |
| Hung et al., 2023 | AB, ON | Dairy Cattle | Solid | MD | CH₄ |
| Holtshausen et al., 2021 | AB, QC | Dairy Cattle | Solid | MX | CO₂, CH₄, N₂O |
| Levin et al., 2007 | Multiple | Beef Cattle, Dairy Cattle, Poultry, Swine | Liquid, Solid | MD | CH₄ |
| Vergé et al., 2007 | Multiple | Dairy Cattle | Liquid, Solid | MX | CH₄, N₂O |
| Alemu et al., 2017 | Multiple | Beef Cattle | Liquid, Solid | MD | CH₄, N₂O |
| Liang et al., 2020 | Multiple | Beef Cattle, Dairy Cattle | Liquid, Solid | MD | CO₂, CH₄, N₂O |
| Binggeli et al., 2021 | Multiple | Dairy Cattle | Liquid | MX | CO₂, CH₄, N₂O |
| Rennie et al., 2021 | Multiple | Dairy Cattle | Liquid | MD | CH₄ |
| Hung et al., 2022 | Multiple | Dairy Cattle | Liquid | MD | CH₄ |
| Turner et al., 2022 | Multiple | Poultry | Solid | MX | CH₄, N₂O |
| Yang et al., 2023 | Multiple | NA | NA | MD | N₂O |
| NA: Not available | | | | | |
| *a*Three or more authors are summarized with \*et al.\* | | | | | |