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Holos: GHG software for farms

Holos

A tool to estimate and reduce GHGs from farms

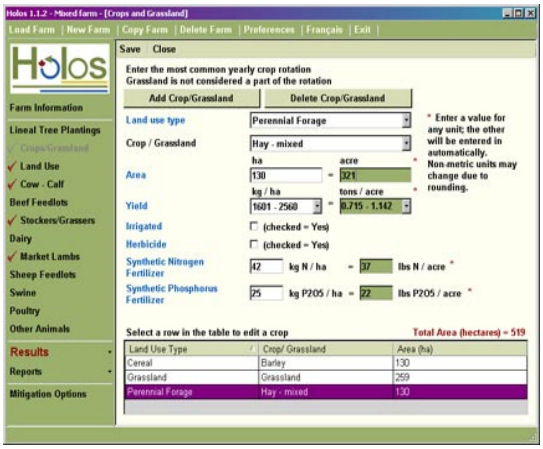
Holos is a whole-farm modelling software program to help farmers estimate their greenhouse gas (GHG) emissions. The main purpose of Holos is to test possible ways of reducing GHG emissions from farms. Holos is the culmination of extensive, collaborative study of greenhouse gas emissions from Canadian farms. Much of this research was conducted by Agriculture and Agri-Food Canada scientists in the Model Farm research program.

The farm operations in Holos are:

- Crops/grassland/land use
- Beef cow-calf
- Beef feedlot
- Beef stocker or grasser
- Dairy
- Sheep - market lambs
- Sheep feedlot
- Swine
- Poultry
- Other animals
- Lineal tree plantings

Holos has several unique features. One of these is the use of 'scenarios' – common packages of Canadian farm management practices. The user selects scenarios that best describe his/her farm and then adds detail to the extent desired. This makes Holos easy to use, while still allowing flexibility for more intensive analyses.

Employing a user-friendly interface, Holos allows users to contemplate possible options that might reduce emissions, and to estimate how those options affect whole-farm emissions. Holos is intended to look into the future, to envision hypothetical scenarios, and look for those practices that best reduce emissions at a specific site before they are implemented. Holos, therefore, is designed primarily as an exploratory tool, rather than as an accounting or inventory tool. It is intended to look into the future and ask 'what if?', rather than looking at the past and asking 'what were my emissions?' Holos also provides a set of possible mitigation options unique to each farm and lets users explore the impact of these options.



Cropping/grassland scenario form.

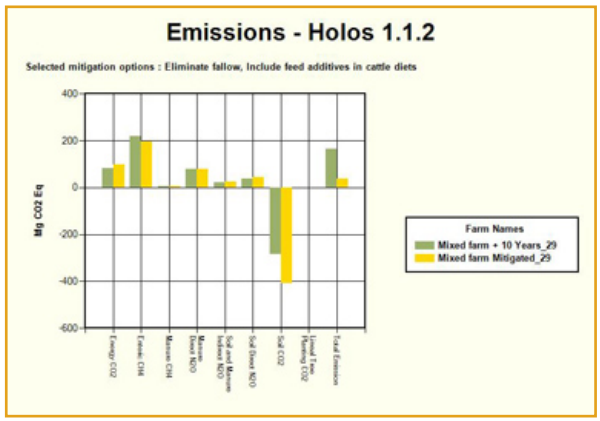
Equations, or algorithms, used in the model are generally based on the Intergovernmental Panel on Climate Change methods, but have been modified for Canadian conditions. The approach of Holos has been to emphasize the interaction of various components on the farm, rather than use exceedingly complex sub-routines of individual facets. Holos focuses specifically on those practices and conditions that might conceivably have significant mitigative effect. The level of detail is also dictated by the amount of supportive scientific information available.

Whole-systems approach

An ecosystem consists of not only the organisms and the environment they live in but also the interactions within and between. A whole systems approach seeks to describe and understand the entire system as an integrated whole, rather than as individual components. This holistic approach can be very complex and describing the process can be difficult. One method to conceptualize a whole system is with a mathematical model.

The whole-systems approach ensures the effects of management changes are transferred throughout the entire system to the resulting net farm emissions. In some cases, reducing one GHG will actually increase the emissions of another. The whole-systems approach avoids potentially ill-advised practices based on preoccupation with one individual GHG.

Holos estimates carbon dioxide, nitrous oxide and methane emissions from enteric fermentation and manure management, cropping systems and energy use. Carbon storage and loss from lineal tree plantings and changes in land use and management are also estimated resulting in a whole-farm GHG estimate. The estimate is based on a yearly time-step and results are provided as reports or comparative charts.



Mitigation options comparison.

Holos, a Greek word meaning *all, entire, total.*

For more information on Holos, email Holos@agr.gc.ca. The program is available for download from www.agr.gc.ca/nlwis - click on the "Tools" link on the left side menu.

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Aussi offert en francais sous le titre :
Holos : logiciel des emissions de GES de la ferme

Beef cattle grazing on perennial forage/grass hay.

Canada