



### Sustainable Development

## Increasing the energy of Canadian forages fed to high producing dairy cows

# Summary 2016

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Improving forage digestibility while maintaining yield and persistence remains a major challenge because these three pillars of forage production are often negatively correlated and they all affect dairy farm profitability. This in turn has implications both for the selection of research efforts by research scientists and funding agencies as well as for dairy producers in making decisions on harvesting dates. Tools are required to determine the best investment in forage research in terms of forage digestibility, yield, and persistence. As well, dairy producers require better tools to make decisions on when to harvest taking into account the requirements in terms of yield and digestibility along with the current or future weather conditions for harvesting.

Although our overall objective is to increase the energy of Canadian forages, forage yield and persistence will always be considered in our efforts to help dairy producers to produce more forages of greater quality. Our goal is to produce forages more balanced in terms of readily available energy and rapidly degradable proteins in an effort to reduce the needs for

concentrates and corn silage and to increase the dietary forage proportion ("milk from forage").

The specific objectives of the research are:

- 1- To increase the readily-available energy to rapidly-degradable protein ratio in alfalfa (*Medicago sativa* spp) through genetic selection for nonstructural carbohydrates.
- 2- To identify crop management practices that maximize the forage readily-available energy to rapidly-degradable protein ratio.
- 3- To develop a web-based decision support tool to provide easy-to-access and local information on the optimum time for cutting forage crops by taking into account forage digestibility, yield, and climatic conditions.
- 4- To evaluate at the farm level the economic and environmental benefits of increasing the digestibility and/or yield of forage crops using the Integrated Farm System Model (IFSM).