Dr Réjean Bouchard

Assistant Director, Policy
and Dairy Production,
Dairy Farmers of Canada

The importance of animal feeding for the global dairy production chain and introduction to the IDF Task Force on Animal Feeding

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The importance of animal feeding for the global dairy production chain and introduction to the IDF Task Force on Animal Feeding

RÉJEAN BOUCHARD, PH. D.
DAIRY FARMERS OF CANADA

Dairy Farmers of Canada

Les Producteurs laitiers du Canada

Presentation

1. Lactating dairy cow
2. IDF work on good farming practices
3. Utilization of IDF guidelines by dairy producers
4. Task Force on Animal Feeding

1. LACTATING DAIRY COW

INDUSTRY PRACTICES ARE CHALLENGED ON BOTH SCIENTIFIC AND ETHICAL GROUNDS

- **Around the world, dairy farming raises concerns regarding its impact on environment, food safety and animal welfare**
- **Besides being a major cost element in producing milk, feeding and feed efficiency impact on productivity, environment and animal health**

NET ENERGY FOR MAINTENANCE AND FOR LACTATION

- High producing dairy cows are using feed energy more efficiently
- Fewer efficient dairy cows are required to produce the same amount of milk
- Maintenance requirement is about 10 Mcal of net energy for lactation (NEL) per day
- A cow producing 45 kg of milk per day needs 4 times as much total energy
- The elite cow producing 90 kg/d needs 7 times as much total energy

INCREASE PRODUCTION OVER THE YEARS

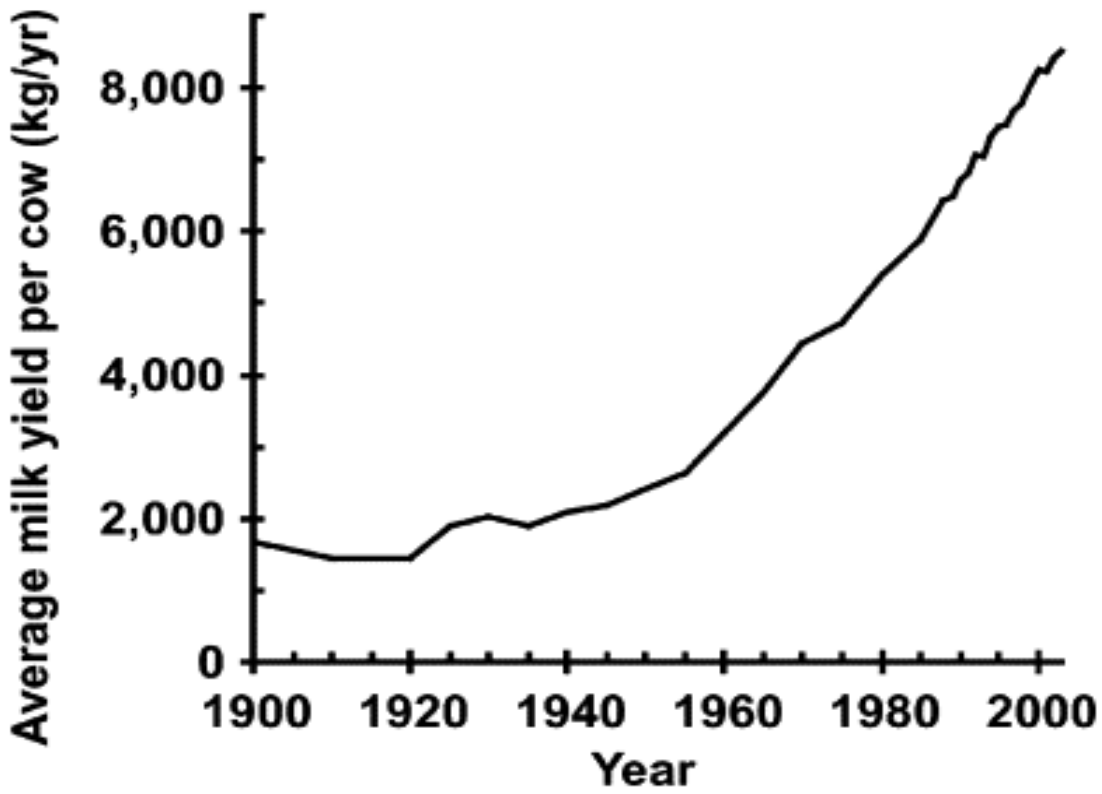


Figure 1. Milk production per cow in the United States over the past 100 yr.

NUTRIENT PARTITIONING

- **High levels of production is the result of intense genetic selection and continuously improvement of management practices**
- **Genetic improvement resulted in an animal which can transform raw material into food**
- **High producing dairy cows partition a greater portion of nutrient intake to support a higher milk yield**
- **Low producing cows direct extra nutrients to body fat rather than to milk**

MILK YIELD, DRY MATTER INTAKE AND BODY WEIGHT

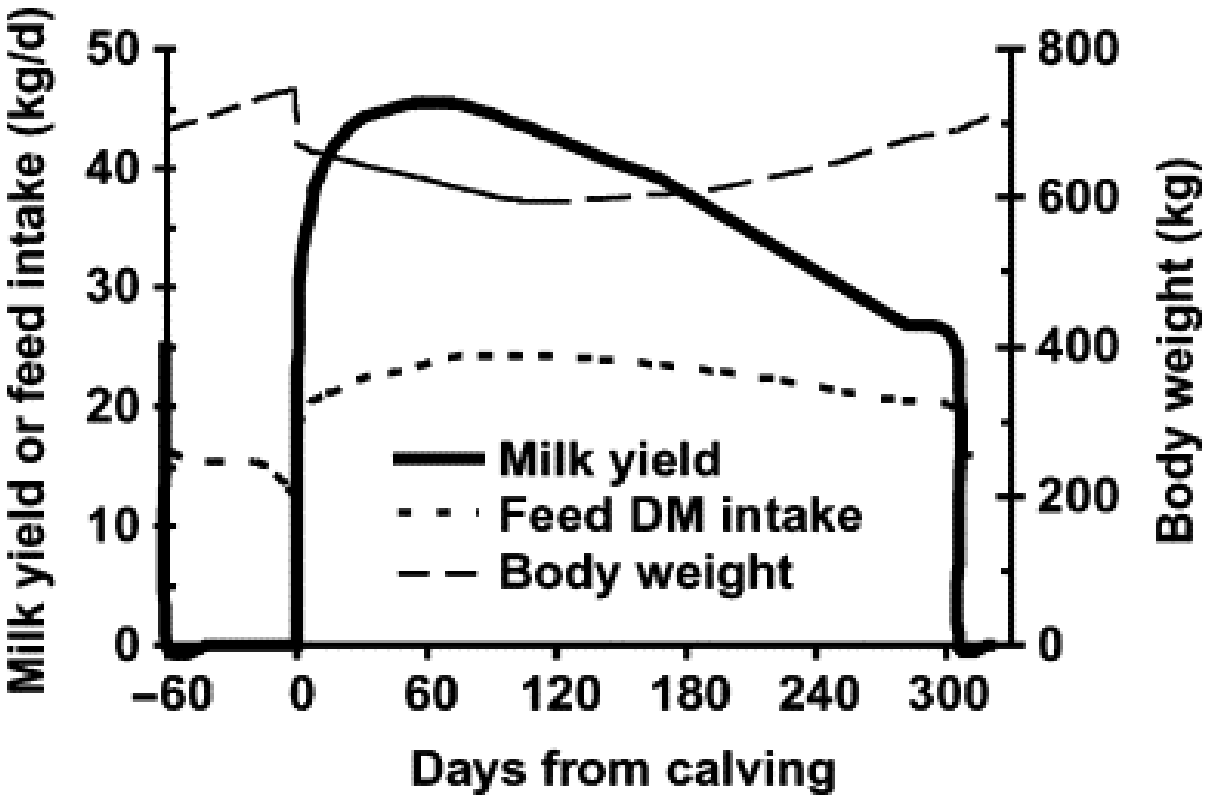
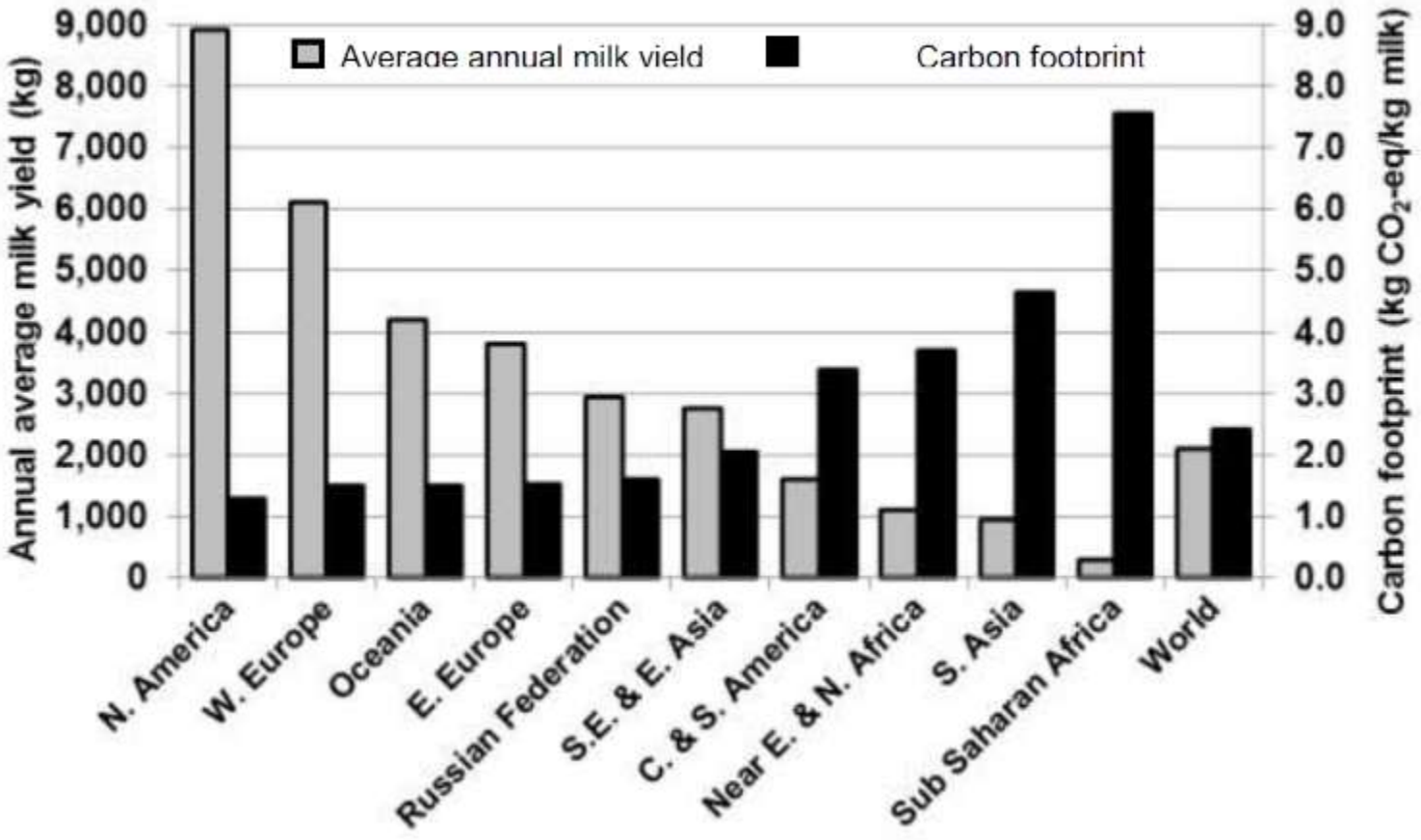


Figure 4. Milk yield, intake, and body weight curves for a typical mature Holstein cow throughout a lactation cycle.

AS PRODUCTION PER COW DECLINES, THE CARBON FOOTPRINT INCREASES

Figure 6. Annual milk yield per cow for four major dairy-producing regions. Adapted from Capper et al. (2009b)



PROTEIN EFFICIENCY NEEDS IMPROVEMENTS

- **Efficiency of conversion of feed protein to milk has not improved as fast as energy efficiency**
- **Cows are fed excess protein to ensure that the minimum requirements are met**
- **Nitrogen waste is an environmental concern**
- **Feeding excess phosphorous has no utility for milk production or fertility**

PROTEIN AND NITROGEN EFFICIENCY

- **Only 23% of N intake crude protein is recovered as milk protein**
- **Limitation of the current models used to balance dairy rations involves the use of high crude protein diets to compensate to avoid amino acid deficiencies**
- **Swine and poultry farmers use reduced protein diets supplemented with limiting amino acids to achieve N efficiencies of 40% or greater**

ADVANCES IN DAIRY CATTLE NUTRITION

- **Milk yield per cow continues to increase with a slower rate of increase in dry matter intake**
- **Efficiency of ruminal fermentation and digestibility of the dietary components are key factors in improving the efficiency of feed use**

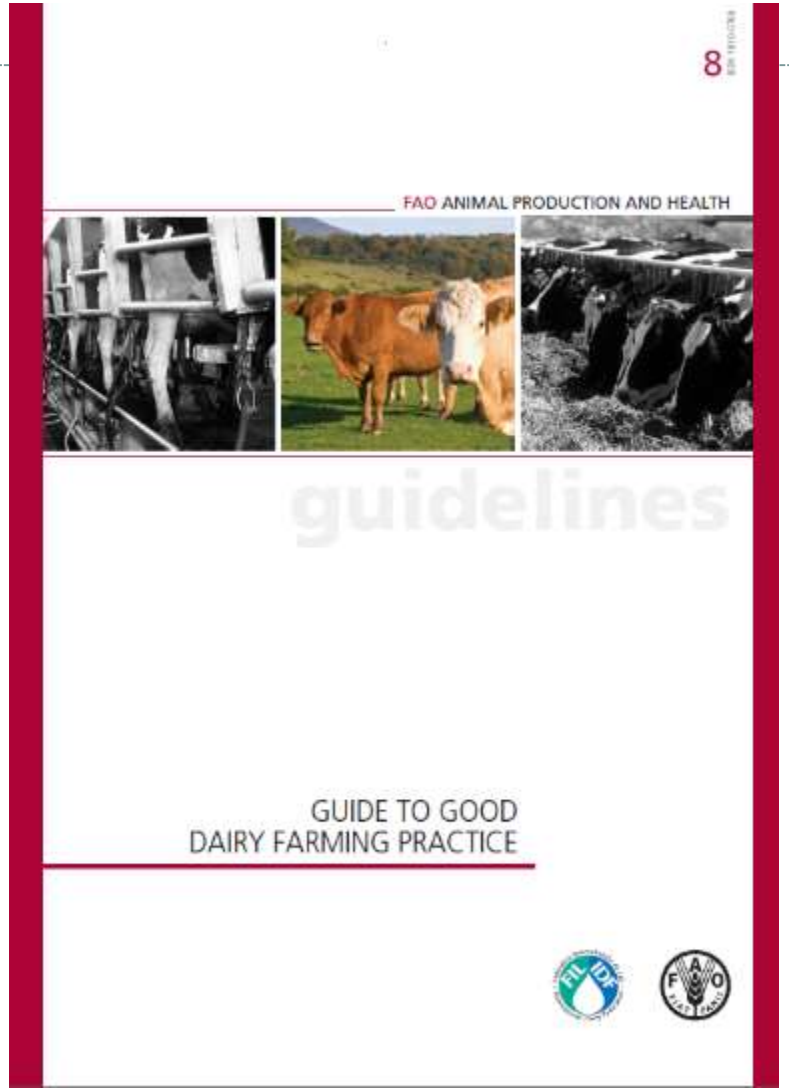
ADVANCES IN DAIRY CATTLE NUTRITION

- **Feeding by-products contributes valuable nutrients and provides protein, fiber, fat, and minerals to diets**
- **Major improvements have occurred in the use of protein, carbohydrates, and fats in diets**
- **Improvement are required in feeding practices to minimize the risk of metabolic diseases around parturition**

NEW GENOMIC TOOLS

- **Science is developing new genomic tools which will accelerate progress in understanding mechanisms controlling nutrient metabolism**
- **Improved selection methods resulting in improved feed efficiency and nutrient utilisation will further reduce environmental contamination by nitrogen and phosphorous**

2. IDF WORK ON GOOD FARMING PRACTICES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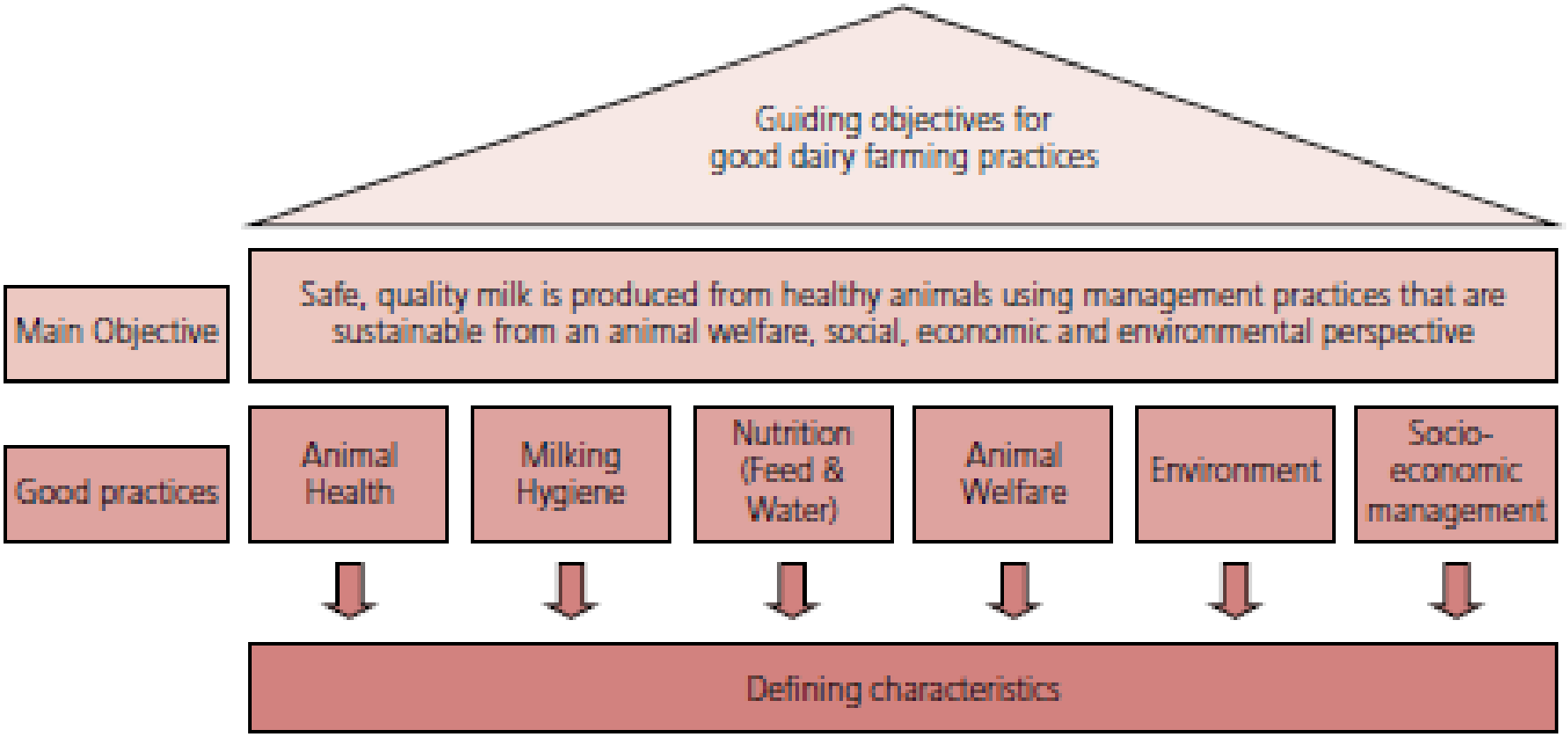
FAO ANIMAL PRODUCTION AND HEALTH
guidelines
GUIDE TO GOOD
DAIRY FARMING PRACTICE

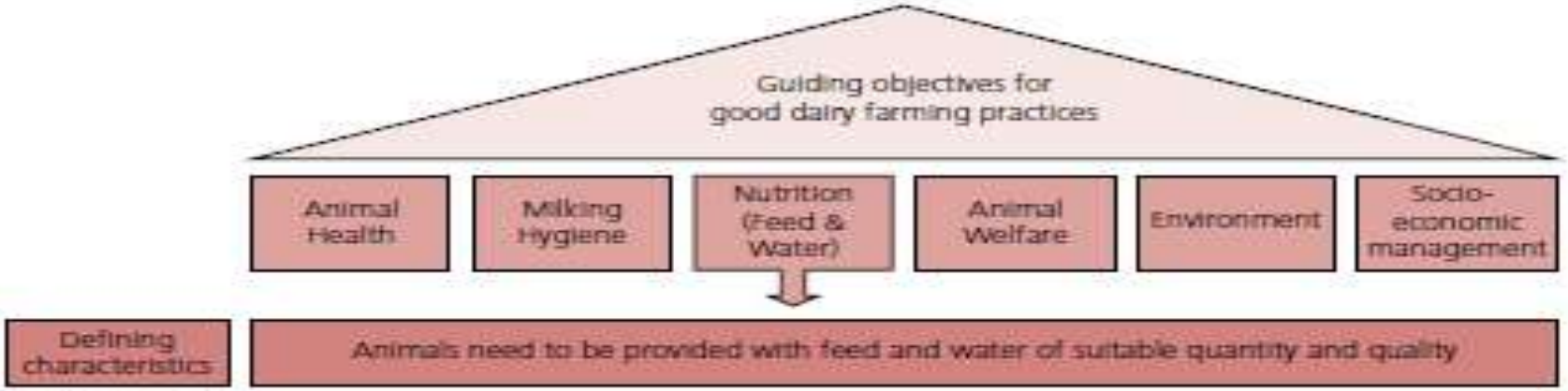

Guiding objectives for
good dairy farming practices
Main Objective
Safe, quality milk is produced from healthy animals using management practices that are sustainable from an animal welfare, social, economic and environmental perspective
Good practices
Animal Health
Milking Hygiene
Nutrition (Feed & Water)
Animal Welfare
Environment
Socio-economic management
Defining characteristics

3. NUTRITION (FEED AND WATER)

The quantity and quality of the feed and water provided largely determines the dairy animal's health and productivity, and the quality and safety of its milk.

This Fact Sheet describes good dairy farming practice for managing animal nutrition, both feeding and watering. The suggested practices are set out under the following headings:

- Secure feed and water supplies from sustainable sources.
- Ensure animal feed and water are of suitable quantity and quality.
- Control storage conditions of feed.
- Ensure the traceability of feedstuffs brought on to the farm.



3. NUTRITION (FEED AND WATER)

Animals need to be fed and watered with products of suitable quality and safety.

Good dairy farming practice	Examples of suggested measures to achieve good dairy farming practice	Objectives of these measures
3.1 Secure feed and water supplies from sustainable sources	3.1.1 Plan ahead to ensure that the herd's feed and water requirements are met 3.1.2 Implement sustainable nutrient, irrigation and pest management practices when growing feed 3.1.3 Source farm inputs from suppliers implementing sustainable systems	Provide the herd with adequate feed and water Limit the potential impact of dairy feed production on the environment
3.2. Ensure animal feed and water are of suitable quantity and quality	3.2.1 Ensure the nutritional needs of animals are met 3.2.2 Ensure the feed fed to dairy animals is fit for purpose and will not negatively impact the quality or safety of their milk or meat 3.2.3 Ensure suitable quality water is provided and the supply is regularly checked and maintained 3.2.4 Use different equipment for handling chemicals and feed stuffs 3.2.5 Ensure chemicals are used appropriately on pastures and forage crops and observe withholding periods 3.2.6 Only use approved chemicals for treatment of animal feeds or components of animal feeds and observe withholding periods	Keeping animals healthy with good quality feed Preserve water supplies and animal feed materials from chemical contamination Avoid chemical contamination due to farming practices
3.3. Control storage conditions of feed	3.3.1 Separate feeds intended for different species 3.3.2 Ensure appropriate storage conditions to avoid feed spoilage or contamination 3.3.3 Reject mouldy or sub-standard feed	Prevent microbiological or toxin contamination or unintended use of prohibited feed ingredients or feeds contaminated with chemical preparations Keeping animals healthy with good quality feed
3.4. Ensure the traceability of feedstuffs brought on to the farm	3.4.1 Where possible, source animal feed from suppliers having an approved quality assurance programme in place 3.4.2 Keep records of all feed or feed ingredients received on the farm	Quality of the feeds fed to dairy animals is assured by the supplier or farmer Prevent the use of feeds that are unsuitable for dairy animals

3. UTILIZATION OF IDF GUIDELINES BY DAIRY PRODUCERS

International Dairy Federation

- **IDF work influences the development of good management practices for milk production in numerous countries**
- **There are many examples of programs developed by dairy producers illustrating the influence of IDF and reflecting directions given by international organizations such as FAO, WHO and OIE**

VERIFIABLE PROCESSES

- **Producers all over the world are developing production standards that are verifiable**
- **Producers can demonstrate to the public and their consumers that safe milk production is done with healthy dairy cows which are well cared for while using production practices reducing the impact of producing milk on the environment**

Canadian Quality Milk On-Farm Food Safety Program

Best Management Practices
Critical Control Points
Standard Operating Procedures
Corrective Actions

Reference Manual

Canada

Dairy Farmers of Canada

June 2010

Canadian Quality Milk On-Farm Food Safety Program

Implementing the Canadian Quality Milk Program
Producer Self-Evaluation Questionnaire
Mandatory Records

Workbook

Canada

Dairy Farmers of Canada

June 2010

CANADIAN QUALITY MILK

- **Consumers of dairy products want to know that the food they eat is safe and wholesome**
- **Canadian Quality Milk Program (CQM), an on-farm food safety program design to help producers prevent food safety hazards and reduce risks on their farms**
- **It assures consumers that Canadian milk and meat are produced in a safe manner**
- **CQM program uses the HACCP approach**

Dairy producers monitor critical areas and implement best management practices

- **Effectively cool and store milk**
- **Closely monitor the use of medicines and chemicals to prevent residues in milk**
- **Sanitize their equipment and make sure their wash water is clean**
- **Safely transport their animals**

Table of Contents

NATIONAL FARM ANIMAL CARE COUNCIL
CONSEIL NATIONAL POUR LE SOIN DES ANIMAUX D'ÉLEVAGE

CODE OF PRACTICE

FOR THE CARE AND HANDLING OF

DAIRY CATTLE

Canada

IDF Guide for Good Animal Welfare in Dairy Production

Guide to Good Animal Welfare in Dairy Production

2008

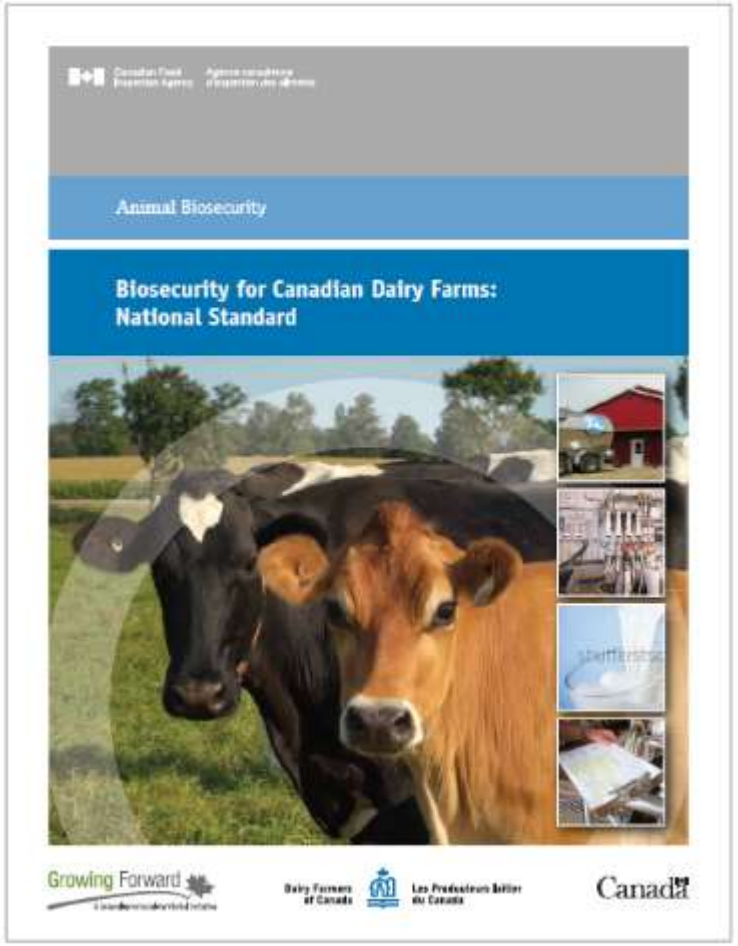
IDF Guide to Good Animal Welfare in Dairy Production

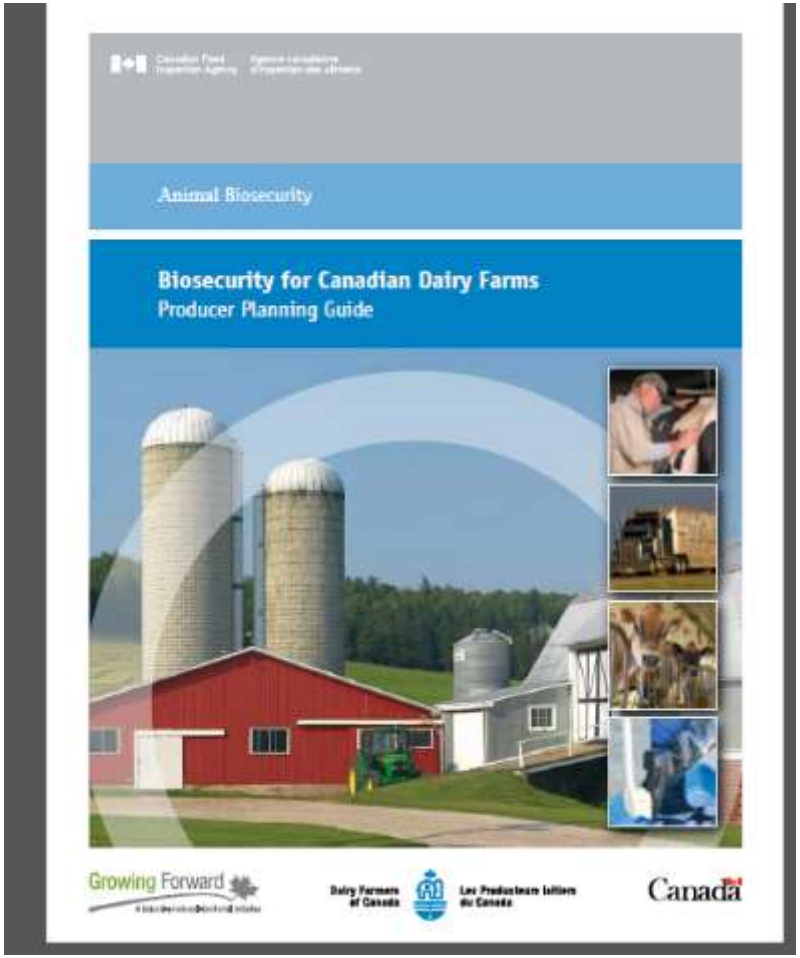
Contents

FIVE KEY AREAS ADDRESSED BY THE GUIDE

- **STOCKMANSHIP**
- **FEED AND WATER**
- **PHYSICAL ENVIRONMENT**
- **HUSBANDRY PRACTICES**
- **HEALTH MANAGEMENT**

Biosecurity





Global Dairy Agenda for Action

ENVIRONMENTAL AND SOCIO-ECONOMIC LIFE CYCLE ASSESSMENT

- **Evaluate the environmental and socioeconomic impacts of dairy production in Canada**
- **Identify potential areas of focus for further improvements of the dairy sector's sustainability**
- **Provide the framework and data to support comparison and benchmarking**

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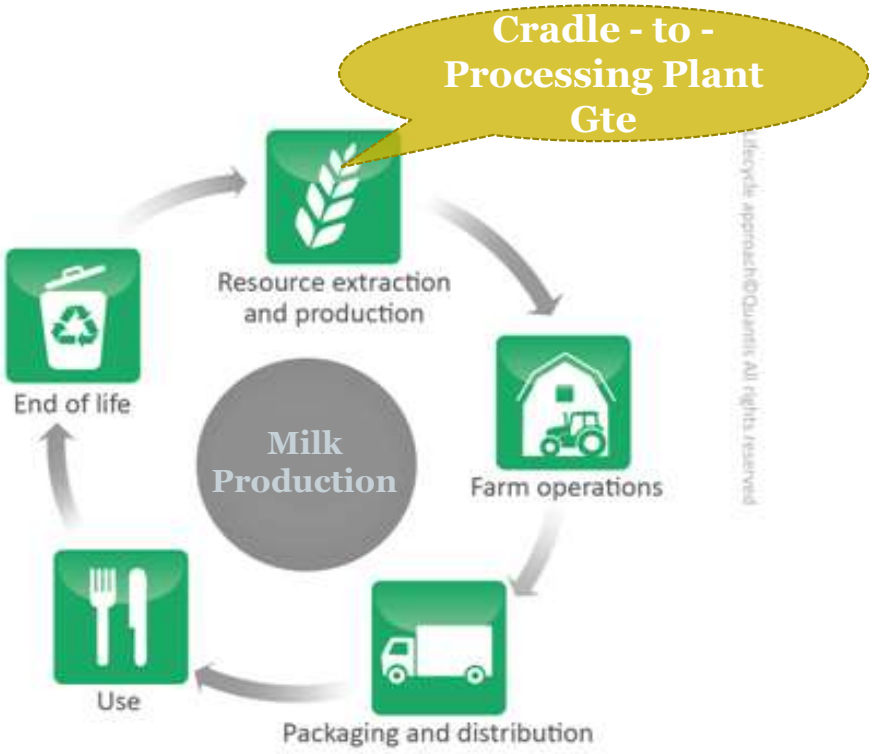
Life Cycle Assessment



Canadian Milk Environnemental Footprint

CARBON FOOTPRINT

1.01 kg CO_2e

- 1 kg : 6 km driven with a car
- Less than 2% of Canada's carbon footprint

1 kg of fat and protein corrected milk (FPCM)

- a 2 minute shower
- Less than 1 % of Canada's water consumption

WATER FOOTPRINT

20 L

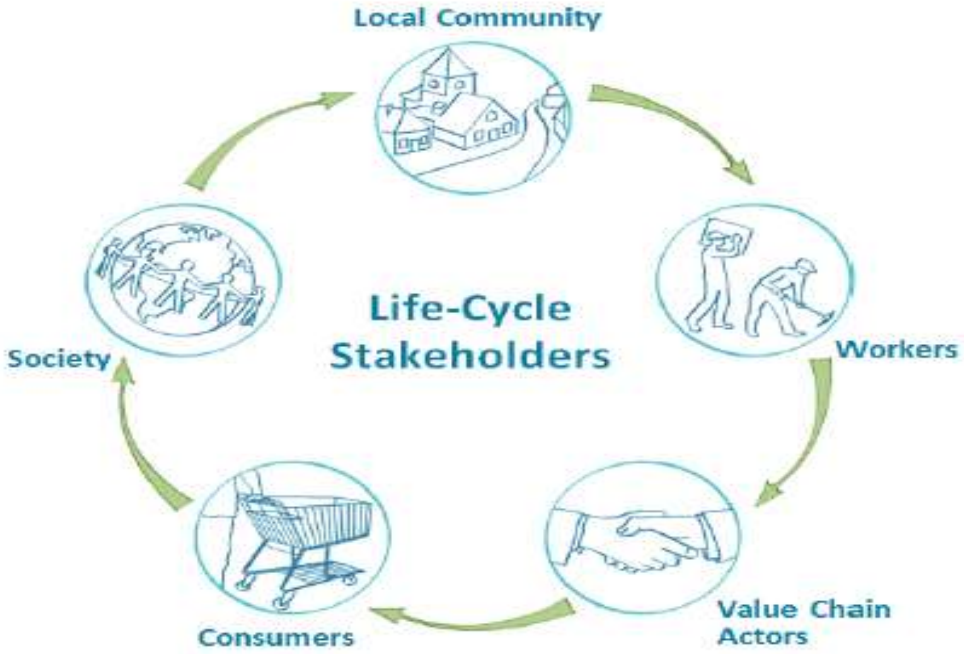
- 1 kg of milk : 0.5 kg of wheat
- 2% of Canada's agricultural land

1.7 m²

LAND USE

Socio-economic LCA

S-LCA : a tool for evaluating the Social Footprint



Impact categories

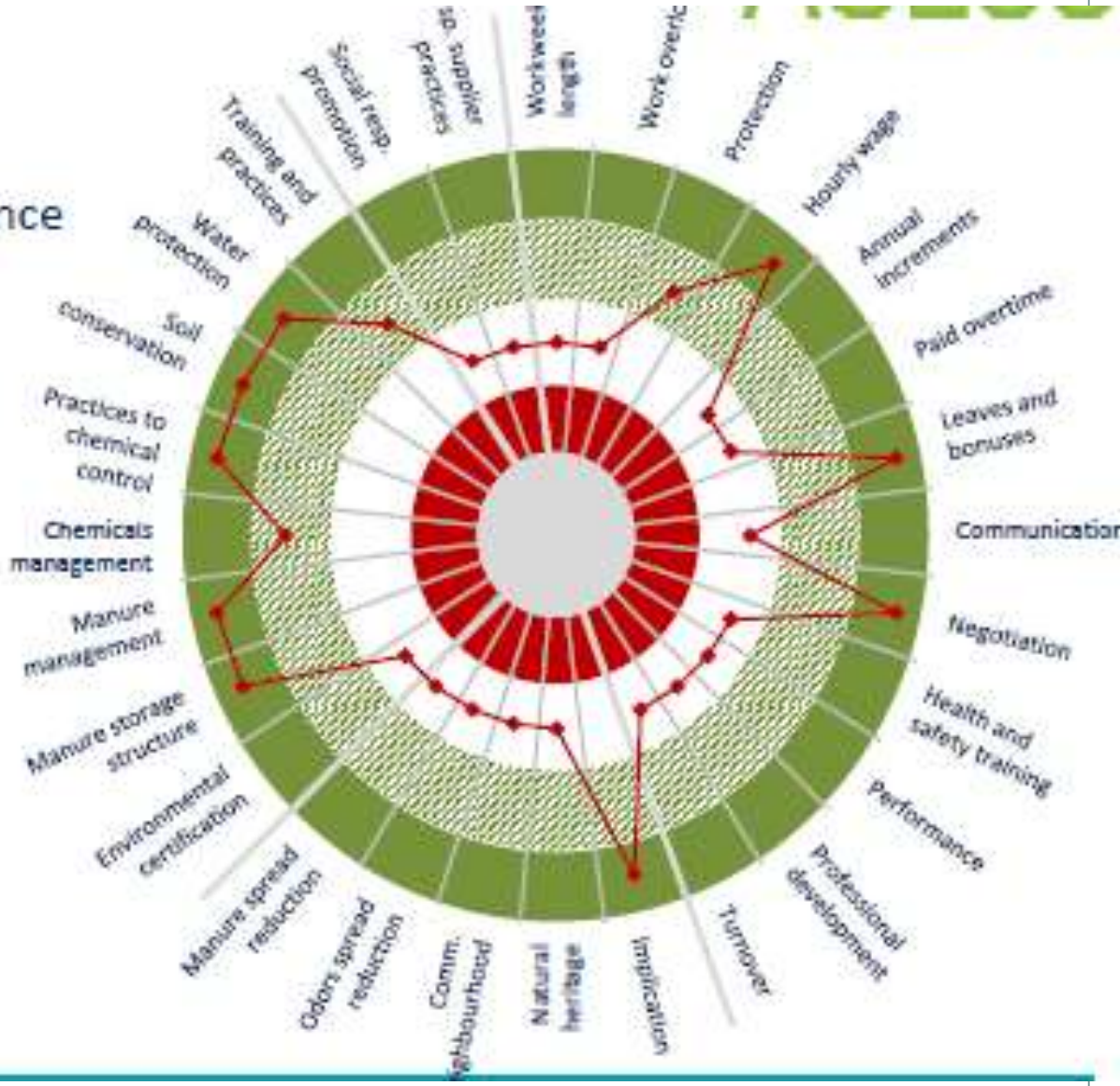
- Human Rights
- Working Conditions
- Socio-Economic Repercussions
- Health and Safety
- Governance
- Cultural Heritage

At each phase of the life cycle of a product, the social and socio-economic impacts on each category of stakeholders are identified and evaluated

The results

Socioeconomic performance of **Canadian dairy farmers**

- 4 groups of stakeholders
- 20 issues of concern and 30 indicators
- An average score



THE SOCIOECONOMIC LIFE CYCLE ASSESSMENT OF MILK

- **Identifies areas for improvement, such as minimizing odour propagation, which can affect surrounding areas**
- **Rated well for their social engagement through milk donations, school milk programs, sponsorship programs, and contributions to research.**
- **Positive initiatives are also in place for animal welfare and sustainable development**

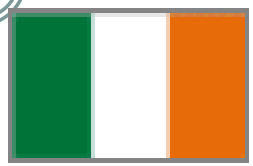
GENERAL INTERPRETATION

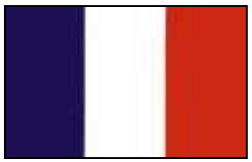
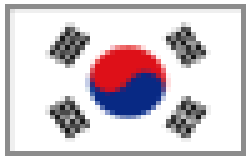
- **Dairy farmers are performing well in environmental and socioeconomic areas. Dairy farming in Canada has relatively low carbon, water and land footprints, comparing well to dairy farming in other countries**
- **The carbon, water and land use footprints demonstrate that farmers are adopting best management practices and produce milk more efficiently, reducing dairy farming's impact on the environment**

4. IDF TASK FORCE ON ANIMAL FEEDING

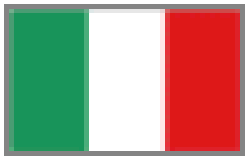
IDF TASK FORCE ON ANIMAL FEEDING SINCE 2010



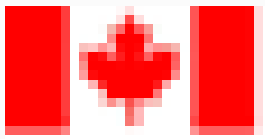







22 experts from 14 IDF member countries, including:

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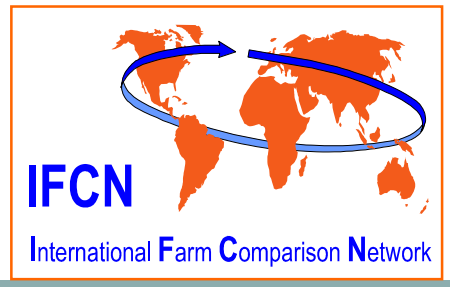

IDF TASK FORCE ON ANIMAL FEEDING

- **The newly formed IDF Task Force on Animal Feeding is documenting feeding systems used for dairy production around the world**

- **The intention is to use the information to advise producers about the management of resources required to produce milk under the numerous production conditions prevailing around the world**

Final objective

Development of a comprehensive IDF scientific-technical guide on animal feeding in the dairy sector like it was done for animal welfare

New guides are under development for animal health, hygiene and

IDF WORK PROGRAMME ON ANIMAL FEEDING

Inventory of analytical methods on milk composition is done

World mapping of animal feeding systems (joint project of IDF/FAO/IFCN) is near completion

Relating feeding systems to milk composition and a Guide to Good Animal Feeding in the Dairy Sector are the next steps

IDF TASK FORCE ON ANIMAL FEEDING

Final objective : Development of a comprehensive IDF scientific-technical monograph / guide on animal feeding in the dairy sector

In that context, IDF is interested in transferring knowledge to producers on dietary practices affecting the nutrient composition of milk to address particular human health and nutrition issues

Dairy Farmers of Canada

Les Producteurs laitiers du Canada