COG Practical Skills Handbooks

ORGANIC LIVESTOCK HANDBOOK

2nd Edition

Laura Telford and Anne Macey
with contributions by E. Ann Clark and Roger Henry

COG
Canadian Organic Growers
Cultivons Biologique Canada

FUNDING PROVIDED BY

Agriculture and Agri-Food Canada

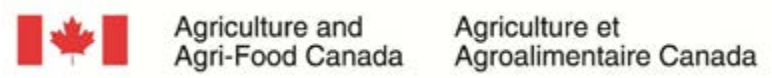
Organic Farming Research Foundation

The McLean Foundation

Homestead Organics

Wendy Lamb

Robin Guard



The
McLean
Foundation

Organic Livestock Handbook
second edition

Laura Telford and Anne Macey

with contributions by
E. Ann Clark and Roger Henry

A *COG* PRACTICAL SKILLS HANDBOOK

Canadian Organic Growers
Cultivons Biologique Canada

ORGANIC LIVESTOCK HANDBOOK

First published in 2000

CANADIAN ORGANIC GROWERS INC.

Suite 7519 - 1145 Carling Avenue · Ottawa
Ontario · K1Z 7K4 · Canada
Tel.: 613-216-0741 Fax: 613-236-0743
www.cog.ca office@cog.ca

PRODUCTION

DESIGN AND LAYOUT:

Laura Telford

COVER DESIGN:

Josh Gordon Creative

COVER PHOTOGRAPHS:

Laura Telford

PRODUCTION ASSISTANCE:

Sally Bernard, Danielle Chabassol, Renée Gendron, Katie MacDonnell, Grant McLaughlin, Stephanie Roberts, Julie Robertson

PHOTOGRAPHS:

Agricultural Research Service U.S. Department of Agriculture, Simon Berlinguet, Chris Boettcher, Danielle Chabassol, Inge Gerstgrasser, Sheila Hamilton, Matthew Holmes, Marilyn Kliever, Tanmayo Krupanszky, Serge Lefebvre, Dorothy Marshall, Laura Telford, Wayne Williment

PROJECT MANAGER:

Kristine Swaren, Blue Chicory Communications

PERMISSION TO USE PREVIOUSLY PUBLISHED MATERIAL:

Alabama Cooperative Extension System, The Canadian Dairy Information Centre, The Northeast Organic Farming Association of New York, Organic Agriculture Centre of Canada, Paula Rozzi, Linda Tikofsky, Stephen Tobin

Library and Archives Canada Cataloguing in Publication

Telford, Laura, 1960-, author
Organic livestock handbook / Laura Telford, Anne Macey; contributing authors, E. Ann Clark and Roger Henry. -- Second edition.

(COG practical skills handbook)
Includes bibliographical references.
ISBN 978-0-9808987-4-3 (pbk.)

1. Organic farming--Canada--Handbooks, manuals, etc.
2. Animal culture--Canada--Handbooks, manuals, etc.
3. Livestock--Ecology--Canada--Handbooks, manuals, etc. I. Macey, Anne, 1948-, author II. Clark, E. Ann, 1951, author III. Henry, Roger, 1957-, author IV. Canadian Organic Growers, issuing body V. Title. VI. Series: COG practical skills handbook

SF75.3.C3T44 2013 636'.08 C2013-908231-X

Printed and bound in Canada

Canadian Organic Growers
Cultivons biologique Canada

Since COG's inception in 1975, changes in the organic sector have been dramatic. A movement then struggling to be noticed is now a multi-billion dollar industry with widespread consumer recognition and national standards backed by federal regulations and international equivalency arrangements.

COG has a significant positive impact on organic growing in Canada through its policy and communications work, educational outreach to farmers and consumers, production statistics, farmer training, market development, and the grassroots work of its chapters.

COG is a federally registered charity (13014 0494 RR0001). Members and supporters are farmers, gardeners, processors, retailers, researchers and consumers who share a vision of a sustainable bioregionally-based organic food system.

COG's mission is to lead local and national communities towards sustainable organic stewardship of land, food and fibre while respecting nature, upholding social justice and protecting natural resources.

Organic Agriculture:

- Produces food using energy efficient methods.
- Increases soil organic matter and the diversity and number of living soil organisms.
- Improves water quality.
- Improves the health of soil, plants, animals, farm workers, and consumers.
- Increases farm financial viability by reducing dependence on external inputs and by giving farmers a fairer return for their products.

Join Canadian Organic Growers
www.cog.ca
Our Nature is Organic

Contents

ACKNOWLEDGMENTS

This book could not have been possible without the generous donation of time and information from people across Canada. We are especially grateful to the farmers who took the time to participate in our interviews and to provide us with their perspectives.

FARMERS INTERVIEWED

Chris Boettcher, Boettcher Family Farm, Ontario

Guylaine Buecheli and Sébastien Angers, les viandes Rheintal, Québec

Gaston Boulanger, Boulanger Family Farm, Manitoba

Janet and Bruce Duncan, Dunbrae Farm, Ontario

Arnold Egli, Arma Farms, Ontario

Keith Everts, Stillbridge Ranch, Alberta

Inge and Manfred Gerstgrasser, Ferme Gerstgrasser, Ontario

Hermann Grauer, Nature's Farm, Manitoba

Ron and Sheila Hamilton, Sunworks Farm, Alberta

Gordon and Marilyn Kliever, Manitoba

Serge Lefebvre, des Ferme Patriotes, Québec

Bryce Lobreau, Pristine Prairie Organics, Manitoba

Dorothy Marshall, Campbellton Farms, Alberta

Gerald Poechman, Poechman's Family Farm, Ontario

Felix Schellenberg, Chilcotin Harvest, British Columbia

John Wise, Wiseacres, Ontario

Karl Schibli, Schibli Organic Dairy Farm, Ontario

Conrad Zacharias, Zacland Dairy, Manitoba

THE AUTHORS

This second edition is based on the first edition of Canadian Organic Growers' *Organic Livestock Handbook*, but some of the sections, such as transitioning to organic, record keeping, bison, rabbits, bees and work horses have not been included in this edition. The other sections remain, but have been extensively rewritten to reflect new science and regulated Canadian Organic Standards.

We are thankful for the foundation provided by the original writers for the topics covered in this edition:

Jean Duval (internal parasites)
Julia Grace (dairy)
Sally Gray (poultry)
Jeff Johnston (homeopathy)
Rupert Jannasch (grazing management)
Susan Peach (pigs)

The Second Edition was written by:

DR. LAURA TELFORD has played a key role in the development of Canada's organic sector since 2003 when she became the director of Canadian Organic Growers. Laura has a Ph.D. in Psychology and has published numerous scientific articles. She now lives in rural Manitoba and works for Manitoba Agriculture, Food and Rural Development as an organic marketing specialist where she enjoys working directly with organic producers to build their farm businesses.

ANNE MACEY is the editor of the first edition of this Handbook. She has contributed to other COG publications, including the *Organic Field Crop Handbook, A Guide to Understanding the Canadian Organic Standards*, and *Living with Worms in Organic Sheep Production*. Anne is a former organic livestock farmer, member of the Animal Welfare Task Force and Chair of the Livestock Working Group of the Canadian General Standards Board's Organic Technical Committee. Anne lives on Salt Spring Island, British Columbia.

DR. E. ANN CLARK retired in 2011 from Plant Agriculture at the University of Guelph to join the farming community in Warkworth, ON. Her new career as a grass-farmer builds on academic credentials in pasture and grazing management and organic agriculture. On her 100 acre grass farm, she is custom grazing a herd of Red Angus cow/calf pairs, soon to be followed by other selected enterprises intended to explore the feasibility of post-oil farming.

ROGER HENRY has worked in most facets of agriculture for more than 30 years - usually in an extension role. He has a background in composting, waste management, crop rotation, soil conservation, organic production systems and alternative solutions to current issues. Roger has bred purebred Holstein dairy cattle and Border Leister sheep and has set up and managed rotational grazing systems for sheep, beef and dairy. Currently, he is a soil and water technician with Agriculture and Agri-Food Canada.

ABOUT THIS HANDBOOK

This handbook is intended as a guide for livestock producers who are looking for information on organic management practices. It will be useful for both experienced livestock producers and those considering introducing livestock to their farms, and for both organic and non-organic operations. It is not intended to be a comprehensive book on basic livestock management, nor does it include information on organic cropping practices as these can be found in the COG's *Organic Field Crop Handbook*.

The first edition of this handbook was published in 2000 and was loosely based on a survey and a series of interviews that Canadian Organic Growers conducted in 1998 with organic livestock producers in Canada and the northern United States. In this edition, we have done an extensive rewrite to incorporate the latest science and knowledge related to organic livestock production systems and have conducted in-depth interviews with some of Canada's leading organic livestock producers.

At the time of the first edition, Canada was operating under a voluntary organic standard, and different provinces and certifiers were using different standards. With passage of the federal Organic Products Regulations (OPR) in 2009, this has all changed.

Throughout the book, we reference the Canadian Organic Standards, hereafter referred to as Organic Standards. In Canada, Organic Standards consist of two documents: The General Principles and Management Standards (CAN/CGSB-32.310) and the Permitted Substances List (CAN/CGSB-32.311). These documents are referenced within the OPR and are thus a legal national standard of Canada. The Canadian Organic Standards are available electronically on the Canadian General Standards Board website.[1] Canada has signed equivalency agreements with the United States (with critical variances), the European Union, Switzerland, and Costa Rica thereby harmonizing standards with its major trading partners. Equivalency does not mean that other standards are identical; only that their intent is similar.

This handbook is divided into three sections. Section one covers the underlying principles on which organic management practices are based. Section two provides an introduction to various management tools that have particular relevance in an organic production system. Section three provides specific examples and case studies for the major types of organic livestock operations that you will find in North America. Suggestions for further reading are provided at the end of each section and references are provided at the end of the book.

1 GENERAL PRINCIPLES

General Principles of Organic Production

1. Protect the environment, minimize soil degradation and erosion, decrease pollution, optimize biological productivity and promote a sound state of health.
2. Maintain long-term soil fertility by optimizing conditions for biological activity within the soil.
3. Maintain biological diversity within the system.
4. Recycle materials and resources to the greatest extent possible within the enterprise.
5. Provide attentive care that promotes the health and meets the behavioural needs of livestock.
6. Prepare organic products, emphasizing careful processing, and handling methods in order to maintain the organic integrity and vital qualities of the products at all stages of production.
7. Rely on renewable resources in locally organized agricultural systems.

Introduction II. CAN/CGSB-32.310-2006, amended June 2011

INTRODUCTION

The goals of organic livestock management are to integrate livestock into the whole farm ecosystem and to optimize animal health and welfare while maintaining farm sustainability and profitability.

Organic agriculture is a holistic system of production designed to optimize the productivity, and fitness of diverse communities within the agroecosystem, including soil organisms, plants, livestock and people. The principal goal of organic agriculture is to develop productive enterprises that are sustainable and harmonious with the environment. - Introduction I. CAN/CGSB-32.310-2006, amended June 2011

This handbook will help producers to meet the fifth principle and to integrate livestock into the whole farm system.

ROLE OF LIVESTOCK ON AN ORGANIC FARM

Although livestock are usually the last part of the farm to be certified organic, they are often central to the farm and can contribute to its success. On any farm, livestock and livestock products can be a major source of income and help to balance cash flow over the year. On organic farms, livestock do more than that; they make the system work.

Livestock play a key role in nutrient cycling, a process in which nutrients are returned to the soil through manure and compost. This allows nutrients to be moved around the farm to where they are needed most. Amending soils with animal manures can alter the structure of the microbial community and increase microbial biomass and enzymatic activity Incorporation of livestock feed crops, such as alfalfa or grasses,

Bryce Lobreau views his organic livestock as a type of insurance; if he has a poor crop, he can feed it to the cattle and still get value from the crop. Having crops and cattle gives him more management flexibility than if he had only crops or livestock.

"If our winter wheat makes milling quality, we'll sell it and buy feed winter wheat back. Same with rye, if it makes milling [grade] and some other farmer doesn't make milling [grade], then we'll sell ours and buy his."

BRYCE LOBREAU Manitoba organic beef producer

Tanmayo Krupanszky

Child experiences organic livestock farming on farm tour to the Schibli Organic Dairy Farm in Ontario

into crop rotations helps build soil organic matter and increases cropping options, adding diversity to the agroecosystem.

Livestock and livestock feed can also play a role in weed control - both directly and indirectly. Feed crops can be used to suppress and control weeds. Animals can be used to graze out weeds on crops or pastures. Some farmers also use livestock to prepare the ground for cropping. For instance, pigs can 'plow' rough or new land before planting vegetables or grains, reducing tillage and weed control costs. They can also be used to facilitate the composting process. Outdoor poultry systems can increase soil fertility for the crops that follow and can help reduce fly larvae on cattle pasture. Livestock can be fed weather–damaged crops or used to clean up fallen fruit to reduce the incidence of disease in orchards.

Producers can take land out of crop production for pasture livestock systems - a valuable tool for interrupting insect and disease cycles. Livestock add value to grasslands and promote the use of green manures. Livestock can also reduce the financial risks of farming by converting lower quality grain crops and seed screenings into profit.

Livestock contribute to the overall sustainability of the farm by making use of marginal land and by making use of land not suited to crop production. There are thousands of acres of land in North America that, without livestock, would not be producing food for people. With a growing population and decreasing land base, there is increasing urgency to ensure that landscapes are used profitably.

When livestock enterprises are managed so that they harmonize with the natural environment, solutions to some of the difficult ethical and environmental questions surrounding livestock production begin to emerge.

There is a lot of wisdom in nature and a definite purpose in its design. It is up to us to work with nature, not against it. What is the purpose of the odd weed in a crop of oats or a low intestinal worm presence in a flock of sheep? If anything it keeps us farmers on our toes and we continue observing ecological relationships and improving our husbandry skills! Farming in this manner is very rewarding. After all, as farmers, providing ecologically produced, quality food for our fellow human beings should be our ultimate goal.

CHRIS BOETTCHER Ontario organic sheep farmer

Lambs play on compost pile at Campbellton Farm in Alberta

Appropriate stocking rates, humane housing and management systems address many of the legitimate public concerns about animal welfare on livestock operations. Energy inputs relative to outputs are reduced in husbandry systems that use no synthetic fertilizers and rely largely on pasture, forage crops and farm-produced feed. Manure is considered a key input and is stored, composted and spread under controlled conditions, minimizing its potential to pollute the water and jeopardize food safety.

CONTRIBUTION TO ENVIRONMENTAL PROTECTION

Agriculture in general has significant environmental impact. As we alter landscapes to increase food production, we degrade wildlife habitats and introduce substances that harm wildlife and soil organisms and pollute the water. While agriculture cannot completely avoid these detrimental environmental impacts, farmers can play a key role in reducing environmental harm. Organic methods do not have to compromise productivity. Some of the environmental advantages of organic farming systems are outlined below.

Organic farming methods preserve soil microbial communities, enhance soil diversity and increase soil organic matter. The Rodale Institute Farming Systems Trial compared organic animal, organic legume, and conventional production systems matched for climate and soil variables over 22 years. Soil carbon, which is highly correlated with soil organic matter, was measured in 1981 and again in 2002. Over two decades, soil carbon increased 28%, 15%, and 9% in the organic animal, organic legume, and conventional systems, respectively.[2] The authors speculated that the large amount of soil organic matter present in the organic systems helped to protect the organic plots from several

droughts that occurred during this time frame. Organic matter improves water infiltration and decreases soil loss through erosion, and helps to cycle and store nitrogen within the soil.

Soils that are rich in organic matter also contain high levels of biodiversity.[2,3] A European investigation by Hole et al.[4] examined 76 studies comparing conventional and organic management systems and found evidence for elevated bacterial and fungal abundance and activity under organic management. In fact, microbial biomass has been reported to be between 10 and 26% higher under organic management conditions.[5] Populations of small insects and earthworms are also twice as high in organic versus conventional agricultural systems.[6] Although there are considerably fewer studies that have examined populations of vertebrates under different production systems, the European analysis[4] did find evidence of increased abundance of avian species on organic farms, as well as increased foraging activity by bats and small mammals.

Recently, livestock production systems, particularly cattle, have come under intense criticism for their role in climate change; in part because animal protein requires more energy than plant protein, but also because cattle burp (and fart) methane gas into the atmosphere as a byproduct of their unique microorganism-assisted digestive systems that allow them to digest grass. Methane is considered to be a particularly harmful greenhouse gas with 25 times the atmospheric warming potential of $C0_2$. A European study concluded that nearly half of all food system greenhouse gas emissions in the European Union are associated with meat and dairy production.[7] As a result, some environmental groups have urged consumers to take livestock out of their diets, or at the very least, to make the switch to more environmentally benign species such as chicken and pork since these animals are more efficient than ruminants at converting intensive feed into protein.

However, according to German veterinarian Anita Idel, under the right conditions, ruminants such as cattle can be environmentalists.[8] Idel argues that this only becomes apparent when one considers the full impact of cattle production on carbon and nitrogen cycles. She believes it is short sighted to limit discussion of the role of livestock in global warming to methane when both methane and nitrous oxide (N_20) are key agricultural green house gases, accounting for 47% and 58% of total global anthropogenic emissions, respectively. According to scientists, N_20 has an even greater impact on climate than methane with 296 times the climate warming potential of $C0_2$.

Brown Swiss heifers fertilize pastures on the Shibli Organic Dairy Farm in Ontario. Once they start producing, they will convert grass and legumes into protein-rich milk

Modern intensive livestock production systems are based on grains grown under energy-intensive, fertilizer-rich and often chemically dependent regimes. Synthetic fertilizers are a key source of agricultural N_20. Since forty percent of the grain in the global harvest is fed to livestock (this percentage is as high as 60% in North America and as low as 5% in India), N_20 emissions must be considered in a full cost accounting of the role of livestock in climate change.

However, not all livestock production systems have the same environmental impact. Livestock that are raised and finished on pasture use less energy. Pastures that incorporate legumes can fix their own atmospheric nitrogen to produce nourishing forages, which in turn are converted to protein in the ruminant digestive system.

By adding value to grasslands, ruminant livestock help to keep grasslands, steppe lands and grazing areas intact. Globally, these grassy areas account for some 40% of the land base (52.5 million km^2), and play a critical role in protecting the planet's soil assets and biological diversity, while acting as terrestrial carbon sinks. Carbon is stored both on the surface of grasslands in the form of plant matter as well as in the soil. In fact, a third of the globe's carbon supply is stored in grassland soils.

Sustainably managed grazing promotes biological activity (photosynthesis) and root development. Since topsoil consists of more than 50% carbon, today's roots are tomorrow's topsoil. Root formation in perennial grass systems depends on the rhythm of grazing. During breaks from grazing, vegetation, with the help of nourishing manure and urine, regenerates and root masses grow. In the sections that follow, you will learn how the best graziers optimize animal health while fostering biomass regeneration and soil building.

The argument has been made that planting feed grains for animals rather than for people can strain a tight global food system. The counterargument is that animals that rely on grazing systems often use marginal land that cannot support grain and other annual crop production, and thus this land use does not compete directly with humans for food.

In 2011, Derek Lynch, Rod MacRae and Ralph Martin[9] published a comprehensive review of 130 published studies comparing energy use and the global warming potential of organic and mainstream agricultural production systems. They concluded that the evidence strongly favours organic farming with respect to whole-farm energy use and energy efficiency both on a per hectare and per farm product basis, with the possible exception of the fruit and poultry sectors. They pointed out that the adoption of organic methods would improve on-farm energy use by up to 20% and reduce food-chain energy use by as much as 7%.

Lynch and his colleagues note that while livestock systems do contribute to global warming, eliminating livestock is not a viable option because of the important ecological role that livestock play in the whole-farm system. Instead, they suggest we focus on optimizing both human and animal feeding systems by maximizing ruminant feeding on forages/grass and monogastric feeding on residues and the seeds of non-dominant crops. North Americans could do a much better job of feeding crop residues and wastes such as oil seed crush, processing residues and lower quality feed grade crops. Another option for increasing energy efficiency in livestock production is to optimize species selection. For instance, Lynch et al. point out that pigs, because of their lower basal metabolic rates, require 40% less energy than beef cattle.

The review by Lynch et al.[9] also concluded that the increased tillage favoured on organic farms was not a significant contributor to on-farm energy use; in other words, organic farmers are not "diesel farmers". They also found no consistent evidence to support the view that tillage reduces soil carbon in organic systems. In fact, the converse is usually true; green manures and forages increase soil carbon, regardless of added tillage. Organic practices such as composting

Livestock Living Conditions

The operator of an organic livestock operation shall establish and maintain animal living-conditions that accommodate the health and natural behaviour of all animals, including

a. access to the outdoors, shade, shelter, rotational pasture, exercise areas, fresh air and natural daylight...;

b. access to fresh water and high-quality feed...;

c. sufficient space and freedom to lie down in full lateral recumbency, stand up, stretch their limbs and turn freely...;

d. space allowances appropriate to local conditions...

e. production techniques that foster the long-term health of livestock...;

f. air quality including moisture and dust content shall not prejudice the well-being of the herd/flock;

g. appropriate resting and bedding areas in accordance with the needs of the animal;

h. livestock housing with non-slip floors...

i. the management of runs and the grazing management of pasture shall be designed to avoid soil degradation, long term damage to vegetation or water contamination.

6.8.1 CAN/CGSB-32.310-2006, amended June 2011

manure can also significantly reduce greenhouse gas emissions as compared to stockpiled manure slurries, largely because of lower methane emissions.[10]

CONTRIBUTION TO ANIMAL WELFARE

Organic Standards include specific animal welfare measures, but many people, including organic farmers, believe that they should go further. Organic Standards are by their nature dynamic and they are constantly improving, but keep in mind that they are designed to set the lower limit of acceptable methods for certification, not to prescribe best practices. It makes sense for farmers to set the bar higher for their own operations to ensure the highest animal welfare standards possible and to continually strive to improve practices. This will pay off in terms of improved animal health, higher yields, better tasting products, and improved trust and confidence from consumers who support your farm, as well as for your own sense of self-worth.

In 2005, the Organic Agriculture Centre of Canada established the Animal Welfare Task Force to disseminate the latest information and thinking on animal welfare to farmers and others in the organic industry with the aspiration of raising the bar for animal welfare in organic agriculture. You will find references to this work throughout this book.

In the next sections, we discuss some of the general features that will improve animal welfare on your farm and that apply to all types of livestock. In section 3, you'll learn about specific measures that you can adopt to improve welfare standards for particular livestock types.

Housing design considerations:

- *Routine chaining is not acceptable.*
- *Assure a source of straw or other bedding material that meets Organic Standards.*
- *Ensure easy access for manure removal.*
- *Ensure adequate ventilation/air circulation.*
- *Design flooring that does not cause harm or distress to the animals. Slatted floors are not considered appropriate, although they might be allowed for a portion of the floor.*
- *Ensure access to pasture during the grazing season and to outdoor exercise areas at other times.*
- *Keep livestock in reasonably stable groups.*
- *House livestock within sight or sound of their own species.*

Shelter & housing

A general principle of organic production is that livestock living conditions must be conducive to the animal's health and natural behaviour. When kept inside or confined in pens, even if only for short periods of time, animals must have adequate space to lie down, groom normally, turn around, stretch their limbs and engage in normal social behaviours. Minimum space requirements are set out in Organic Standards and they should be used as a starting point. However, with experience and by paying close attention to livestock behaviour, you can increase space or decrease stocking rates if needed. Crowding causes stress and makes livestock more susceptible to health problems. Examples of housing systems that meet these requirements are provided in section 3.

Access to the outdoors is a key tenet of organic production systems. Ruminants are required to be on pasture during the grazing season and all livestock, including pigs and poultry, must have access to outdoor runs throughout the year. Organic Standards do provide exceptions based on life cycle stage, weather and health. Other factors may also impact a farmer's ability to provide access to outdoors, including threats to biosecurity. Occasionally, as in the case of increased risk of disease transmission from wild animals, provincial or marketing board

authorities will require animals to be kept indoors and these laws take precedence over Organic Standards.

When animals are kept outdoors, they need some protection from the elements in winter and summer. This can be provided by trees, windbreaks or by specially constructed portable shelters. Even in harsh winters, large animals can remain outside if they have protection from cold winds and extreme conditions. Shade in summer is equally important. When temperatures rise above 26° C (80° F) and the humidity is more than 50-70%, most species can suffer heat stress, but pigs and young livestock are the most sensitive. Plenty of clean, cool drinking water will help the animals cope. Fluid intake can increase by up to 30% on hot days. Livestock safety is another factor to consider. For example, free-range chickens may be vulnerable to predators and should have access to a protected area.

Stocking rates

In section 3, you'll find detailed *maximum* stocking densities as required by Organic Standards for each species. Actual stocking rates will vary from farm to farm as a function of the carrying capacity of the land, which in turn is determined by the amount of forage in a pasture and the area available to spread manure. Overstocking can lead to a buildup of parasites. Observe your livestock and try to determine whether the stocking rate is having a negative impact on their health.

Think in terms of optimal, rather than maximum, numbers. Productivity on a per unit basis can be higher in extensive systems than in intensive systems if you compare the total cost of production in each system. Intensive systems rely heavily on feed grains so you need to look at the cost of labour to produce the grains as well as equipment costs and/or the cost of purchasing grains. Veterinary health costs tend to be lower in extensive systems.

Reducing stress

"Stress" is a broad term used to describe the negative impacts of husbandry practices on livestock. Potential sources of stress include non-optimal stocking rates, poor nutrition, temperature extremes, parasites, lack of shade and pain during handling or medical procedures. Stress can also occur when animals are unable to pursue natural behaviours. Stress results in disease and in behaviour that can make livestock difficult to handle. Ultimately, it results in economic losses due to weight loss, decline in meat quality, higher veterinary bills and potentially even increases in livestock mortality.

We went towards organic because we were so fed up with all the problems. The idea was to get rid of the cows and grow crops to make a living. But when we started transitioning to organic, the cows got so much better, and we started to like it all over again. I went to farm tours and spoke to dairy farmers who had switched to organic. They all said the same things. When you stop using these crutches, you will find a new happiness in having cows. As a conventional farmer, when you walk from the house to the barn, you think to yourself what problems will we have today? That wears you out.

Karl Schibli *Ontario organic dairy farmer*

Organic agriculture improves animal welfare by reducing stress wherever possible, such as during transportation or routine health care or identification procedures. Many standard practices in mainstream agriculture such as debeaking and tail docking are not allowed in organic production. Other practices such as dehorning, castration and tail removal in lambs are allowed, but only when appropriate anaesthetic and sanitary procedures are followed.

According to Jane Morrigan, a Trustee of the Animal Welfare Foundation of Canada, farmers should consider the calmness of the breed when purchasing breeding stock as some breeds are more easily stressed than others. Choosing hornless breeds of cattle such as Polled Angus and Polled Herefords will reduce the risk of injury.

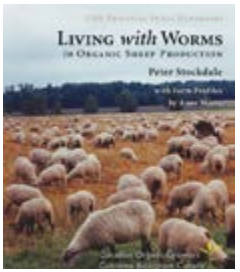
Farmers can minimize stress by habituating livestock to humans and to different situations. For instance, animals that are not afraid of people and vehicles will be calmer when boarding transport vehicles.

Livestock managers should also experiment with methods that reduce the stress of weaning. One approach is to give young animals some physical proximity to their dams using fencing. The visual and auditory contact can reduce the stress of both the dam and the calf. [11]

Farmers should also take into account the natural behaviour of each species and provide appropriate living conditions and stimulation to reduce boredom, which, if extreme, can be a form of stress. Reducing flies, dust, fumes and noise will also contribute to a stress free environment.

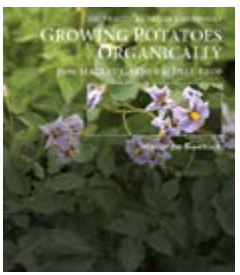
During transport, animals should be housed in familiar groups and not overcrowded. Provide adequate bedding and

COG Practical Skills Handbooks



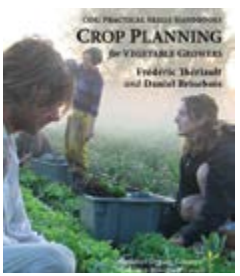
Living *with* worms *in* organic sheep production

Written by Peter Stockdale, a sheep farmer and retired parasitologist, this books guides you through raising sheep without chemicals.



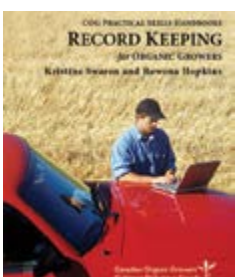
Growing potatoes organically
***from* market garden *to* field crop**

Farmer Maureen Bostock addresses one of the most heavily pesticide-dependent field crops - potatoes.



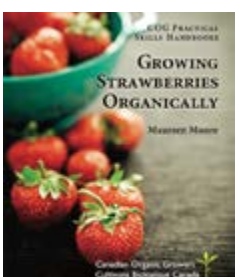
Crop planning
***for* organic vegetable growers**

Authors Frédéric Thériault and Daniel Brisebois share their 11-step process for making money from a market garden (with templates and real life success stories).



Record keeping
***for* organic growers**

Making less work of paperwork is the mission of authors Kristine Swaren and Rowena Hopkins. Filled with examples, templates and practical advice.



Growing strawberries organically

Author Maureen Moore takes you through the process of growing strawberries without chemicals - from preparing the seed bed to harvest.

COG Practical Skills Handbooks

Organic Livestock Handbook

The 2nd edition of the Canadian Organic Grower's classic Organic Livestock Handbook has been fully revised to reflect the Canadian Organic Standards and latest research on organic livestock production. You will find details on production methods as well as tips and techniques for transitioning to organic. This edition also contains profiles of Canada's most successful organic livestock operations and interviews with real-world advice from experienced farmers. Whether you aspire to go organic or you're already an organic farmer, you'll want to have this comprehensive guide to organic livestock production at your side.

Canadian Organic Growers
Cultivons Biologique Canada
1145 Carling Ave., Suite 7519
Ottawa, Ontario
K1Z 7K4 Canada
1-888-375-7383
www.cog.ca

ISBN 978-0-9808987-4-3
9 780980 898743