

# 优质牛奶生产手册

## Manual on High Quality Milk Production

韩 特 博 士 著

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Dr. Terry D. Hunt



中国农业大学出版社



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中/加动物保健发起项目

China/Canada Animal Health Initiative

中加奶牛育种综合项目

Integrated Dairy Cattle Breeding Project

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Minister responsible for the Canadian Interna-  
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# 序 言

## Preface

健康、营养良好、舒适的母牛能生产更多更高质量的牛奶。

Healthy, well-fed, and comfortable cows produce more milk of a better quality.

编辑这本手册的目的就是为了给奶牛群疾病防治和群体保健问题提供参考和基本出发点。为消费者(客户)提供安全健康的牛奶,是牛奶生产者、技术支持队伍(兽医、营养学家、牧场主及牧场工人)、牛奶运输人员、乳制品加工厂及食品零售商的责任。优质牛奶是由健康的奶牛在严格的卫生条件下生产出来的。对一个以消费者为主导的社会来说,食品及食品安全问题是个非常重要的问题。

This manual is to serve as a reference and starting point for issues dealing with disease prevention and herd health in the dairy herd. It is the responsibility of the dairy producer, the support team (veterinarians, nutritionists, farm managers and workers), milk haulers, dairy processors and food retailers to ensure that the consumer (client) receives safe wholesome milk. What we eat and food safety issues are very important in our consumer-oriented society.

在加拿大,绝大多数兽医<sup>①</sup>受雇于私营兽医诊所或拥有自己的私营

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① 加拿大的兽医必须经过最少6年的大学教育,一般在申请到兽医学院学习之前已经获得了其他学位(自然科学或农业科学)。由于竞争非常激烈,只有成绩最好的学生才可能得到入学的机会。兽医专业的毕业生先通过一个全国性准入考试并在将要行医的省获得执照后才能成为有行医资格的兽医。其他兽医设置考试。经选举产生的兽医考试委员会由兽医组成,他们将根据参加考试人员的完成情况决定是否授予其行医的权力。

Canadian veterinarians have had a minimum of six years' university education, usually obtaining another degree (Science or Agriculture) prior to applying for admission into veterinary college. Competition is very keen, so only the best academic students are admitted. The graduate must pass a national entry-level exam and then be licensed by the province where they wish to practice, for eligibility to practice veterinary medicine. Other veterinarians set the exam and the right to practice is granted by an elected board of veterinarians, upon completion of all requirements.

兽医诊所。在兽医诊疗过程中客户需要支付服务费和建议费。兽医与客户建立起兽医/客户关系(VCR),这使兽医有权做出决定保障健康、提供紧急兽医服务、分发药物以治疗病畜和预防疾病、制定应用于生产的群体健康计划,与奶农并肩工作。不论是在私营或者公立的诊所工作的兽医,都是预防流行性疾病在全国畜禽群中的传染和保障公众的动物源食品安全的专业队伍中的关键人员。

In Canada, the majority of veterinarians are employed by or are owners of, private veterinary practices. In these practices, the client pays for the veterinary services and expertise. The veterinarian and the client develop a Veterinary Client Relationship (VCR) which allows the veterinarian to make health related decisions, provide emergency veterinary services, dispense drugs to treat sick animals and prevent disease, develop production related herd health programs and to work as a team member with the farmer. Veterinarians, whether in private or public practices, are key members of the team to ensure that epidemic diseases are prevented from infecting our national herds and that the public receives safe wholesome food derived from animals.

在中国实施的动物保健计划正经历巨大改变。中国政府现在已经成为世界贸易组织的成员。在食品生产方面,中国是自给自足的,现在有条件向其他市场出口食品。国际兽疫局(OIE)是负责设立国际健康标准以监测、报告和控制动物疾病的国际组织。中国想成为 OIE 的成员就必须符合这些标准,并且必须建立起敏感的、反应迅速的和高透明度的专业兽医体系,包括改变对兽医职业的定义、兽医管理条例和提高兽医的职业技能。

In China, the delivery of animal health services is under-going radical change. The national government is now a member of the World Trade Organization (WTO). China is self-sufficient in food production and is now poised to export agricultural products into niche markets. The international body setting the health standards for the monitoring, reporting and control



of diseases infecting animals is the Organization International Epizootic (OIE). China, to achieve membership in the OIE, must meet those standards and a responsive, proactive, transparent veterinary profession is essential. This will involve changes in the definition of what a veterinarian is in China, changes in the regulation of veterinarians and upgrading of the existing skills of veterinarians.

我非常感谢下列这些书的作者(表 1 和表 2),他们为我提供了许多参考资料及兽药应用技艺方面的灵感。

I would like to thank the authors (Table 1 and Table 2) of the following books as reference sources and also, as inspirations into the art and science of veterinary medicine.

**表 1 参考资料( I )**  
**Table 1 Reference( I )**

书 名 Title	作 者 Author(s)	出版社 Publisher	出版年 Year
牛病诊所指南(第 3 版) Guide to Bovine Clinics, 3rd Edition	Chris Pasquini Susan Pasquini	Sudz Publishing	1966
兽药使用手册(第 2 版) Handbook of Veterinary Drugs, 2nd Edition	Dana G. Allen John K. Pringle Dale A. Smith	Lippincott- Raven	1998
牛群保健食品动物生产药品 (第 3 版) Herd Health Food Animal Production Medicine, 3rd Edition	Otto M. Radostits	W. B. Saunders	2001
袖珍型兽药指南 Pocket Companion to Veterinary Medicine	Douglas C. Blood	Harcourt Publishers Ltd.	2000
大动物外科手术技术(第 2 版) Techniques in Large Animal Surgery, 2nd Edition	A. Simon Turner C. Wayne McIlwraith	Lippincott Williams & Wilkins	1989

续表 1

书 名 Title	作 者 Author(s)	出版社 Publisher	出版年 Year
默克兽医手册(第 8 版) The Merck Veterinary Manual, 8th Edition		National Publishing Inc.	1998
桑德斯综合兽医词典(第 2 版) Saunders Comprehensive Veterinary Dictionary, 2nd Edition	D.C.Blood V.P.Studdert	W.B.Saunders	1999
兽药:牛、绵羊、猪、山羊及马的 疾病教科书 (第 9 版) Veterinary Medicine: A Textbook of the Diseases of Cattle, Sheep, Pigs, Goats and Horses, 9th Edition	Otto M.Radostits Clive C.Gay Douglas C.Blood Kenneth W.Hitchcliff	W.B.Saunders	2000

表 2 参考资料(Ⅱ)  
Table 2 Reference(Ⅱ)

标题 Title	作者 Author(s)	信息来源 Source of information
改进设备管理提高母牛 舒适度 Best Management of Faci- lities for Cow Comfort	John T.Tyson	Agricultural Engineering Agent Penn State Cooperative Extension. 2002
改进畜舍设计和管理最 大化干物质进食量 Designing and Managing Facilities to Maximize Dry Matter Intake	M.J. Brouk <sup>1</sup> , J.F. Smith <sup>1</sup> , J.P.Harner III <sup>2</sup>	<sup>1</sup> Dept. of Animal Sciences and Indu- stry, Kansas State University <sup>2</sup> Dept. of Biological and Agricultural Sciences, Kansas State University 124 Call Hall, Manhattan, KS 66506 - 1600 E-mail: <a href="mailto:mbrouk@ksu.edu">mbrouk@ksu.edu</a>
最大限度提高散栏式牛 舍中母牛舒适度 Maximizing Cow Comfort in Free Stall Barn	Brian Perkins & Gordie Jones	Dairy Biz Archive-Production & Profi- tability February 2000



续表 2

标题 Title	作者 Author(s)	信息来源 Source of information
为控制传染性疾病而应采取的牛群运营和良好生产实践的生物安全基本措施 Biosecurity Basics for Cattle Operations and Good Management Practices (GMP) for Controlling Infectious Diseases	Marilyn Buhman, Grant Dewell, Dee Griffin	<i>File G1411 under: ANIMAL DISEASES</i> <i>F - 9, September 2000. <a href="mailto:pubs@unl.edu">pubs@unl.edu</a></i> <i>General Livestock, University of Nebraska Cooperative Extension educational programs abide with the non-discrimination policies of the University of Nebraska-Lincoln and the United States Department of Agriculture.</i>
代谢疾病的群体水平生物学测定 Herd-Based Biological Testing For Metabolic Disorders	Garrett R.Oetzel	School of Veterinary Medicine, UW-Madison American ASSOCIATION OF BOVINE PRACTITIONERS 36th Annual Conference. <b>September 15 - 17, 2003 - Columbus, OH</b>
亚急性瘤胃酸中毒的群体水平诊断 Herd-Based Diagnosis of Subacute Ruminal acidosis	Ken Nordlund	University of Wisconsin-Madison American ASSOCIATION OF BOVINE PRACTITIONERS 36th Annual Conference. <b>September 15 - 17, 2003 - Columbus, OH</b>

加拿大国际开发署项下的中/加动物保健发起项目和中加奶牛育种综合项目出资开发并印刷出版了这本手册。

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我衷心感谢以下译者在翻译过程中所做的努力,也感谢他们对项目实施的一贯支持。

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July, 2004

# 缩写表

## Abbreviations

英文缩写	英文全称	中文译名
ADF	Acid detergent fibre	酸性洗涤纤维
BF	Butterfat	乳脂
BCS	Body condition scoring	体况评分
CCP	Critical control point	关键控制点
CMT	California mastitis test	加利福尼亚乳房炎测定法
DHI	Dairy herd improvement	奶牛群体改良/生产性能
DMI	Dry matter intake	干物质进食量
GIT	Gastro-intestinal tract	胃肠道
ID	Identification	个体识别
IV	Intravenous	静脉
LDA	Left displaced abomasums	皱胃左方变位
MF	Milk fever	乳热症
NDF	Neutral detergent fibre	中性洗涤纤维
NFC	Non-fibre carbohydrate (concentrate)	非纤维性碳水化合物(精料)
OIE	Office International des Epizooties	国际兽疫局
SCC	Somatic cell count	体细胞计数
TMR	Total mixed ration	全混合日粮
TPR	Temperature, pulse, respiration	体温、脉搏、呼吸
UIP	Undegraded intake protein (bypass)	非降解蛋白质
VFA	Volatile fatty acid	挥发性脂肪酸

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# 牧场的生物安全措施

## Biosecurity Measures on the Farm

撰写:韩 特 博士

Prepared by: Dr. Terry Hunt

翻译:傅小平 博士

Translated by: Dr. Xiaoping Fu

生物安全措施是指:“为防止传染病、寄生虫或有害物在动物间进行传播而采取的安全(预防)措施”

Biosecurity refers to “security (prevention) from transmission of infectious diseases, parasites and pests from one animal to another”

采取常见的预防措施防止传染病的传入是对牧场的最佳投资

Taking common sense precautions to prevent infectious diseases from coming on to your farm is the best investment you can make

### ■ 保持封闭的畜群

Maintain a closed herd/flock

#### ▶ 自繁自养

Raise your own replacements

#### ▶ 接种本地区常见流行疾病的疫苗

Vaccinate against common diseases in the area

#### ▶ 购买已知安全状态的饲草/饲料

Purchase feed from known clean sources



■ 购买已知健康状态的家畜

Purchase livestock from known healthy sources

- ▶ 如果可能,给新购入家畜进行本地区常见疾病的疫苗预防接种

If possible, have them vaccinated against common diseases in the area

- ▶ 只引进健康、年轻的家畜

Only introduce young healthy animals

■ 将新购入的家畜隔离 3 周

Isolate new arrivals for three weeks

- ▶ 不让其与其他家畜亲密接触

Do not allow nose-to-nose contact with other animals

- ▶ 不共享饲料、饮水或垫料

Do not share feed, water or bedding

- ▶ 给新购入家畜进行本地区常见疾病的疫苗预防接种

Vaccinate new arrivals against common diseases in the area

- ▶ 接触新引进的家畜后,清理并消毒靴子和工作服

Clean and disinfect boots and coveralls after working with new arrivals

■ 限制参观访问

Restrict visitors

- ▶ 不要让危险人群(来自疫区或接触过病畜)接近你的畜群

Do not allow high risk visitors contact with your animals (people from diseased herds or having contact with diseased livestock)

- ▶ 为所有访问者提供干净的靴子和工作服

Supply clean boots and coveralls to all visitors

- ▶ 也许需要帽子和口罩

Hats and masks may also be required

- ▶ 要求参观者在参观牧场的前后做清洁

Insist that visitors wash well before and after visiting the farm

i. 50 % 乙酸稀释液

50 % dilute vinegar solution

ii. 把靴子上的家畜粪便清理掉后进行消毒

Wash all manure from footwear then disinfect

▶ 车辆和设备在参观牧场前必须进行清洁和消毒

Vehicles and equipment must be cleaned and disinfected before visiting the farm

■ 实施良好的生物安全措施

Practice good biosecurity

▶ 在牧场上要用干净、消毒的靴子和工作服

Use clean disinfected clothing and boots on the farm

▶ 接触体液或粪便时要戴一次性塑料套袖和手套

Wear disposable plastic sleeves and gloves whenever there is contact with body fluids or manure

▶ 使用前和使用后要对所用仪器设备进行清洁、消毒

All equipment should be cleaned and disinfected before and after use

▶ 如可能,使用一次性针头和注射器

Use disposable needles and syringes when possible

■ 所有家畜应有唯一的个体标识

Identify all animals

■ 做好准确的记录

Keep accurate records

■ 防止家畜接触野生动物和害虫

Control livestock contact with wildlife and vermin