Welfare of the Laying Hen

Edited by G.C. Perry, University of Bristol, UK

The welfare of egg-producing poultry is a topic of great concern to the poultry industry and to researchers in applied animal behaviour. Issues such as battery cages, space requirements, access to daylight and 'free-range' eggs have attracted public interest.

This book brings together edited papers from the 27th Poultry Science Symposium of the World's Poultry Science Association (UK Branch), held in Bristol in July 2003, addressing such issues. Topics covered include: welfare issues, perception and cognition; behaviour, health and diseases, stockmanship and the environment; handling, slaughter and transport; and perspectives of consumers and producers.

The book will appeal to researchers in poultry and food science, veterinary medicine, animal behaviour and welfare.

Cover illustration used with permission from the Burrell Collection, Glasgow Museums

CABI Publishing
Wallingford, Oxfordshire OX10 8DE, UK.
875 Massachusetts Avenue, 7th Floor, Cambridge, MA 02139, USA.

ISBN 0-85199-813-5

Welfare of the Laying Hen

Poultry Science Symposium Series

Vol. 27

Perry

CABI

Welfare of the Laying Hen

Edited by G.C. Perry

Poultry Science Symposium Series

Vol. 27

CABI *Publishing*

~~27165~~
2614

Poultry Science Symposium Series
Executive Editor (Volumes 1–18): B.M. Freeman

1 Physiology of the Domestic Fowl*
2 Protein Utilization by Poultry*
3 Environmental Control in Poultry Production*
4 Egg Quality – A Study of the Hen's Egg*
5 The Fertility and Hatchability of the Hen's Egg*
6 i. Factors Affecting Egg Grading*
ii. Aspects of Poultry Behaviour*
7 Poultry Disease and World Economy
8 Egg Formation and Production
9 Energy Requirements of Poultry*
10 Economic Factors Affecting Egg Production*
11 Digestion of the Fowl*
12 Growth and Poultry Meat Production
13 Avian Coccidiosis*
14 Food Intake Regulation in Poultry*
15 Meat Quality in Poultry and Game Birds
16 Avian Immunology
17 Reproductive Biology of Poultry
18 Poultry Genetics and Breeding
19 Nutrient Requirements of Poultry and Nutritional Research*
20 Egg Quality – Current Problems and Recent Advances*
21 Recent Advances in Turkey Science
22 Avian Incubation
23 Bone Biology and Skeletal Disorders
24 Poultry Immunology*
25 Poultry Meat Science
26 Welfare of the Laying Hen

*Out of Print
Volumes 1–24 were not published by CAB International. Those still in print may be ordered from:

Carfax Publishing Company
PO Box 25, Abingdon, Oxfordshire OX14 3UE, England

Welfare of the Laying Hen

Poultry Science Symposium Series
Volume Twenty-seven

Edited by

G.C. Perry
Department of Clinical Veterinary Science, University of Bristol, UK

CABI Publishing

CABI Publishing is a division of CAB International

CABI Publishing
CAB International
Wallingford
Oxfordshire, OX10 8DE
UK

Tel: +44 (0)1491 832111
Fax: +44 (0)1491 833508
E-mail: cabi@cabi.org
Website: www.cabi-publishing.org

CABI Publishing
875 Massachusetts Avenue
7th Floor
Cambridge, MA 02139
USA

Tel: +1 617 395 4056
Fax: +1 617 354 6875
E-mail: cabi-nao@cabi.org

A catalogue record for this book is available from the British Library, London, UK.

Library of Congress Cataloging-in-Publication Data
World's Poultry Science Association. Meeting. (2003 : Bristol, England)
Welfare of the laying hen / edited by G.C. Perry.
p. cm. -- (Poultry science symposium series ; 27)
Proceedings of the World's Poultry Science Association Meeting held in Bristol, England, July 2003.
Includes bibliographical references and index.
ISBN 0-85199-813-5 (alk. paper)
1. Hens--Congresses. 2. Poultry--Congresses. I. Perry, G. C. (Graham, C.) II. Title. III. Series: Poultry science symposium ; no. 27.
SF481.2.P66 2003
636.5--dc22
2003026169

ISBN 0 85199 813 5

Typeset by MRM Graphics Ltd, Winslow, Bucks
Printed and bound in the UK by Cromwell Press, Trowbridge

CONTENTS

CONTRIBUTORS

J.-M. Aerts, *Department of Agro Engineering and Economics, Katholicke Universiteit Leuven, Kasteelpark Arenberg 30, B-3001 Leuven, Belgium*

M.J. Albentosa, *Department of Biological Sciences, University of Lincoln, Riseholme Hall, Lincoln LN2 2LG, UK*

M.C. Appleby, *The Humane Society of the United States, 2100 L Street, NW Washington, DC 20037, USA*

D. Berckmans, *Katholicke Universiteit Leuven, Kasteelpark Arenberg 30, B-3001 Leuven, Belgium*

P.S. Berry, *Silsoe Research Institute, Wrest Park, Silsoe, Bedfordshire MK45 4HS, UK*

D. Bowles, *RSPCA, Wilberforce Way, Southwater, Horsham, West Sussex RH13 9PS, UK*

H.-W. Cheng, *Livestock Behavior Research Unit, USDA-ARS, West Lafayette, IN 47907, USA*

J.J. Cooper, *Department of Biological Sciences, University of Lincoln, Riseholme Hall, Lincoln LN2 2LG, UK*

A. Elson, *ADAS Gleadthorpe, Meden Vale, Mansfield, Nottinghamshire NG20 9PF, UK*

J.-M. Faure, *Station de Recherches Avicoles, INRA Centre de Tours, 37380 Nouzilly, France*

M. Gentle, *Roslin Institute (Edinburgh), Roslin, Midlothian EH25 9PS, UK*

J. Gittins, *ADAS, Ceres House, 2 Searby Road, Lincoln, Lincolnshire LN2 4DW, UK*

P.H. Hemsworth, *Animal Welfare Centre, University of Melbourne and Department of Primary Industries, Victorian Institute of Animal Science, Werribee, Victoria 3030, Australia*

P.M. Hocking, *Roslin Institute (Edinburgh), Roslin, Midlothian EH25 9PS, UK*

J.R. Jarvis, *Silsoe Research Institute, Wrest Park, Silsoe, Bedfordshire MK45 4HS, UK*

Index

Page numbers in **bold** refer to illustrations and tables.