

## **ENZYMES IN FARM ANIMAL NUTRITION**



# ENZYMES IN FARM ANIMAL NUTRITION

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Marlborough  
Wiltshire  
UK*

*CABI Publishing*

*CABI Publishing is a division of CAB International*

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Oxon OX10 8DE  
UK

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

**Library of Congress Cataloging-in-Publication Data**

Enzymes in farm animal nutrition / edited by M.R. Bedford and G.G. Partridge.

p. cm.

Includes bibliographical references.

ISBN 0-85199-393-1 (alk. paper)

1. Enzymes in animal nutrition. 2. Feeds--Enzyme content. 3. Animal feeding. I. Bedford, M. R. (Michael Richard), 1960- II. Partridge, G. G. (Gary G.), 1953-

SF98.E58 E59 2000  
636.08'52--dc21

00-044426

ISBN 0 85199 393 1

Typeset in Garamond by AMA DataSet Ltd

Printed and bound in the UK by Biddles Ltd, Guildford and King's Lynn

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# Preface

The rearing and feeding of domestic animals and the use of enzymes in processes such as brewing have been distinct parts of human life for many thousands of years, but it is only recently that these two disciplines have crossed paths. The first commercial use of feed enzymes dates back to 1984 in Finland, where opportunities existed to improve significantly the nutritional quality of barley-based rations by inclusion of enzymes derived from the brewing industry (A. Haarisilta, Suomen Rehu). The years since then have seen an exponential increase in the usage of many enzyme types in rations for poultry and, to a lesser extent, swine. Significant recent interest has also been shown by the ruminant sector. Scientific studies describing the use of exogenous enzymes in animal nutrition dates back to the mid 1920s and they now number in excess of 1300 papers for broilers alone (Rosen, 2000, personal communication). This rapidly expanding field is becoming increasingly multi-disciplinary as more is understood of the mode of action of feed enzymes. Due to the complexity of this field it is timely to produce a single source from where the uninitiated and well versed alike can ground themselves with the basics required to grasp the subject. Furthermore, it is the intention of this book to provide sufficient detail to enable an understanding of the complexities of response to such products in all classes of farm animal livestock.

It is of interest that not only the usage of enzymes has increased but also the scope of their use. This is likely to continue as the price of enzyme application falls, with improvements in both enzyme efficacy and production costs making previously uneconomic solutions more attractive. Particular attention is drawn to the ruminant sector, where usage is in its infancy but research is demonstrating that significant gains can be made. The challenge is to find methods of predicting enzyme response so that enzyme application in all classes of livestock becomes increasingly a science rather than an art.

**In memoriam**

It is with great sadness that this book is produced after the death of Dr E.T. Kornegay, a significant contributor to this publication and to the field of phytase research in poultry and pigs. Dr Kornegay was particularly active and enthusiastic in his enzyme phytase research and will be sadly missed.