

THE UNFOLDING GENE REVOLUTION

Ideology, Science, and Regulation
of Plant Biotechnology

Eufemio T. Rasco, Jr.



THE UNFOLDING GENE REVOLUTION

**Ideology, Science, and Regulation
of Plant Biotechnology**

Eufemio T. Rasco, Jr.

**International Service for the Acquisition of Agri-biotech Applications
SEAMEO Southeast Asian Regional Center for Graduate Study and
Research in Agriculture**

First published in the Philippines by the International Service for the Acquisition of Agri-biotech Applications and the SEAMEO Southeast Asian Regional Center for Graduate Study and Research in Agriculture with ISBN 978-97193983-0-1.

© Eufemio T. Rasco Jr. 2008

All rights reserved. Except for brief quotations in a review, this book, or parts thereof, must not be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, duplicating or otherwise, without the prior permission in writing of the publisher and copyright owner.

For more information, contact the ISAAA SEAsiaCenter, c/o IRRI, DAPO Box 7777, Metro Manila, Philippines or email isaaa-seasia@isaaa.org.

*To Precy, for keeping the flowers in bloom as I sequester myself
in the study room, reading and writing endlessly*

and

*to Kul, for doing the great sacrifice of keeping quiet
when I need silence*

and

*to Riza and Sherwin, for giving us the pleasure of
seeing them succeed*

Contents

Preface		ix
Acknowledgements		xv
Chapter 1	Before GMOs	1
Chapter 2	Evolution: the Ideology of Genetic Engineering	20
Chapter 3	Discovering the Secret of Life	45
Chapter 4	Building the Tool Kit for Plant Genetic Engineering	70
Chapter 5	Transforming a Plant: Lessons From a Bacterium	90
Chapter 6	Making a GMO	99
Chapter 7	Is Genetic Engineering Inherently Risky?	119
Chapter 8	Fear by Association	138
Chapter 9	Assessing the Safety of GM Foods and Crops	154
Chapter 10	Rules That Invite Violation	192
Chapter 11	Rewarding Innovation, Sharing Benefits	218
Chapter 12	Making GMOs Better, Safer	234
Chapter 13	Pharming and Metabolic Engineering	252
Chapter 14	Agricultural Biotechnology Without the Controversy	279
Chapter 15	Making Plant Biotechnology Work for the Philippines	293

