

R. Kenneth Horst

Field Manual of Diseases on Trees and Shrubs

 Springer

Field Manual of Diseases on Trees and Shrubs

R. Kenneth Horst

Field Manual of Diseases on Trees and Shrubs

 Springer

R. Kenneth Horst
Plant Pathology and
Plant Microbe Biology
Cornell University
Ithaca, NY, USA

ISBN 978-94-007-5979-4 ISBN 978-94-007-5980-0 (eBook)
DOI 10.1007/978-94-007-5980-0
Springer Dordrecht Heidelberg New York London

Library of Congress Control Number: 2013935125

© Springer Science+Business Media Dordrecht 2013

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The information in this manual is taken in large part from the records of the Plant Disease Survey as given in the *Plant Disease Reporter*, *Plant Disease*, and from the *Index of Plant Diseases in the United States*, *Agriculture Handbook 165*, U.S. Department of Agriculture. There are a great many records that bring in new reports every day, and any such list is out of date by the time it is published, and is sure to be far from complete. This check list is offered as a helpful guide, a foundation on which to build. It is by no means the last word.

Hosts are listed alphabetically by common names except where the scientific names mean less confusion. The diseases are those mostly reported from North, Central, and South America.

Contents

Part I

Trees and Shrubs.....	3
-----------------------	---

Part II

Disease Control and Management.....	13
-------------------------------------	----

Part III

Host Plants and Their Diseases.....	19
A.....	21
B.....	37
C.....	47
D.....	65
E.....	71
F.....	77
G.....	83
H.....	89
I.....	101
J.....	105
K.....	109
L.....	111
M.....	117

N..... 127

O 129

P 133

Q 155

R..... 157

S 165

T..... 175

U..... 179

V..... 181

W..... 183

Y..... 189

Z..... 191

Part IV

**List of Land-Grant Institutions and Agricultural
Experiment Stations in the United States** 195

Glossary 199

Part I

Trees and Shrubs



Plate 1 Lethal Yellowing on Coconut Palm caused by a Phytoplasma pathogen



Plate 2 Cedar-Apple Rust on Apple caused by *Gymnosporangium juniperi-virginianae*



Plate 3 Cedar-Apple Rust on Cedar caused by *Gymnosporangium juniperi*



Plate 4 Mosaic on Rose caused by Prunus Necrotic Ringspot Virus



Plate 5 Phyllody on Hydrangea caused by a Phytoplasma Pathogen



Plate 6 Oak Anthracnose

Plate 7 Black Knot on
Prunus sp.



Plate 8 Botrytis Petal Spot
on Magnolia





Plate 9 Azalea Leaf Gall



Plate 10 Phyllosticta Leaf Spot on Mountain-Laurel





Plate 11 Mistletoe, Common in Southern trees

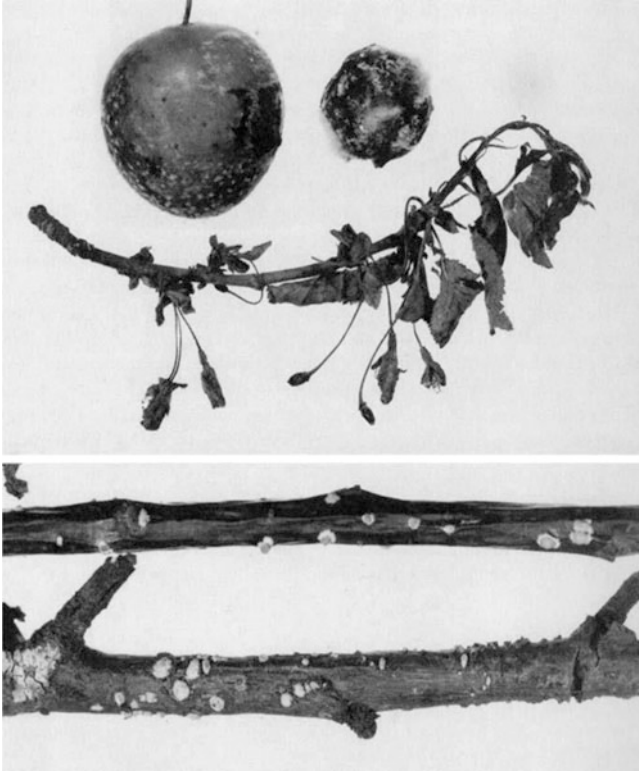


Plate 12 Brown Rot of Plums

Part II

Disease Control and Management

Control of a plant disease means reduction in the amount of damage caused. Our present annual toll from disease is nearly four billion dollars. Perfect control is rare, but profitable control, when the increased yield more than covers the cost of chemicals and labor, is quite possible. Commercial growers now average a return of four dollars for each dollar so invested. Keeping home plantings ornamental yields a large return in satisfaction and increased property value.

The five fundamental principles of control are exclusion, eradication, protection, resistance, and therapy.

1. *Exclusion* means preventing the entrance and establishment of pathogens in uninfested gardens, states, or countries. For home gardeners it means using certified seed or plants, sorting bulbs before planting, discarding any that are doubtful, possibly treating seeds or tubers or corms before they are planted, and, most especially, refusing obviously diseased specimens from nurseryman or dealer. For states and countries, exclusion means quarantines, prohibition by law. Sometimes restricted entry of nursery stock is allowed, the plants to be grown in isolation and inspected for 1 or 2 years before distribution is permitted.
2. *Eradication* means the elimination of a pathogen once it has become established on a plant or in a garden. It can be accomplished by *removal* of diseased specimens, or parts, as in roguing to control virus diseases or cutting off cankered tree limbs; by *cultivating* to keep down weed hosts and deep ploughing or spading to bury diseased plant debris; by *rotation* of susceptible with nonsusceptible crops to starve out the pathogen; and by *disinfection*, usually by chemicals, sometimes by heat treatment. Spraying or dusting foliage with sulfur after mildew mycelium is present is eradication, and so is treating the soil with chloropicrin to kill nematodes and fungi.
3. *Protection* is the interposition of some protective barrier between the susceptible part of the susceptible or host and the pathogen. In most instances this is a protective spray or dust applied to the plant in advance of the arrival of the fungus spore; sometimes it means killing insects or other inoculating agents; sometimes it means the erection of a windbreak or other mechanical barrier.