





THE STANDARD PESTICIDE USER'S GUIDE



BERT L. BOHMONT

Contents

PREFACE		XI
Acknowli	EDGMENTS	xii
CHAPTER	INTRODUCTION TO PESTICIDES	1
	History	1
	Current Circumstances	2
	Terminology	6
	Who Uses Pesticides?	8
	Public Perception of Pesticides	10
	Acronym Dictionary	10
	Putting Numbers in Perspective	14
CHAPTER	PESTICIDES AND ENVIRONMENTAL	
	Considerations	16
	General Considerations	16
	Endangered Species	33
	Pesticide Persistence	34

VI CONTENTS

	Pesticide Accumulation	34
	Pest Resistance to Pesticides	35
	What Pesticide Applicators Can Do to Protect the Environment	36
CHAPTER	INSECTS	38
	Insects as Pests	38
	Basic Anatomy	39
	Development and Metamorphosis	42
	Classification and Identification	44
	Insect Relatives	47
	Centipedes and Millipedes	51
	Snails and Slugs	52
	Insect Outbreaks	52
	Steps in Insect Control	53
	Methods of Insect Control	56
	Use of Chemicals in Insect Control	58
	Insecticide Classification	58
CHAPTER	PLANT DISEASE AGENTS	62
	Ways in Which Diseases Affect Plants	62
	Biological Abnormalities	65
21.7°C	The Plant Disease Concept	65
	Pathological Disease	. 65
	How Plant Diseases Develop	68
	How Diseases Are Identified	70
	How Plant Diseases Are Controlled	73
	Types of Protectant Fungicides	75
CHAPTER	Vertebrate Pests	80
	Human Society and Wildlife Conflicts	80
	Some Vertebrate Pest Animals	81
	General Wildlife Damage Control Measures	96

	Contents	vii
	Damage Control Techniques	97
	What Does the Law Say?	105
CHAPTER	WEEDS	107
	Plants as Weeds	107
	Characteristics of Weeds	108
	Ways in Which Weeds Injure Plants and Affect Land Use	109
	Weed Classification	110
	Weed Identification	115
	Weed Control Methods	116
	Classification of Herbicides	118
	Herbicide Modes of Action and Managing	
	Weed Resistance	123
	Harvest Aids and Growth Regulators	128
CHAPTER	INTEGRATED PEST MANAGEMENT	131
	The Concept and Principle of IPM	131
	Regulatory Action	132
	The Evolution of IPM	134
***************************************	Natural Controls	135
	Applied Controls	136
	Pest Control Failures	137
	The Goals of IPM	138
	Who Benefits from IPM?	138
	An Approach to Effective IPM	139
	Implementation of IPM	140
Снартев	PESTICIDE LAWS, LIABILITY, AND RECORDKEEPING	142
	Laws	143
	Federal Agencies Regulating Pesticides	143
	State Agencies Regulating Pesticides	166
	Canadian Pest Control Products Regulations	166

VIII CONTENTS

	Liability	166
	Recordkeeping	170
CHAPTER	THE PESTICIDE LABEL	181
	The Most Expensive Literature in the World	181
	What Is on a Pesticide Label?	184
	When Should You Read the Label?	195
Ţ.	Warning Concerning Out-of-Date Sources of Pesticide Information	197
	Specimen Labels	197
	Material Safety Data Sheet (MSDS)	198
CHAPTER	PESTICIDE SAFETY	201
	General Considerations	201
	Pesticide Selection	202
	Handling and Mixing Pesticides	203
- ANGE 2015, 10	Application of Pesticides	206
	Restricted Entry into Treated Fields	207
	Toxicity of Pesticides	209
	Toxicity Values	216
	Acute or Chronic Toxicity and Hazard	216
	Pesticide Exposure: Protective	
	Clothing and Equipment	219
	Care and Maintenance of Respirators	229
	Pesticide Poisoning Effects and Symptoms	230
	Pesticide Poisoning	237
	Physician Notification	237
	Poison Control Center	238
	Medical Supervision for Pesticide Applicators	238
	Aerial Application Safety	238
	Critical Time Periods	241
	Greenhouse Operations	242
	Safety Checklist	243

Contents

CHAPTER	Pesticide Formulations and Adjuvants	246
	Pesticide Additives	246
	Types of Formulations	247
	Packaging	253
	Spray Adjuvants	254
	What Does the Label Say?	259
	Functions of Adjuvants	260
	Practical Considerations	261
	Problem Areas	262
	Water pH: How It Affects Pesticide Stability and Efficacy	262
	Pesticide Compatibility	267
CHAPTER	PESTICIDE APPLICATION EQUIPMENT	271
	General Information	271
	Types of Application Equipment	275
	Spray Equipment Parts	284
	Precision Application Devices	306
	Sprayer Maintenance and Cleaning	323
	Sprayer Storage	324
	Aerial Application Equipment	325
CHAPTER	PESTICIDE EQUIPMENT CALIBRATION	335
	Calibration Importance	335
	Calibration Methods	336
	Aerial Equipment	355
	D 6	
CHAPTER	PESTICIDE CALCULATIONS AND	
	USEFUL FORMULAS	363
	Chemical Mixing	363
	Calculations for Mixing	364

X CONTENTS

	Useful Formulas and Tables	369
	Conversion Tables	371
	Additional Useful Tables	378
	Figuring the Cost of Chemicals	382
	Area Measurements	382
CHAPTER	PESTICIDE TRANSPORTATION, STORAGE,	
	DECONTAMINATION, AND DISPOSAL	387
	Safe Transport of Pesticides	387
	Pesticide Storage	391
	Pesticide Decontamination	395
	Pesticide and Container Disposal	405
	Tips for Minimizing Waste Generation	409
GLOSSARY	FOR PESTICIDE USERS	411
Appendices	S	458
	A: Selected References	458
	B: Pesticide Information Telephone Numbers and Web Page Addresses	461
	C: Restricted-Use Pesticides	465
	D: United States and Canadian Pesticide	
	Control Offices	477
	E: Trade Name/Common Name Cross-Reference	484
	F: Toxicity Classification and Signal Words for Pesticides	513
	G: Stability of Agrichemicals with Respect to pH of Carriers/Diluents	571
	H: Cold Weather Handling of Liquid Chemical	
	Products—Temperature Restrictions Guide	579
	I: Chapter Study Questions Answer Key	587
INDEX		595
	Subject Index	595
	Classification Index	612