

CONTENTS

ACKNOWLEDGMENTS x

INTRODUCTION 1

Mushrooms and Humans: Past, Present,
and Future 1

A Bit about Me and My Approach to
Mushroom Cultivation 2

1 MUSHROOM BASICS 6

What Are Mushrooms? 6

Mushrooms in Ecosystems 13

What Mushrooms Need to Survive and Thrive 17

**2 OVERVIEW OF THE
CULTIVATION PROCESS 20**

Cultivation Flow 20

Preparation 24

3	WORKSPACES, TOOLS, AND EQUIPMENT	26
	Lab Infrastructure and Aseptic Transfer Spaces:	
	Flow Hoods, Still Air Boxes, and More	26
	The Lab Environment and Tools	30
	Where to Inoculate Bulk Substrates	34
	Where to Incubate Growing Mycelium	34
	Fruiting Space: Factors to Consider	37
	Options for Home-Scale Fruiting Chambers	38
	Environmental Control in Fruiting Spaces	46
	Other Spaces	51
4	SANITATION AND TECHNIQUES TO AVOID CONTAMINATION	54
	Vectors of Contamination and Management Strategies	56
	Common Contaminants: Recognition and Management	62
5	STARTING AND MAINTAINING CULTURES	66
	Get Cultured	66
	Liquid Culture	69
	Agar Culture	81
	Long-Term Culture Storage Methods	88
6	MAKING AND USING GRAIN SPAWN	90
	Making Grain Spawn	90
	Using Grain Spawn	95

7	FRUITING SUBSTRATE FORMULATION AND PREPARATION	98
	Containers for Mycelial Growth and Fruiting	98
	The Substrates	104
	Substrate Treatments	116
	Sterilization	116
	Pasteurization and Alternatives	118
8	OUTDOOR GROWING AND MUSHROOM GARDENING	126
	Growing Mushrooms on Logs and Stumps	126
	Mushroom Beds	132
	Next-Level Applications	135
9	HARVEST, PROCESSING, AND USE	138
	When and How to Harvest	138
	Basic Cooking Techniques	139
	Preservation Methods	143
	Mushrooms and Mycelium for Medicine	144
	IN CONCLUSION: SUBSTRATE FOR THOUGHT— TOWARD FURTHER APPLICATIONS	147
	Mycopermaculture	147
	Mycoremediation on a Home Scale	150
	Mycoarts and Fungi as Functional Materials	150
	Community-Based Cultivation Efforts	151

APPENDIX 1: SPECIES PROFILES 153

- Agrocybe aegerita*—Pioppino 154
Coprinus comatus—Shaggy Mane 155
Cordyceps militaris—Caterpillar Fungus 156
Flammulina velutipes and allies—Enoki 157
Ganoderma lucidum and allies—Reishi 159
Hericium species—Lion’s Mane and allies 160
Hypsizygus tessulatus—Shimeji and
 H. ulmarius—Elm Oysters 162
Lentinula edodes—Shiitake 163
Pholiota nameko and allies—Nameko 165
Pleurotus species—Oyster Mushrooms 166
Stropharia rugoso-annulata—Wine Cap 169
Trametes versicolor—Turkey Tail 171

APPENDIX 2: RESOURCES 173

- General 173
Annual Mycology Gatherings 177

BIBLIOGRAPHY 178

INDEX 181

ABOUT THE AUTHOR AND ILLUSTRATOR 186

A NOTE ABOUT THE PUBLISHER 188