

INTRODUCTION CURRICULUM 6

Lesson 1: Introduction to Aquaponics 7

Teacher Guide 7

Student Guide – What is Aquaponics? 12

LESSON 2: ADDING BACTERIA 17

Teacher Guide 17

Student Guide – Why is bacteria added? 21

LESSON 3: CHOOSING FISH 27

Teacher Guide 27

Student Guide – How do we choose the best fish for our aquaponic system?
36

LESSON 4: CHOOSING PLANTS 45

Teacher Guide 45

Student Guide – What shall we plant? 53

LESSON 5: SIMULATING SUNSHINE 61

Teacher Guide 61

Student Guide – How can we mimic the sun? 67

LESSON 6: ADDING WORMS 79

Teacher Guide 79

Student Guide – Why do we add worms? 82

ADVANCED CURRICULUM 87

LESSON 7: AQUAPONICS 89

Teacher Guide 89

Student Guide – Why use aquaponics to grow food? 93

PLANTS 97

LESSON 8: PH & PLANTS 97

Teacher Guide 97

Student Guide – What is pH & why is it important for our plants? 102

LESSON 9: PARTS OF PLANTS 107

Teacher Guide 107

Student Guide – What are the parts of plants & what do they do? 110

LESSON 10: SEEDS 113

Teacher Guide 113

Student Guide – What are seeds & what do they do? 116

LESSON 11: THE PLANT LIFE CYCLE 123

Teacher Guide 123

Student Guide – How does a plant change throughout its lifetime? 126

LESSON 12: PLANT CLASSIFICATION 133

Teacher Guide 133

Student Guide – How are plants classified? 139

FISH 145

LESSON 13: DISSOLVED OXYGEN 145

Teacher Guide 145

Student Guide – How do fish breathe? 148

LESSON 14: PARTS OF THE FISH 153

Teacher Guide 153

Student Guide – What are the parts of fish & what do these parts do? 157

LESSON 15: THE LIFE CYCLE OF A FISH 163

Teacher Guide 163

Student Guide –What stages does a fish go through during its life? 166

LESSON 16: FISH METABOLISM 173

Teacher Guide 173

Student Guide – What happens when we give fish food? 176

LESSON 17: FISH CARE 183

Teacher Guide 183

Student Guide – How do we keep our fish happy & healthy? 188

LESSON 18: AQUACULTURE 199

Teacher Guide 199

Student Guide – What is going on with the fish we eat? 203

SOIL & GROW MEDIA 209

LESSON 19: GROW MEDIA VS SOIL 209

Teacher Guide 209

Student Guide – What are our plants growing in? 214

LESSON 20: BACTERIA 223

Teacher Guide 223

Student Guide – What are bacteria? Why do we need them? 226

LESSON 21: WORMS 233

Teacher Guide 233

Student Guide – What are the worms doing in our system? 236

ECOLOGY 243

LESSON 22: WETLANDS 243

Teacher Guide 243

Student Guide – What are wetlands? 246

LESSON 23: ECOSYSTEMS 255

Teacher Guide 255

Student Guide – How do organisms within an ecosystem depend on each other? 259

LESSON 24: SUSTAINABILITY 267

Teacher Guide 267

Student Guide – How does our aquaponics system address some issues in sustainability? 272

LESSON 25: CLIMATE & AGRICULTURE 281

Teacher Guide 281

Student Guide – How can the environment affect our crops? 283