BOOK REVIEW

Dale Walters. 2021. **Chocolate Crisis.** (ISBN-13: 9781683401674, hbk). University Press of Florida, 2046 NE Waldo Road, Suite 2100, Gainesville, Florida 32609, U.S.A. (**Orders:** upress.ufl.edu). $40.00 US, 230 pp., black and white photos, glossary, references, index, 6" × 9".

This book addresses a topic that is probably near and dear to most peoples' hearts. Chocolate has been a part of certain cultures dating back thousands of years. Its popularity increased significantly in the past few hundred years and has grown into a multibillion dollar industry. Walters starts by grabbing the reader's attention with the emotionally charged title *Chocolate Crisis*. He goes on to give a detailed account of cacao's history, including its medical and religious uses, then talks about how cacao is grown and produced into chocolate. Several chapters are devoted to threats by diseases and pests. The book ends with the environmental conditions cacao needs to grow and how global warming is affecting it. While reading this book, I was impressed by how detailed each chapter is and was not at all surprised that the bibliography was 24 pages long. The author gives an account of his childhood when his father worked in a cacao plantation. He was particularly interested in the cacao pods, which grow from the trunk of the tree. Later in life, he took an interest in the organisms that cause diseases in the cacao tree. Wanting to solve these issues is why he chose to study plant science in college. The purpose of this book is to bring attention to the threats to the cacao plant and what we can do to help.

The main threats to the cacao plant are disease and global warming. The five most serious diseases cause estimated crop losses of over 20% per year. In 2012, losses were approximately 1 million tonnes. This means a loss of billions of dollars per year. One of these diseases *Phytophthora infestans* is also the same agent responsible for the Irish potato famine in mid-19th century Europe. If left unchecked, the impact on cacao from disease would be equally as devastating as the potato famine.

Global warming is not far behind disease when it comes to the impact it has on cacao plants. The majority of scientists consider human activity to be the cause of global warming. Africa is more vulnerable to climate change due to being the hottest continent. Almost three-fourths of the world's cacao production comes from Africa. Higher temperatures would increase water loss by plants, and make precipitation erratic, leading to drought. The effort needed to overcome the detriment caused by global warming costs both cacao plants that can't be saved and increased financial strain to keep cacao plants alive that can be saved.

Researchers argue that the traits that cacao needs to mitigate the stresses from climate change might already be present in the cacao germplasm. Cacao is found in areas that have a lot of variation in climate and research is being conducted on how to use gene editing to breed new cacao varieties to deal with climate change. There are various organizations working on researching how to preserve cacao from climate change. These organizations are currently and unfortunately underfunded.

This book emphasizes the impact of the chocolate crisis. This crisis affects not only people in the chocolate industry but the general public as well. Those in the chocolate industry have a personal stake in preserving cacao plants, but each and every individual person can use the information in this book to find ways to help the crisis as well. Everyone has to work together to mitigate the issues threatening cacao plants, or else chocolate will become something for only the elite of society instead of being readily available.

—Jerrod Stone, Botanical Research Institute of Texas, Fort Worth, Texas, U.S.A.