
Preface

1 The Interaction Between a Plant and Its Attacker

The continued existence of plants is remarkable given the huge range of organisms that uses them as a source of nourishment. The fact that plants survive in the face of continual onslaught from attackers is testimony to their defensive abilities and their ability to cope with damage inflicted during attacks. Understanding the changes that occur in plants under attack is important in attempts to produce crops better able to withstand the ravages of pathogens and pests. Feeding an ever-increasing human population requires not only efficient crop production, but also the ability to protect crops, allowing them to realise their yield potential. In the study of crop protection, plant defence has attracted most attention from researchers. However, it is becoming increasingly clear that understanding the metabolism and physiology of interactions between plants and their attackers is important, not least because of the connections between plant defence and primary metabolism. The interaction between a plant and an attacker is dynamic, and, for example, in an incompatible interaction, host defence is financed by primary metabolism, and often, effective resistance is associated with a cost in terms of plant growth. In compatible interactions, despite the fact that attackers are able to manipulate host metabolism for their own benefit, the host plant is still able to alter metabolic processes to make life difficult for the invader.

We are beginning to understand interactions of plants with the biotic environment at a level of detail that was difficult to imagine when I was an undergraduate student at Wye College in the mid-1970s. My interest in what was then called 'physiological plant pathology' started at Wye, but it was my move to Lancaster for postgraduate work that cemented my interest in plant disease physiology. I was very fortunate to be supervised for my PhD by Peter Ayres whose gentle approach to supervision and enthusiasm for physiological plant pathology made my time at Lancaster very happy. Over the years, I have been very fortunate to be able to discuss ideas with various colleagues, especially Nigel Paul, Ian Bingham and Adrian Newton. I am most grateful to Nigel Balmforth, who has always been supportive of my ideas for books and has shown considerable patience when I've asked for deadline extensions. Finally, I owe a huge debt of gratitude to Beverley for not only encouraging me in my book-writing activities, but also putting up with my grumpiness when the writing is not going well.

I have taught modules on the physiological responses of plants to pathogens since 1982, and over the years, this has developed to include physiological responses to pests and parasitic plants. It appears logical to me to study plant responses to different attackers in the same module, and in the absence of a single text adopting this approach, I decided to write one. It took me longer than expected, and there were times I thought I'd taken on too big a task, but the more I delved into the literature, the more fascinated I became. I hope this fascination comes through in the following chapters.