Plant Pathology Fiction


As a plant pathologist, I rarely get to read a novel about someone in my profession. Plus, any novel that introduces the Irish potato famine on the first page is bound to get my attention. Because the famine was caused by the potato disease known as late blight, this historical event of the 19th century is a major motivating force for plant pathologists who attempt to improve disease control through research. The Irish potato famine is mentioned in Buzzword during an argument between the protagonist, Alex Wyckham, and his wife, Sharon. Although I know many highly dedicated plant pathologists, including some who are obsessed with the science, I strongly suspect there are few who bring up historic plant disease epidemics in an argument with a spouse over where to live.

Alex and Sharon both work for CIP, Centro Internacional de la Papa (International Potato Center), in Peru. This real-life facility is one of the international agricultural centers around the world that focus on improving production of major food crops through plant breeding, disease and insect control, and other agricultural practices. Alex is a plant pathologist, Sharon a plant geneticist. Although Alex’s position deals with improving disease control, he also has had a long-term interest in using plant pathogens for a very different purpose: deliberately killing narcotic plants. Very early in the novel, Sharon and her colleagues go on an expedition and stumble upon a hidden facility run by a major drug lord. Sharon and most of her group are instantly killed, setting the novel’s events into motion. Alex will have his revenge, and help save the world from some of the horrors of drugs, by using plant pathogens to destroy the drugs’ source.

Although most plant pathologists study diseases to better control them, some do so in hopes of finding ways to effectively kill weeds using so-called bioherbicides. The biggest success of this effort, perhaps, has been the use of a rust fungus to control skeleton weed. In the novel, Alex repeatedly argues that what he is proposing is nothing more than biocontrol of undesirable plants. In particular, he proposes to kill coca (and ultimately cannabis and opium poppy) with plant pathogens. The dilemma, of course, is that coca is not a weed, but a crop. Although many would consider the crop to be undesirable as well as illegal, some parties around the world (such as the drug industry) consider it very desirable indeed.

Alex envisions a massive program that would involve large production facilities to culture the pathogens and store the inoculum, and then the delivery of the inoculum over wide areas using airplanes. The novel presents this as a fairly original idea for combating a major threat through the use of bioweapons aimed at crops. In fact, the use of plant pathogens as bioweapons has a long history. Until 1969, the United States had a large anticrop weapons program That program was dropped a few years before the signing of the Biological Weapons Convention (BWC). The former Soviet Union signed the BWC, but maintained its anticrop (as well as antihuman) bioweapons program essentially until the fall of the USSR (Rogers et al. 1999). Just as disturbing, Iraq had an anticrop bioweapons program in the early 1990s (Whitby and Rogers 1997), and one can easily suspect that it still exists.

There is much resistance to Alex’s idea of developing a major program to kill coca with pathogens. In reality, however, the idea is not new; in fact, considerable effort has been spent preparing to do precisely this. The United Nations Drug Control Program (UNDCP), with strong backing from the United States and Britain, has seriously investigated reducing drugs at their source through use of plant pathogens (Jelsma 2001). The interesting thing about this work is that many of the procedures for producing and storing inoculum, and its subsequent delivery by release from aircraft, are very similar to those developed in the former US and Soviet programs for biological warfare. The antidrug programs came to light in the popular press in 1999, partly in response to opposition by various groups (Kleiner 1999). There are at least three points of opposition to the real-life program. One is environmental, in that the release of large numbers of spores will have many undesirable consequences. Infection of plant species other than the intended targets is one example. The argument against this criticism is that the older policy is to use herbicides to destroy these crops, and that the herbicides have a greater negative impact on the environment than the use of carefully chosen plant pathogens with narrow host ranges.

The second argument is that this program may be in violation of the BWC, at least in spirit if not in practice. The third argument against the use of plant pathogens in this way is related more to a perceived misguided overall strategy—that it is nonsensical to try to destroy drugs at their source because demand controls supply, and as long as there is a demand, a supply will be found. Killing coca hurts only the poor local growers who are displaced by growers elsewhere who do not lose their crop. In Buzzword, Alex makes a strong case that drugs must be eliminated if the global society is to survive. Unfortunately, this central theme comes across very clumsily in the book; casual conversations read like carefully prepared speeches to make the case that Alex’s solution is absolutely needed. Through Alex, strong arguments are made that the international drug trade is bad, certainly for those who become addicted but also for the rest of society. I suspect that the author started with this agenda about drugs and wrote a novel to make his point. The fact that the book...
was published by a company called Public Policy Press supports my suspicion. The readers of *BioScience* probably want to know how much they will learn about plant pathology through this novel. The short answer is, not much. Readers of *Buzzword* will become aware that crop plants do have diseases, which are caused by fungi, bacteria, and viruses. They will also learn about some of the negative effects of diseases on crops, and that there are major programs throughout the world to improve crop production by controlling diseases. On the other hand, one will not gain much insight into the research life of plant pathologists. Most of the experimentation is not really described; instead, the plant pathology happens in the background, with occasional references to what is happening. In addition, the approach taken in one case—modifying the coffee rust fungus through genetic engineering to make it a coca pathogen—is not realistic, based on today’s technology and understanding of pathogen host range. The other approach taken, delivering the pathogens in association with insect “vectors” (beetles, leaf cutter ants), makes no sense for plant pathogens that do not have insect vectors. Moreover, it seems to me that there is a bigger issue: namely, Alex does not act or sound like any plant pathologist I know.

It becomes clear early on in this novel that the book is really a spy or adventure thriller that just happens to use a plant pathologist as the protagonist. I am not giving too much away to note that the powers in the US government do not like Alex’s proposal, and that he goes ahead with his plans without federal or international cooperation. It seems that Alex is independently wealthy, so he can pay for a lot of what needs to be done. The effort still cannot be undertaken in the open, so another country provides the resources and security to allow the plan to move forward. These contacts are possible because he is close friends with ambassadors and other powerful, rich people. As you might expect, there are many individuals and organizations that are trying to stop Alex, and the reader does not know what will happen until the end.

It is logical to ask whether the fictional program Alex devises to eliminate drug production at the source is a realistic objective. Certainly many individuals in the real-life UNDCP think that limiting drugs at their source is realistic. Alex, however, works on the assumption that plant diseases can totally eliminate coca production. Diseases do have many deleterious effects on crops, including a reduction in yield. However, diseases do not necessarily kill plants, or kill them quickly, or kill all the plants in an area. Furthermore, plant disease development is highly dependent on the environment, especially weather. The real UNDCP is not based on the assumption of outright death of coca (or cannabis or poppy), but Alex’s program is. It remains to be seen whether the nonfictional UNDCP that deals with plant pathogens, if ever implemented, can be effective enough to substantially reduce drug production.

L. V. MadDen
Department of Plant Pathology
Ohio State University
Wooster, OH 44691

References cited

