

## Some Thoughts on Demography of the Great Potato Famine

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As Mokyř (9) put it succinctly, "Irish history is demographic history." Although at first thought demographic changes may seem sufficient for discussing the Great Potato Famine, perusal of the demographic literature illuminates two other intertwining skeins in the Irish ravel: political climate and crop diversification. It is my intention to attend to some variations in the demographic pattern, thus creating a newer understanding of the famine, which in turn will serve to bifurcate the discussion along these other two lines, and to attempt some conclusions from the unraveling.

In a recent PLANT DISEASE editorial, Paddock (11) stated that: "By 1830 there were 8 million Irish. By 1850, 2 million were dead of starvation and 2 million had begun an emigration that would leave 4 million behind in abject poverty."

These numbers have a rather familiar ring. I myself have often referred to the bold symmetry of "4 million lost, 4 million left behind," believing the numbers to be the truth. I was intrigued, therefore, on reading *The Great Hunger* by Cecil Woodham-Smith (13), to find not only that this "symmetric statement" is inaccurate but that there are fairly realistic tallies of the demographic changes that followed the famine years.

Because the Great Potato Famine holds a pivotal place in the science of phytopathology (7), it is always interesting to learn more about it. I suspect that many of us attempt to capture the enormity of the famine by citing figures we think demonstrate this. For example, the 1991 annual report of the International Potato Center in Lima (1) stated that "the famine saw a third of the local population starve and another third or more emigrate"; Dyer (4) related that "Ireland's population has shrunk by half: from 8 million in the 1840s to not much over 4 million now"; Stakman and Harrar (12) wrote that "a million people are said to have died of starvation or diseases following virtual starvation during the following 15 years"; and Harris and Levey (6) stated that ". . . hundreds of thousands perished from hunger and disease. Many thousands of others emi-

grated; between 1847 and 1854 about 1,600,000 emigrated to the United States."

Woodham-Smith (13) believes that "The figures available . . . must be regarded as giving only a rough indication: vital statistics are unobtainable, no record was kept of deaths, and very many persons must have died and been buried unknown, as the fever victims died and were buried in west Cork, as bodies, found lying dead on the road, were buried in ditches." In answer to the question "How many people died?", she cites the following: "In 1841, the population of Ireland was given as 8,175,124; in 1851, after the famine, it had dropped to 6,552,385, and the Census Commissioners calculated that, at the normal rate of increase, the total should have been 9,018,799, so that a loss of at least 2½ million persons had taken place. Between 1846 and 1851, nearly a million persons emigrated, and it therefore appears that, roughly, about a million and a half perished during the famine, of hunger, diseases brought on by hunger, and fever. . . . How many people died in the famine will never precisely be known."

To quote Mokyř (9): "The Irish Famine has, of course, been viewed by Irish historians as an event of singular importance. Yet, it is rather astonishing how imprecisely historians have estimated the actual number of people who died during the famine as a result of the blight." He goes on to cite several demographic sources that show how the figures varied according to the method of enumeration or estimation. Thus the numbers who perished, according to the year of calculation, were: 1851—985,366; 1874—1.24 million; 1957—more than 0.5 million; 1960—800,645; 1974—1.9 million; 1977—1.5 million; and 1980—600,000. It is not surprising that our understanding of the demographic changes is cloudy and that the symmetry of 4:4 is a handy vehicle to use when discussing famine, blight, population changes, or disasters due to plant pathogens.

Dyer (4) makes some interesting demographic observations on the famine of the 1840s: "No Protestants starved in Ireland, and there was plenty of food in the island throughout the . . . famine years. . . . In 1840 nine-tenths of the Irish population was Catholic, . . . no Protestant died or fled in the famine, and

by 1855 between one-quarter and one-third of the people left in Ireland were Protestants." It is quite possible (although maybe a little whimsical) to relate the famine events to the siege of Londonderry in 1689, for in the events that followed, the original Catholic population lost nine-tenths of its land to the Protestant "invaders and settlers"; or even further back in time to when Pope Adrian IV granted overlordship of Ireland to Henry II of England in the 12th century (6). Much of the settlement was in the northern counties, and "Ireland was in the grip of famine in the west and south-west . . ." (13).

The many references to "fever victims" is interesting. Cholera, typhus, and relapsing fever were often mortality factors in the areas hardest hit by the shortage of foodstuffs, but they were also contracted and carried in the ships bound for North America and proved to be the causes of death of thousands of would-be immigrants. Cholera appeared to be as much a component as starvation. Cholera, recently brought home to us through the outbreaks in South America, is not a stranger to North America. In the summer of 1849, 10% of the population of St. Louis was lost to cholera. The disease can kill in a few hours through intense dehydration brought on by massive diarrhea, and fluids equal in amount to one's body weight can be lost in 7 days (3).

One can well imagine how the defenses of starved and emaciated bodies ("haggard, dirty and wretched people" [7]) reacted to *Vibrio cholerae*. More than one-half of the immigrants arriving at Montreal were known to be dying. The emigrant ship *Agnes*, for instance, arrived with 427 passengers, of which only 150 were still alive after a quarantine of 15 days (13). Quarantines were abandoned because of the pressure of immigrants, and doctors treating the sick and "healthy" died of infection. Thus, a proportion of the deaths were brought on by starvation conditions but could be attributed to communicable diseases.

Bourke (2) describes briefly some of the political repercussions resulting from the waves of blight infestations during the famine years. The blight attack in the London area (in 1845) sounded the alarm for Ireland, and the government of the day, headed by Sir Robert Peel (who, incidentally, established a perma-

ment police force that came to be known as "bobbies"), took the matter seriously, whereas the opposition did not. There was a change of government in 1846, and Lord John Russell's Whigs moved slowly and inadequately, with tragic results. Peel's government fell largely because it repealed the Corn Laws that had favored the Tory landowners.

There is a deep sense here of business serving itself at the expense of the peasantry. Woodham-Smith (13) weaves an implicit indictment of the political approaches to the Irish problem through her text. Political attitudes and social history were clearly as much a part of the famine as was late blight, and the operation of the famine relief was suffused with the ongoing politics of the time. Woodham-Smith (13) points out at some length that the control of almost all the relief and other famine-related governmental actions were centered in one man, Sir Charles Edward Trevelyan, assistant secretary to the treasury in London but in effect permanent head of the treasury.

Trevelyan sanctioned all the expenditures incurred for famine relief and directed the relief structure and its subsequent dismantling with its disastrous results. Much of the disaster can be ascribed to Trevelyan's operation-of-natural-causes system, and it was the doctrinaire policy of Trevelyan that prevailed. He was, as is said, "a man of his time."

The operation-of-natural-causes system may best be understood as the prevailing political doctrine of mid-19th century England: the age of Victorian expansionism and exploitation of the colonial empire—of its resources and its peoples. It was the ultimate expression of Toryism, the "let sleeping dogs lie" approach graced by the term "laissez-faire." In Ireland this was the age of absentee landlordism, callous attitudes on the part of petty officials, and a landlord-tenant system that saw houses destroyed for the tenants' failure to pay rent and eviction of the peasant population, who built sod houses in ditches. It was a system that allowed unscrupulous merchants to charge high prices that forced many poverty-stricken Irish further into the vortex of starvation. It allowed prices to rise to the level the market could bear, which was generally above that of the peasants. Attendant upon the Act of Union in 1800, Ireland lost its economic independence and was completely integrated into a British common market (9). It was a free-market economy that favored the rich and disadvantaged the poor. With no crop to sell, the peasant could not raise the rent money and was evicted. It was a terribly vicious cycle into which the peasant was drawn with no way out—other than by emigrating (or dying)—and it was perpetrated on the least literate

and most isolated of communities, the famine victims of the Catholic-dominated rural areas.

Actually more foodstuffs were exported under the prevailing free-trade and laissez-faire political climate than were imported (under the relief system and, later, the merchant system that sold corn imported from the United States) to feed the starving thousands (13). It is clear that not all the Irish "left behind" (11) were in abject poverty, although the ripple effect of the famine continued for many years (13).

Many Irish commuted, as it were, between England and Ireland. There is a little facile geography at play here. Ireland is referred to as the country where these dreadful events were played out, giving the impression that the whole country was involved. Moky (9) refers to the reality of "two Irelands": About two-thirds of the population were laborers and cottiers, whereas the remainder had comparatively settled and economically stable life-styles.

Woodham-Smith (13) and Dyer (4) both point out that the majority of the famine victims lived (and died) in the west and southwest. These areas were for the most part rural and quite isolated. With the road system, transport, and communication infrastructure of the pre-famine and famine years, the isolation component must have been intense and contributory to the famine/disease complex, factors brought out quite clearly in O'Flaherty's novel *Famine* (10).

Entirely related to the demographic changes in Ireland, of course, is the cultivation of the potato and crop diversification. Mary Matossian (8), in *Poisons of the Past (Molds, Epidemics and History)*, believes that the Irish were rather fortunate in that rye, the staple food of much of the population of continental Europe and host for *Claviceps purpurea*, was not a staple food in Ireland. She discusses at length population growth in Ireland prior to the famine in terms of the potato and refers to this as the "potato theory of population growth," according to which there is a favorable differential calorie content for potato vs. grain seed. If  $X \text{ m}^2$  is required to produce grain giving a calorie content equal to that of a potato, then  $Y/X \text{ m}^2$  (where  $X > Y$ ) is required for a potato; Matossian refers to this as "miniaturizing agricultural production." With only a small plot of land to develop for subsistence purposes, the potato "fitted" well into the scheme of Irish peasant tenancy, and with areas having annual rainfalls of more than 2,000 mm (6), potatoes were easy to grow (the "lazy-bed" system was widespread) and highly nutritious (the diet was probably richer than in all but the most advanced regions of Europe [9]). Potatoes could be sold to raise rent money and be eaten for subsistence, and they were free from the

debilitating scourges associated with ergotism. The potato theory, however, may contain "the right answer for the wrong reasons" (8). Unhealthy potatoes are discarded, being smelly and rotten, whereas insidious infection of grain by fungi resulting in mycotoxins more easily passes undetected into the human food chain.

According to Matossian (8), the population in Ireland in 1850 had increased to 216.7% of that in 1750. Parallel increases were noted in many European countries. Around 1750, the population of Europe began to "balloon." Population growth occurred not only throughout Europe but also in the American colonies and China. Matossian suggests that the activity of *C. purpurea* fell with changes to a warmer climate and led to reductions of fertility-suppressing alkaloids and lethal mycotoxins; she bases this on her understanding that the pathogen produces a complex of alkaloids, the composition of which is "controlled" by climatic conditions, and that waves of ergot-related problems result. Nevertheless, changes in mortality, reductions in wheat prices (leading to greater use of white bread), changes in marriage habits, fertility, and plant health are all implicated in European demography and in the Irish famine (8).

Faye Getz (5), in discussing the Black Death, suggests that "History, like a novel, ought to make sense, and how could the death of most of the population of Europe have happened for no good reason?" Do terrible catastrophes indeed have a "silver lining"? Perhaps the lesson of crop diversification and the need to create agricultural patterns less dependent on single-crop cultivation is the silver lining. The recent annual report of the International Potato Center (1) states: "Nothing like that famine [in Ireland] has been seen since, but the fact that 80% of American and Canadian potato acreage is planted with just six of the thousands of varieties available is a grim reminder that it could happen again." Matossian (8) suggests that crop diversification is the best hedge against both famine and the deleterious effects of insidious food poisoning. Moky (9) makes the interesting observation, however, that it was not so much the lack of crop diversification that lay at the base of the famine as the lack of consumer diversification, since other crops could be and were grown by cottiers and laborers.

Woodham-Smith (13) also reflects on diversification and speculates on the conduct of the British government toward the Irish people, its parsimony and callousness. Although the potato and its dependent population underwent such destruction in 1846, no serious effort was made to instruct the peasantry in diverse crop production. Schemes put forward in the famine era by the gov-

ernment representatives in Dublin to effect improvement (through "agricultural instructors") were ridiculed and dismissed as mere "toys" by Russell's government in London. Woodham-Smith (13) asserts this is the most serious charge against the government of the day, for improving agriculture would have led to improvements in land tenure and tenancy, in other words, in needed social changes.

Although starvation, emigration, and abject poverty were prevalent in mid-19th-century Ireland, when we begin to look more closely at the population numbers given for each condition we can conclude that starvation was in fact a complex pattern of diseases and predispositions, that emigration was not a wholly successful enterprise (again, complexed by disease), and that abject poverty had a regional aspect and, though affecting Ireland as a whole in some way or another, was in reality a problem of the poor and rural southern and southwest Catholic-dominated counties, and not of the industrialized and Protestant north. Numerous authors have attached numbers to each condition, with amazingly wide ranges the result.

The Great Potato Famine was probably unique in that the sociopolitical climate in Ireland, the history of events on Irish soil, and the attitudes of successive English governments to Ireland cannot be repeated. Mokyr (9) considered many causes for the failure of the Irish economy in the first half of the last century without being able to select any

particular one, although the Act of Union (bringing with it a loss of Irish cottage industry and independence) and failure to industrialize as England and continental Europe had done merited his special attention. Ireland was in effect a colony of England and was directed from London.

Ireland and the Irish were subject to the political philosophies of the ruling elite that were largely self-serving, philosophies that directly affected the Poor Laws, the ability to cope with a population highly vulnerable to a crisis that hit hard at its very subsistence, and that blinded the government to the unfolding of the tragedy. The political philosophies influenced the use and distribution of the land, which in turn influenced crop culture and consumerism, resulting in the tragedy of the famine. The need to avoid parsimony and callousness, charges brought against the British government by authors, is illustrated by these facts: The total amount of money spent on Irish relief was about \$25 million and the total amount spent on Britain's war 8 years later in the Crimea was about \$175 million (9); that war also became famous for disregard of casualties and scandalous treatment of troops (6).

I will let Woodham-Smith have the last word, since it was her book (13) that stimulated this excursion into data of the Great Potato Famine. She describes, in great detail, the emergency relief system for the hardest hit counties and its success—and then the change of government

and a change in political will. The relief system was reduced and even dismantled in 1846, when the ravages of *Phytophthora infestans* were even more evident and relief was needed more than ever. It appears that this is when the famine began to turn into the tragedy that is history.

#### LITERATURE CITED

1. Anonymous. 1991. Worldwide Potato and Sweet Potato Improvement (annual report). International Potato Center, Lima, Peru.
2. Bourke, P. M. A. 1964. Emergence of potato blight, 1843-1846. *Nature* 203:805-808.
3. Diamond, J. 1992. The return of cholera. *Discover* 13(2):60-66.
4. Dyer, G. 1989. Ireland: The curse of history. *Evening Telegram*, St. John's, Newfoundland, 31 July, p. 4.
5. Getz, F. M. 1991. Black death and the silver lining: Meaning, continuity, and revolutionary change in histories of medieval plague. *J. Hist. Biol.* 24:265-289.
6. Harris, W. H., and Levey, J. S. 1975. Ireland. Pages 1362-1363 in: *The New Columbia Encyclopedia*. Columbia University Press, New York.
7. Large, E. C. 1940. *The Advance of the Fungi*. Henry Holt & Co., New York.
8. Matossian, M. K. 1989. *Poisons of the Past (Molds, Epidemics and History)*. Yale University Press, New Haven.
9. Mokyr, J. 1983. *Why Ireland Starved: A Quantitative and Analytical History of the Irish Economy, 1800-1850*. Allen & Unwin, Ltd., London.
10. O'Flaherty, L. 1938. *Famine*. Camelot Press Ltd., Southampton.
11. Paddock, W. C. 1990. Change our mode of thinking! *Plant Dis.* 74:728.
12. Stakman, E. C., and Harrar, J. G. 1957. *Principles of Plant Pathology*. Ronald Press Co., New York.
13. Woodham-Smith, C. 1962. *The Great Hunger*. Harper & Row, New York.