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The Past, Present, and Future of Soils and Human Health Studies

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The idea that human health is tied to the soil is not a new one. As far back as approximately 1400 B.C. the Bible depicts Moses as understanding that fertile soil was essential to the well-being of his people. While exploring Canaan, Moses charged the men he sent to evaluate the fertility of the soil. In 400 B.C. the Greek philosopher Hippocrates provided a list of things that should be considered in a proper medical evaluation, including the ground. By the late 1700 and early 1800s, American farmers had recognized that soil properties had some connection to human health. In "Letters from an American Farmer", published in 1792, J. Hector St. John De Crèvecoeur stated "Men are like plants; the goodness and flavor of the fruit proceeds from the peculiar soil and exposition in which they grow". And in "Larding the Lean Earth", published in 2002, S. Stoll noted that North American farmers in the early 1800s recognized a link between an enduring agriculture and an enduring society, leading them to become concerned about the fertility of their soils and to seek ways of improving the soil in order to insure a healthy society. Continuing into the first half of the 20th Century, a 1940 publication by the International Harvester Company noted that poor soils lead to "stoop-shouldered, poverty-stricken people." Then, in 1947, Sir Albert Howard published his landmark work "The Soil and Health: A Study of Organic Agriculture", a work that took a critical look at modern production agriculture and at the link between soil fertility and health. Despite these various lines of evidence of some earlier level of understanding that healthy soils are required for healthy people, the scientific study of the relationship between soils and human health is a fairly new undertaking. In his 1997 work "Soil and Human Health: A Review", M.A. Oliver states "... there is a dearth of quantitative information on the relations between elements in the soil and human health;...there is much speculation and anecdotal evidence." So, the scientific study of soils and human health is a recent undertaking, but the idea that healthy soils are required for healthy people is not a particularly new one.

In the modern world, we recognize that soils have a distinct influence on human health. We recognize that soils influence 1) food availability and quality (food security), 2) human contact with various chemicals, and 3) human contact with various pathogens. Soils and human health studies include investigations into nutrient supply through the food web and routes of exposure to chemicals and pathogens. However, making strong, scientific connections between soils and human health can be difficult. There are multiple variables to consider in the soil environment, meaning traditional scientific studies that seek to isolate and manipulate a single variable often do not provide meaningful data. The complete study of soils and human health also involves many different specialties such as soil scientists, toxicologists, medical professionals, anthropologists, etc. These groups do not traditionally work together on research projects, and do not always effectively communicate with one another. Climate change and how it will affect the soil environment/ecosystem going into the future is another variable we need to get a better understanding of. Future successes in soils and human health research will require effectively addressing difficult issues such as these.