# Permanent Agriculture: Precursor to Organic Farming

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A century ago, the pre-eminent American soil scientist of his day wrote an eye-witness account of what he called *permanent agriculture*. Franklin Hiram King was recently retired as Professor of Agricultural Physics at the University of Wisconsin, when he embarked on a journey to the East. The resulting book, *Farmers of Forty Centuries, or Permanent Agriculture in China, Korea and Japan,* (1911), has been described by the founder of Organic Agriculture as a "classic" which "no student of farming or social science can afford to ignore" (Northbourne, 1940, p. 17, p. 55).

*Permanent Agriculture* is a concept that predates Bio-dynamic and Organic Agriculture, and like them, was, in part, a response to governmental agricultural orthodoxy. Shulman (1999) comments that early in the twentieth century, "Existing institutions, such as the United States Department of Agriculture, were not considered adequate guardians of the food supply" (p. 401). The Professor of Agronomy at the University of Illinois, Cyril Hopkins, wrote:

> *In recent years, Whitney and Cameron have revived [the] theory of toxic excreta from plant roots, in support of a more radical theory announced by them, to the effect that soils do not wear out or become depleted by cultivation or cropping. While this theory is advanced with no adequate foundation and in direct opposition to practical experience and to so many facts of mathematics, chemistry, and geology, that it is in itself quite unworthy of further consideration, the fact is that it has been promulgated by Professor Whitney as Chief of the United States Bureau of Soils, and by Doctor Cameron as the chief chemist of the same Bureau; and, consequently, it cannot be ignored* (Hopkins, 1910, p. 313).

King worked briefly at the USDA Bureau of Soils in Washington, from 1902 to 1904 and is reported (Tanner & Simonson, 1993) to have vigorously objected to the Whitney and Cameron (1903) theory that the supply of nutrients in soil will last indefinitely without replenishment, and the Whitney (1906) proposition, that manures work by offsetting the *toxic excreta* of plant roots. According to Hopkins (1910), Whitney boasted that USDA Soil Bulletins were used as text books in US agricultural colleges.

Two books resulted from this clash. Hopkins wrote *Soil Fertility and Permanent Agriculture* (1910) citing the first reports of King's 1909 excursion to the East. The fol-



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lowing year, King's *Farmers of Forty Centuries, or Permanent Agriculture in China, Korea and Japan* was published, citing Hopkins' 1910 work.

King's oriental tour occupied the first eight months of 1909 (Allen, 2000); it seems that Conford (2001) is mistaken in twice reporting the year as 1907. King wrote:

> *We had long desired to stand face to face with Chinese and Japanese farmers; to walk through their fields and to learn by seeing some of their methods, appliances and practices which centuries of stress and experience have led these oldest farmers in the world to adopt. We desired to learn how it is possible, after twenty and perhaps thirty or even forty centuries, for their soils to be made to produce sufficiently for the maintenance of such dense populations … we were instructed, surprised and amazed at the conditions and practices which confronted us whichever way we turned; instructed in the ways and extent to which these nations for centuries have been conserving and utilizing their natural resources* (ch. Intro).

King reported the sale of *night soil* (human excrement) that was daily returned from the cities to the farms, and in Japan was applied at the rate of 1.75 tons per acre per annum. He described the early morning procession of carts heading from Kobe, for sale to farmers. He related that Government subsidies encourage the use of composts, and that "prizes are awarded for the best compost heaps in each county" (ch. XVII).

The annual wheat production in the USA, is quoted by King as 19 million tons, and he commented that "China's output of rice was certainly double and probably three times this amount from nearly the same acreage of land; and notwithstanding this large production per acre, more than fifty percent, possibly as high as seventy-five percent, of the same land matures at least one other crop the same year, and much of this may be wheat or barley, both chiefly consumed as human food" (ch. XII).

King reported intercropping of "two rows of maize, kaoliang or millet alternated with soy beans" and commented on the nitrogen fixing ability of the soy (ch. XVI), and that rice crops were followed by red clover (ch. XII). He reports the "planting of cotton in wheat fields before the wheat is quite ready to harvest … without plowing … the growing of multiple crops is the rule. Sometimes as many as three crops occupy the same field in recurrent rows, but of different dates of planting and in different stages of maturity"(ch. XI).

"The intense individual economy, extending to the smallest matters" impressed King (ch.VII); "in their systems of multiple cropping; in their extensive and persistent use of legumes; in their rotations for green manure to maintain the humus of their soils and for composting; and in the almost religious fidelity with which they have returned to their fields every form of waste which can replace plant food removed by the crops, these nations have demonstrated a grasp of essentials and of fundamental principles which may well cause western nations to pause and reflect" (ch. XII).

King reported "their domestic animals receive kind, thoughtful treatment" (ch. XII). He quotes from Hopkins (p. 234) that "1000 bushels of grain has at least five times as much food value and will support five times as many people as will the meat or milk that can be made from it" (ch. 1). He quotes Rothamsted experiments where 100 pounds of dry food fed to cattle, converts to 6.2 pounds of flesh, of which less than two thirds is suitable as human food, and comments that the adoption of a vegetarian diet leads to agricultural efficiency.

Foreseeing a world movement for agricultural reform, King wrote: "China, Korea and Japan long ago struck the keynote of permanent agriculture, but the time has now come when they can and will make great improvements, and it remains for us and other nations to profit by their experience, to adopt and adapt what is good in their practice and help in a world movement for the introduction of new and improved methods" (ch. XII).

Long out of print, King's book has recently been republished by Dover (March, 2004), with an interesting title revision: *Farmers of Forty Centuries, Organic Farming in China, Korea and Japan*. It is also available as a free download from Project Gutenberg <www.gutenberg.org>; it was prepared as an eBook by Charles Aldorondo and Tasmanian, Steve Solomon, and also released March 2004.

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