Irrigation is human manipulation of the natural hydrologic cycle for the purpose of increasing crop production which, on the average, has been highly successful. More than one-third of the total harvest has been produced on irrigated land, which amounts to only ~17% of the world’s cropland (Hillel, 1991, p. 227). Clearly, irrigated agriculture serves a significant role in producing food and fiber for which demand is expected to increase with increasing human population. The question “Is irrigated agriculture sustainable?” is a critical question for the future of humanity.

The concept of sustainability is ambiguous. A dictionary definition of sustain is “to keep in existence”. The failure to keep irrigated agriculture in existence at some level would appear to be a preposterous thought. Yet, Mesopotamia provides an ominous historical precedent. Hillel (1991) documents the rise and fall of this great society. The rise was associated with surplus production by farmers largely aided by irrigation developments that freed much of the population to pursue other professions associated with urban societies. Declining yields brought about by waterlogging or salinization were devastating to cities where the needs of a considerable superstructure of priests, administrators, merchants, soldiers, and craftsmen had to be met by surpluses from agricultural production. The southern part of the alluvial plain never recovered and many great cities dwindled into villages or were left in ruins.

A political definition of sustainable agriculture (Section 1404 of the Natural Agricultural Research, Extension and Teaching Policy Act of 1977, as amended by Section 1603 of the FACT Act) is “an integrated system of plant and animal production practices having a site-specific application that will, over the long term: (i) satisfy human food and fiber needs; (ii) enhance environmental quality and the natural resource base upon which the agricultural economy depends; (iii) make the most efficient use of non-renewable resources and on-farm resources and incorporate, where appropriate, the natural biological cycles and controls, (iv) sustain the economic viability of farm operations; and (v) enhance the quality of life for farmers and society as a whole.” I find this definition too complex and cumbersome to address in my evaluation of the sustainability of irrigated agriculture.