



Applied Technology on Influence of Humic Substances on Fertilizer, Water-use Efficiency and Soil Health

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In continuation of over 35 years of on-farm studies on soil organic matter from different humates (functional carbon) and compost, I have documented quantitative improvements in soil health and water-use efficiency. The ability of soil organic matter to bind water has become an important theme for research in past years. Research trials were established to evaluate the efficacy of different commercial functional carbon products derived from Leonardite (highly oxidized lignite) in crop production. In each of these trials, functional carbon (Humic and Fulvic acids) products were used in a randomized complete block design. The use of humic substances creates strong organo-mineral complexes (aggregation), chelation, as well as enhanced buffering capacities. We evaluated data from 3 fields and compared the results. Our observation and field demonstrations indicated there was a marked increase in water retention. Data from humic acid (HA) trials showed that different cropping systems responded differently to different products in relation to yield and quality. The functional carbon products used in the study seemed to enhance fertilizer and water-use efficiency by increasing complexation, chelation and buffering. The consistent use of good quality functional carbons in our replicated plots resulted in a yield increase from 6% to 30% over several decades.