SOIL SECRETS
Unlocking the Secrets of Healthy Soil

Abstract

Humic Acids: Marvelous Products of Soil Chemistry

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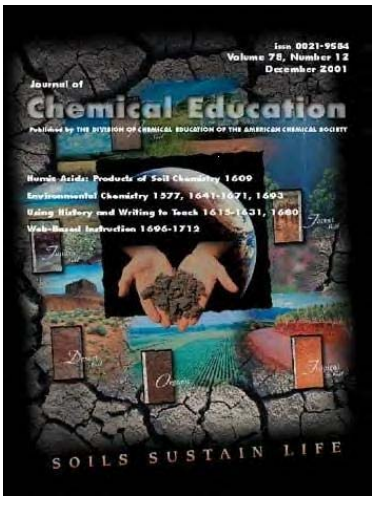
Humic acids (HAs) are remarkable brown to black products of soil chemistry that are essential for healthy and productive soils. Current Humic Acid models help to explain HAs' origins and behavior as flexible, aliphatic-aromatic, highly functionalized molecules that can act as photosensitizers, retain water, bind to clays, act as plant growth stimulants, and scavenge toxic pollutants. No synthetic material can match HAs' physical and chemical versatility. Removal of HAs from water avoids disinfection by-products such as chloroform and is a required step in production of potable water. HAs can bind soil toxins along with plant nutrients and they strongly stabilize soils. For these reasons more widespread HA production from composting and future applications of HAs extracted from coal will help to combat water and soil pollution, fight soil erosion, and lessen our dependence on chemical fertilizers.



Cover page

Arizona Case Study, showing Humic Acid accumulation after just three years.