Repurposing Produced Gas Well Water as an Alternative Water Source for Agriculture, Year III

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Can Raton Basin produced gas well water be reused for agriculture? Last year's project determined produced water is comparable to other water sources for agriculture in a hydroponic system. This year compares plants' germination rates, wet and dry weights, and heights, utilizing soil. I will also conduct testing procedures myself to determine the chemical composition of the water sources and chemical/metallurgical effects the water sources have on plants. The project uses Sprouting and Hyton's Medicago sativa, Agropyron cristatum, and Dutch Trifolium repens. The project tests the water sources for TDS (Total Dissolved Solids), pH, total hardness, total nitrate and nitrite, mercury, water metals, total alkalinity, free chlorine, copper, total chlorine, lead, fluoride, total iron, zinc, arsenic, salinity, chromium, phosphate, sulfate, aluminum, and arsenic (water sources only). The hypothesis is that produced water would facilitate plant growth as well as other local water sources. Also, in terms of chemical and metallurgical properties, produced water and plants grown using produced water would be comparable to other local water sources. The project will first measure out soil and seeds and place them into mini-greenhouse growing flats, labeling them according to plant type and water type. Each day, the plants will be watered according to their corresponding water source. At the conclusion of the experiment, the wet and dry weights, germination rates, and heights of all four species will be recorded. The experiment will be conducted twice. The plants and waters will also be tested as to their chemical and metallurgical compositions.

Awards Won: