Agricultural Water Treatment Process

1. Low concentration Cr\(^{6+}\) in groundwater is extracted from the upper aquifer

2. Cr\(^{6+}\) impacted water is then pumped to a storage tank and sent to a drip irrigation system

3. Cr\(^{6+}\) impacted water is converted to Cr\(^{3+}\) in the grass/alfalfa root zone (see right image)

How Cr\(^{6+}\) is Converted to Cr\(^{3+}\) in the Root Zone

1. Reduction of Cr\(^{6+}\) to Cr\(^{3+}\) through interaction with electron donor in soil and organic matter
2. Uptake and reduction by plant roots
3. Adsorption onto colloids and organic matter in the root zone microbial-induced (microorganisms or bugs) reduction of Cr\(^{3+}\)
4. Complexation with organic functions groups involved in the reductions