Industrial Hemp as a Potential Crop for Reclaiming Disturbed and Contaminated Soils[1]

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Abstract: Industrial hemp (*Cannabis Sativa L.*) is the same plant as the marijuana used for medicinal or recreational purposes except that it has been bred to produce lower concentrations of THC (*delta-9 tetrahydrocannabinol*), the psychoactive ingredient in marijuana. By law, industrial hemp must contain less than 0.3% THC. New federal legislation has allowed for an expansion of industrial hemp acreage. Industrial hemp can be harvested for its grain or fiber. The grain is a high-quality food, feed product, and produces a high value oil for the supplements and cosmetics market. The fiber market is still relatively small. Cannabis produces a large amount of biomass in a relatively short period of time. It also is known to be salt tolerant and accumulate toxic metals of concern, making it a potential income-producing biomass crop for disturbed and metal contaminated soils. Here we report on our preliminary experiments on industrial hemp germination response to salt stress (up to 80% germination at 10 ds/M as NaCl) and metal uptake from a multi-metal contaminated soil (increase in tissue metal concentration with soil metal concentration). We will also discuss some of the agronomic, regulatory, and economic hurdles for industrial hemp to become a viable biomass crop for disturbed and contaminated soils.[3]

Additional Key Words: Cannabis, abiotic stress, germination, plant growth.

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1. Oral paper presented at the 2019 National Meeting of the American Society of Mining and Reclamation, Big Sky, MT. Welcome Back to Montana: The Land of Reclamation Pioneers, June 3–7, 2019. Published by ASMR, 1305 Weathervane Dr., Champaign, IL 61821.
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3. Work reported here was conducted in a laboratory and greenhouse near 38º35’51” N, 80º27’65”W.