HB12-1099

Colorado

Industrial Hemp Remediation Pilot Program

Background

Farming in America over the past few hundred years has significantly reduced the viability of the available soil for raising crops. Numerous physical, chemical and biological changes over the years have reduced the productive capabilities of these lands. These soils can be made more pristine through a rapidly growing industry of phytoremediation, another expanding Bio-tech industry.

Over the last two decades, remediation techniques for serious environmental pollution has attracted considerable attention. Many different processes have been employed for effective remediation of contaminated soil and water, including biological and chemical processes. The nature of soil contamination, location of the site, time required, and costs will determine what strategy is employed in any specific area.

Non-drug hemp is a plant that shows a large potential for its function as a phytoremediator. This study will assemble the data necessary to determine what parameters non-drug hemp will perform within for this application. Non-drug hemp is a viable plant to study due to its very strong tap root system and the depth of which it goes into the soil, one of the factors to consider when determining the depth of the required remediation.

02/12/2012

Jason Lauve
18274 East Arizona Ave. Unit F
Aurora, Co 80017
e-mail: JasonLauve@gmail.com
Tel.: (720) 840-8627

Other factors are rate of absorption, the range of growing requirements, the ability of the non-drug hemp plant to continue growing while absorbing numerous substances from the soil and water. The substances which non-drug hemp may mitigate include, but are not limited to heavy metals such as lead or mercury, dyes, pesticides, pharmaceuticals and excessive nutrients. These accumulated issues have lead to fish kills, loss of biodiversity, and has rendered water unfit for drinking and other agricultural or industrial uses in ever expanding areas. (1)

Using plants as a remediation method reduces costs and environmental impact to remediation sites. The economics, restrictions and benefits of phytoremediation have been thoroughly researched. (2) Recently, there has been a focus on soil and atmospheric pollutants. (3) non-drug hemp has been shown to bind organic compound contaminants from the air and soil. Non-drug hemp grows well in many types of soil conditions and is water efficient, which makes it an ideal plant for Colorado.

Potential Sites

Target areas include farmland, mine dumps, and mill tailings. Other sites may include land fills, sludge and effluent runoff from agricultural, industrial and municipal waste areas could also be potential program areas.

Economics

The scaling of the project will allow for flexibility of the programs funding. Farmers, consumers and business will benefit in a multitude of ways. As the project matures, the potential for economic return will increase due to the rejuvenation of the soil and water. Specific economic benefits from this project are an increase the usable land area for agriculture, improved hunting, bird watching and fishing habitats,

flood attenuation, wastewater treatment, and CO_2 sequestering. This also has positive implications to The Economics of Ecosystems and Biodiversity (TEEB), which demonstrates the value of ecosystems and biodiversity to the economy, to society and to individuals. To achieve the maximum benefit from this pilot program, it is in the best interest of the government, academia and businesses to work together to achieve these goals. The chart below are seven values that come out of the ecosystem.

Phase One

To address the cost, safety, security of this phase of the pilot project, the testing and cultivation of samples will be located in an indoor grow facility. The initial stages require multitudes of testing scenarios and controls of all aspects to formulate a baseline set of data.

Phase Two

This is where the pilot program is taken outdoors to a larger scale of implementation of specific results from Phase One, ranging from 1-500 acres.

Disposal

After a season of non-drug hemp is cultivated, the materials of the plant, leaves, stalk, and seed, are to be disposed of in a controlled and secure manner. This is an additional economic opportunity for the local economy.

Evaluation

The data collected from the non-drug hemp remediation pilot program will help determine the economic impact of the changes in the ecosystem and their benefit. With the policy change of researching non-drug hemp and its impact on the ecosystem, the changes in ecosystem services and thus the impacts on human welfare will determine the programs effectiveness. Included below is a graph showing seven ecosystem services that are impacted. (fig 1)

Legal

States Rights and the Tenth Amendment The Tenth Amendment states the Constitution's principle of federalism by providing that powers not granted to the federal government nor prohibited to the States by the Constitution are reserved to the States or the people.

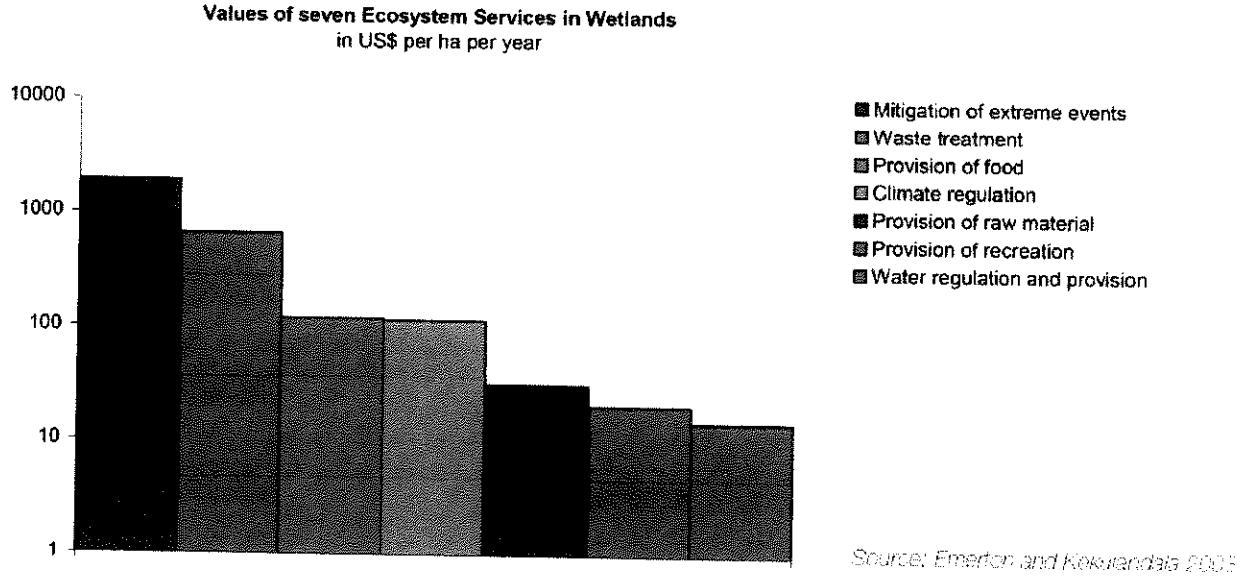
On the Federal level, the legal issues with the DEA could be resolved with the signature of the president, as an administrative rule change.

Article 28, of the Single Convention on Narcotic Drugs of 1961, as amended by the 1972 Protocol, states that, "This Convention shall not apply to the cultivation of cannabis plant exclusively for industrial purposes (fiber and seed) or horticultural purposes."

(1) Carpenter, S.R., N.F. Caraco, D.L. Correll, R.W. Howarth, A.N. Sharpley, and V.H. Smith. 1998. "Nonpoint Pollution of Surface Waters with Phosphorus and Nitrogen". Ecological Applications 8:559-568.

(2) Cunningham et al. 1995; Pletsch et al. 1999; Burken et al. 2000; Macek et al. 2000)

(3) Salt et al. 1998



HB12-1099 FACT SHEET

Colorado

Industrial Hemp Remediation Pilot Program

The health of our communities and future generations can be improved by implementing a hemp phytoremediation program. This has a positive contribution to the economic potentials of today through local economic stimulation.

The pilot program would specifically:

- Create a set of data that would determine the effective remediation capacities of hemp
- Demonstrate that hemp can aid in improving soil conditions for the production of food crops
- Restore proper pH balance in the soil and water
- Demonstrate the economic potentials for using hemp in remediation projects
- Demonstrate that hemp can remediate contaminants from water

Cost associated to the pilot program:

- Phase One: Indoor testing of samples including
  - Facility
  - Equipment, lights, containers, etc.
  - Testing materials and data collection
- Phase Two: Outdoor plots including
  - Testing material and data collection
  - Harvesting
  - Containment/Disposal

The economic potentials of the pilot program:

- Increase the usable land area for agriculture
- Strengthen the resources available to the Colorado farmer with sustainable farming and environmental stewardship
- Improved hunting, bird watching and fishing habitats
- Flood attenuation (US$ 772/ per acre)
- Industrial and domestic wastewater treatment (US$ 265/ per acre per year).
- CO2 Sequestering: (a damage cost of US$ 10 per ton of carbon per year)
- Stronger local infrastructure
- Phytoremediation
- The Economics of Ecosystems and Biodiversity (TEEB)*
- H2O remediation of pharmaceutical contamination
- Hemp Grocery Bags as a local demonstration project (Boulder city's Zero Waste Master Plan and Seattle City Council recently banned plastic grocery bags and charge a 5-cent fee on paper bags)

*TEEB: The TEEB report demonstrates the value of ecosystems and biodiversity to the economy, to society and to individuals. It underlines the urgency of action, as well as the benefits and opportunities that will arise as a result of taking such action. The report shows that the cost of sustaining biodiversity and ecosystem services is lower than the cost of allowing biodiversity and ecosystem services to dwindle. It demonstrates how we can take into account the value of ecosystems and biodiversity in policy decisions and identify and support solutions, new instruments, and wider use of existing tool in order to pioneer a way forward. In so doing, the report addresses the needs of policy-makers and those in the policy-making process.

NORTH DAKOTA HOUSE OF REPRESENTATIVES

Representative David Monson
District 10
P.O. Box 8
Osnabrock, ND 58269-0008

STATE CAPITOL
600 EAST BOULEVARD
BISMARCK, ND 58505-0360

Assistant Majority Leader
COMMITTEES:
Appropriations

Testimony on HB 12-1099
Rep. David Monson
2/13/2012

I am unable to be at your hearing in person today, but I felt that I should encourage your passage of HB 12-1099 sponsored by Rep. Wes McKinley. Just a bit of an introduction: I am presently a state representative in ND from District 10 in northeastern ND and a former Speaker of the House (2008-2010). I have been in the ND House since 1992 and serve on the Appropriations Committee. Since we are citizen legislators in ND and have real-life jobs, I have always had other jobs outside the legislature. I have farmed our family farm since 1975. I was also a teacher, secondary principal, and superintendent of schools for many years beginning in 1972. I retired from that career in 2008 and now concentrate on my farming, legislative duties, and enjoying my family, especially my two granddaughters. I have many civic duties serving as my church president, a board member for Prairie Public Broadcasting, president of the board for Family Mutual Ins. Co., and I serve on the board for the North American Industrial Hemp Council.

As a farmer in ND not far from Manitoba, Canada, where friends of mine grow industrial hemp, I see the value in this crop. It is a crop with thousands of uses already known and thousands more just waiting to be discovered. The jobs that can be created around this crop would be a huge economic boost to any area growing industrial hemp. The benefits to the environment are numerous, but carbon sequestration, production without pesticides and herbicides, and clean strong construction products are at the forefront of the list. I am enthusiastic about the prospects of what this bill may help discover about hemp's ability to clean the soil and the environment of pollutants. Industrial hemp is a plant with very high amounts of biomass produced annually. Whatever is taken into the plant can be locked away for long periods of time by using it in construction materials, etc.

I would like to mention my experience trying to get this crop back into production in the US. I have been working on this project for nearly 15 years. We passed our first bill in 1997, I believe, taking the lead in this endeavor in the US following Canada's protocol. We have passed nearly every bill introduced in the ND Legislature to study the feasibility of raising this crop, setting up licensing procedures, removing it from the noxious weed list, and adding it to the list of crops under the jurisdiction of the ND Dept. of Agriculture. Every bill has passed by huge margins with bipartisan support and support from our Attorney General's office and Ag Dept. The problem is, the federal government still views this as a drug issue and doesn't recognize industrial hemp as a farm crop. Our former Ag Commissioner, Roger Johnson, (now head of the National Farmers Union) and I testified and helped Vermont pass laws modeled after our ND laws. Several other states have done the same. I am convinced that if enough states show some conviction in this matter and treat this as a states' rights issue, we may be able to show the federal government we are serious about raising this valuable crop in the US once again. I encourage your favorable consideration of this bill and would be happy to answer any questions you may have by phone (701-496-3394) or e-mail (dmonson@nd.gov).

February 13, 2012

Colorado State Representatives
200 E. Colfax Avenue
Denver, CO 80203

Re: HB12-1099

Honorable Representatives:

As I am unable to attend the hearing today, I am offering this letter in lieu of my presence.

With a history of five generations of farming in northeastern Colorado as a background, I encourage the passage of this bill which intends to prove the efficacy of phytoremediation of soil through the planting of industrial hemp. My experience as an advisor to a global land management company gives me the experience to attest, without hesitation, to the fact that phytoremediation is both a cost effective and prudent approach to revitalizing marginal soils.

The success of such a study would lead to a practical policy framework allowing for the decontamination and remediation of soils from both a toxicity and pH-balance perspective; landscapes across Colorado in both rural and urban settings would be the beneficiaries.

Global pressures on agriculture to provide abundant food, feed, fuel and fiber translate to the need for *increasing* the options for agriculturists with the kind of common sense approach this bill promotes. Industrial Hemp can both return marginalized soils to a viable condition and the crop itself can provide food, fiber, and fuel products. With the passage of this bill Colorado is uniquely positioned to demonstrate leadership on this critical, national issue in a pragmatic and thoughtful way. Please support HB12-1099.

Sincerely,

Michael A. Bowman

Michael A. Bowman