

June 7, 2019

Re: Carbon Sequestration Through Forestry

I am very concerned about the problem we have created through excessive emissions of carbon into the atmosphere. It was this concern that lead me to attend the recent Carbon Market Workshop held at Clemson University on May 23, 2019.

I think using forests to remove CO<sub>2</sub> from the atmosphere is a very necessary part of solving the problem we have created from burning fossil fuels. After reading and hearing many different researchers and organizations bring up the need for use of afforestation in solving the carbon pollution crisis, I am puzzled and concerned that I have not heard anyone discuss the most straight forward and proven method of carbon removal and sequestration. This method is the conversion of wood into charcoal and the burial of the charcoal in abandoned mines. To put it simply, we make charcoal a product of the forest industry in addition to timber, wood pulp, fiberboard, and fuel pellets. Hopefully, charcoal for sequestration will become the major product.

I enjoyed the workshop very much and received much valuable information. I understand many of the difficulties and limitations that come with the implementation of new environmental initiatives. Please allow me this opportunity to offer some ideas about why I think the charcoal product approach should be incorporated into all carbon sequestration initiatives.

1. Sequestration of elemental carbon in the form of charcoal and burial is permanent and environmentally safe sequestration. Buried charcoal is environmentally stable and non-polluting. In fact, charcoal is used to remove pollutants. Production of charcoal is an industrial process which can be safely performed within current environmental regulations. There are thousands, perhaps millions, of abandoned mines which exist unfilled and potentially present avenues for pollutants to enter the groundwater.
2. The charcoal sequestration approach does not require elaborate and expensive administrative and monitoring programs. During burial, precautions will need to be taken to prevent fires. After filling of the burial

sites and closure, the only monitoring required would be simple verification that the charcoal is not being mined for use as fuel.

3. Charcoal sequestration is not limited to the timber industry but can provide an avenue for sequestration of carbon from waste wood, including cleanup of hurricane and flood damage. I am sure that many other cellulosic wastes can also be handled.
4. The charcoal sequestration approach can also be used by all forest owners, including owners of small tracts.

The attached chart summarizes the historical data for forests in the United States. I have lived and worked mostly in the southern states. I find this forest distribution data very interesting and represents what I have seen during my lifetime. The history that I find most informative is the last 20 to 25 years. In the Eastern United States, especially in the South, the amount of forestland has been increasing rapidly. This increase, I propose, is caused by the shift of population from rural to urban areas. The Eastern US was heavily forested in precolonial times. As the population increased, the forests were converted to agriculture. As industrialization increased, small farms became less profitable and lands were abandoned in favor of industrial jobs in urban area. Agricultural lands were at first converted to timber plantations and pastures. The recent decades have seen a return of these lands to native forests.

The South, which is sometimes called the “wood basket” of the nation now exceeds the amount of forestland it had at the beginning of the 20<sup>th</sup> Century. In fact, my home state of South Carolina, now is estimated to have 63% of its land in forests. Many rural counties in South Carolina now have 70% or more of their land in forest, which exceeds the regional precolonial amount and may also exceed the pre-Columbian amount. Eighty-eight % of forests in South Carolina are Non-Industrial Private Forests.

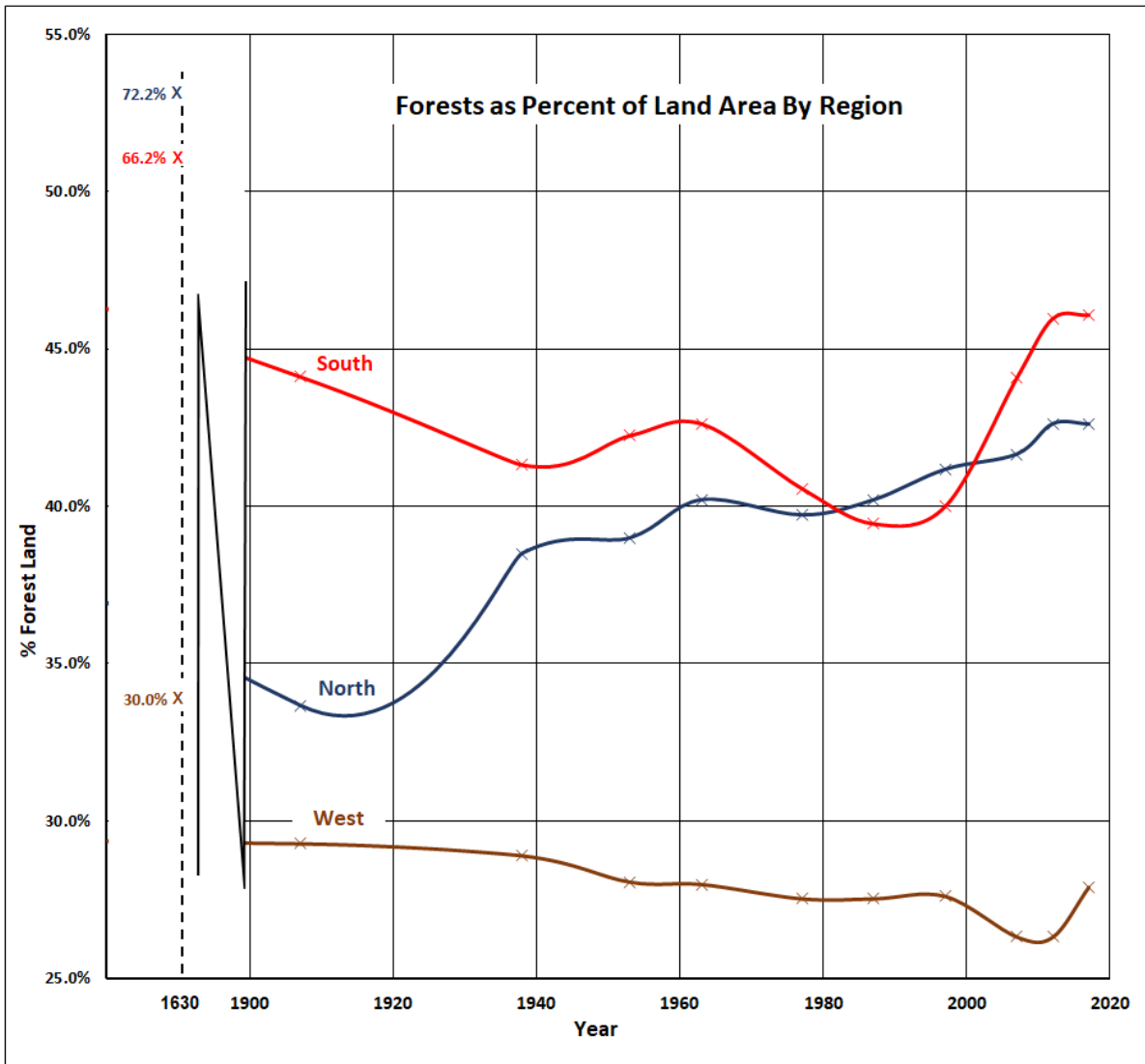
The point of this historical reminiscence is that the South has a vast potential for carbon sequestration through managed forest growth and harvest. The way to put this potential to use for the benefit of the planet and the private forest owners is to use the charcoal sequestration alternative. The California Market protocol, and other protocols, need to add charcoal sequestration and allow all harvests for charcoal sequestration to be allowed, including existing

trees. Perhaps it could be ruled that since charcoal sequestration did not previously exist, it will not be included in any baseline usage.

In conclusion, I urge Clemson University and the California Air Resources Board to evaluate and include charcoal sequestration in their programs.

Sincerely,

Edwin Eugene (Gene) Ott



Sources:

2017 US Department of Agriculture, Forest Resources of the United States, 2017: a technical document supporting the Forest Service 2020 RPA Assessment, Gen. Tech. Rep. WO-97, 2019, Table 1a. Land area in the United States by major class, region, subregion, and State, 2017, pp. 71-72.

2007, 2012 US Department of Agriculture, U.S. Forest Resource Facts and Historical Trends, Forest Service, FS-1035, August 2014, pp. 8-9.

1630-1997 US Department of Agriculture, U.S. Forest Resource Facts and Historical Trends, Forest Service, FS-696, March 2001, p. 4.