

## Agenda Item 11a – Marin Carbon Project

The Marin Carbon Project is a consortium of the leading agricultural institutions and producers in Marin County, university researchers, county and federal agencies, and nonprofit organizations seeking to understand and demonstrate the potential of enhanced carbon sequestration in Marin's agricultural and rangelands soils<sup>1</sup>. Their vision is for landowners and land managers of agricultural ecosystems to serve as stewards of soil health and to undertake carbon farming in a manner that can improve on-farm productivity and viability, enhance ecosystem functions, and stop and reverse climate change<sup>2</sup>. Carbon Farming involves implementing practices that are known to improve the rate at which CO<sub>2</sub> is removed from the atmosphere and converted to plant material and/or soil organic matter<sup>3</sup>.

The Marin Carbon Project is currently working in partnership with the Environmental Defense Fund to develop an American Carbon Registry protocol for their rangeland compost practice. The protocol involves adding compost to rangelands to increase the soil organic carbon, avoid emissions of anaerobic decomposition of organic waste material in landfills, and increase the production of above ground and below ground plant material. Apart from the economic benefit of increased forage production, applying compost to grazed grasslands also has many environmental co-benefits such as improved soil quality, decreased risk of water and wind erosion by increasing soil aggregation, and increased nutrient and water availability for vegetation<sup>4</sup>.

The Protocol requires a ten year period of continued grazing of the project area within 3% of the predetermined minimum and maximum stocking rates. These stocking rates need to be determined in consultation with a Qualified Expert, which includes Certified Rangeland Managers, to prevent abusive grazing practices that may cause reversal of the expected increase in forage<sup>4</sup>. The minimum stocking rate should be set to avoid changes in the plant community composition and the maximum rate should be set so the rangeland utilization remaining sustainable.

A number of scientific studies have been designed to study the effects of the addition of compost to rangelands. Ryals and Silver treated valley and coastal perennial grasslands with a single application of ½ inch of composted green waste. They measured the results for three growing seasons and found an average 50% increase in forage production and 1 ton/hectare increase of soil carbon sequestration. They speculated that the persistence of the treatment effects were likely the result of increased water holding capacity of the soils and slow release fertilization from the compost decomposition<sup>5</sup>.

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<sup>1</sup> <http://www.marincarbonproject.org/pages/b9-pages/about/who-we-are>. Accessed 9/9/14.

<sup>2</sup> <http://www.marincarbonproject.org/about>. Accessed 9/9/14.

<sup>3</sup> <http://www.marincarbonproject.org/carbon-farming>. Accessed 9/9/14.

<sup>4</sup> <http://americancarbonregistry.org/carbon-accounting/old/carbon-accounting/compost-additions-to-grazed-grasslands>. Accessed 9/9/14.

<sup>5</sup> [\*\*Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands\*\*](#). Rebecca Ryals and Whendee L. Silver. **Ecological Applications** 2013 23:1, 46-59.