2016 ACORN Conference & Trade Show

Delta Beauséjour Hotel, Moncton NB

Workshop Title:

Carbon Farming

Speakers:

Connor Stedman

Executive Summary:

The session covered the importance of sequestering carbon and methods of doing so/ Carbon farming is essentially about sequestering as much carbon into the soil as possible. This is needed to reduce the global warming potential from high concentrations of carbon in our atmosphere.

Main Notes:

Regeneration: what is the true potential of our land?

The Climate Crisis: need to consider climate in terms of regeneration. Current CO2 concentration in atmosphere is 400+ppm, where the historical normal is 180-280ppm

Concentration needed for maximum 2C average warming: 350ppm To get below 350ppm, 250+ billion tonnes C need to be removed from the atmosphere, plus zero net additional emissions.

Currently net sum is approx. 4.5 billion tonnes C added/year.

Climate Justice and Climate Debt:

Wealthy global north owes an enormous global debt to the global south

Responses to the Climate Crisis:

1. Emissions reduction
2. Adaptation to disrupted climate

3. Carbon sequestration

We need 250+ billion tonnes sequestered and zero net emissions

Carbon Sequestration Pathways: Three ways carbon can be taken from the atmosphere

1. Decomposition ➔ soil
2. Photosynthesis ➔ soil (liquid carbon pathway)
3. Photosynthesis ➔ perennial plant tissues

The goal is to maximize these three processes!

Math of Carbon Farming:

- Carbon Farming = Land Restoration
- 1% increase in soil organic matter = Average of 20 tonnes belowground C sequestered/hectare
- Converting treeless farmland to tree-based farming (agroforestry) can sequester 50- 150tonnes above ground C per ha in most climates
- 3+ billion ha of farm and rangeland with degraded soils worldwide
- 1+ billion ha of farmland suitable for agroforestry worldwide
- He emphasizes this is NOT A SILVER BULLET
- No single technique is applicable worldwide!

Challenges and Risks of Carbon Farming:

- Transition to new practices has costs and risks
- Global average: 3-5 years to break even in transitioning to CF practices
- Industry, philanthropy and gov't need to make money available to farmers for transition

- No incentive for land insecure farmers to invest in perennial crops and land improvements

Improved Annual and Pasture Systems

- Beyond-Organic
- Annual Ag: Organic no till
- Cover cropping
- Pasture cropping/no-kill cropping
- Compost and compost tea application

Management-Intensive Grazing:

0.3-0.8 tonnes C sequestered per ha per year using rotational grazing. Challenge with livestock systems-methane-23 times stronger than GHG than CO2. Manure methane is a major problem with confinement systems, negligible in pasture systems. But-belching methane is worse on pasture than in confinement grazing systems lose equivalent of approx. 25% of their C sequestration benefit to methane emissions

Marin Carbon Project:

Involves spreading compost on rangelands. In addition to C stores via compost, also increases storage rate via photosynthesis for years after application

Bio char:

- Global average 10-20% gain in yields, very long-term C storage w/bio char as soil amendment
- Climate justice, carbon credit land grabs concerns

Perennial grains

Keyline Water Planning

Storing water in landscape and the soil Carbon technique for dry areas

Re-wilding

Agroforestry

Tropical Home Gardens

Diverse, multilayer, homegrown gardens covering a few hectares of land

Tree-based Carbon Farming System for Cold Climates:

Silvopasture (pasture -> silvopasture)

Year round access to shade

Higher meat and milk quality because animals are happier and healthier while on the farm

Nut Crops