Soil carbon accounting in the Pacific Northwest Stand Management Cooperative: Tracking the effects of management on ecosystem-level carbon in intensively-managed forests of the coastal Douglas-fir region. (S07-harrison134405-Oral)

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Abstract:

The Pacific NW Stand Management Cooperative (SMC) is comprised of 24 organizations managing forest land in the coastal Douglas-fir region. The SMC is beginning to include C accounting in its inventory system. We examined whether N fertilization of Douglas-fir (Psuedotsuga menziesii plantations in western Washington State could affect C sequestration in both the vegetation and soils. Three sites, which received a total of 896-1120 kg/ha over a 16-y period, were compared with adjacent unfertilized control sites. There was 6.2% more C (8 Mg/ha) stored in the sum of non-tree components. The N treatment added an average of 26.7 Mg/ha (significant at 0.01 level) to the live tree component. On average, the entire forest system of the fertilized plots added 34.7 Mg C/ha. A large portion of the soil C was found in deeper horizons. When sampling to a depth of 85 cm, 75% of soil C was found below the A horizon and 40% below 25 cm. This study suggests that N fertilization of commercial forests in western Washington could increase C stored in these forest ecosystems, though the absolute effect of widespread fertilization on stands of varying properties was not evaluated in this study.

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