

Interactive comment on “Soil biochemical properties after six years in amended brown and gray mine soils in West Virginia” by C. Thomas et al.

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1. A reviewer asks if there was a surface organic layer on the areas where we sampled (page 679).

Reply: These are still very young soils since only 6 years have passed since reclamation and very little above ground cover exists (only 40% total cover at the most, Table 4), therefore, no organic layer has developed either as a surface litter horizon or a well-defined A horizon. There was no reason to sample the soil separately from the 0 to 15 cm in depth.

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2. A reviewer asks about the effect of legumes on influencing nitrogen content of the mine soils (page 681).

Reply: It is true that several legumes were seeded as part of the hydroseeding mix, namely birdsfoot trefoil, Kobe lespedeza and Ladino clover. We did not show the cover composition data, but the legumes contributed a very small amount of the total herbaceous cover, which was only 40% or less of total cover. The grasses, particularly perennial ryegrass and orchardgrass, were the predominant herbaceous plants on these sites with sparse cover. While we did not measure the effect of possible nitrogen-fixation by these legumes and their contribution of N to the soil, due to the low amount of cover contributed by the legumes to the small amount of total cover, we think that the nitrogen effect is not due to nitrogen fixation, but much more likely due to the N fertilizer application.

I added the following sentences to address this issue:

"Nitrogen-fixing legumes were introduced by hydroseed application, which could have influenced the PMN:TN ratio. The effect of legumes on N cycling is unclear since the total N content of the mine soils with and without hydroseed was not different and the PMN on hydroseed plots was significantly greater in both mine soils. The herbaceous cover contributed by seeded legumes was very low compared to the seeded grasses, therefore it was assumed that the N differences were likely due to the earlier N fertilization.

3. The reviewer says that since MBC and PMN are significantly affected by hydroseeding, it makes no sense to discuss the overall mean of subplots on different substrates, and the values given in the text confuse with the data in table 7.

Reply: I agree and have eliminated two sentences on overall means for mine soils. Therefore, I have re-written the section emphasizing the hydroseed effects. And the reviewer is also correct that incorrect values were used in the text and didn't match the values in the tables. These have been corrected.

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Interactive comment on SOIL Discuss., 2, 675, 2015.

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