

Interactive comment on “Soil organic carbon dynamics under long-term fertilizations in arable land of northern China” by W. J. Zhang et al.

Anonymous Referee #1

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General Comments: This study is significant because it is a long-term, multi-site study. Because of this the authors are able to make generalizations about carbon sequestration under different management regimes over large geographical areas. More studies, such as this one, are needed to truly evaluate the ability of soils to sequester carbon.

Specific comments: Comment 1: There was only one large pattern that was overlooked in this paper. Cropping (double vs mono), climate, and soil texture are all confounded. The mono-cropping systems are all in the temperate/colder climates and have 2 to 3 times the clay content of the double-cropping systems in the warm climates. They find carbon sequestration rates to be highest in the mono-cropping sites with the high clay content. They relate carbon sequestration rates to temperature and annual precipitation, but they do not mention the fact that clay content could also be driving this

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pattern.

Comment 2: They state that they have no evidence of carbon saturation (line 353), but in Figure 4(f) the manure addition treatment do look as though they asymptote at about 13 years. This seems to be mild evidence for possible carbon saturation.

Technical comments:

Line 113-116: Is this residue management just for wheat or also for corn?

Line 146: When was manure added?

Line 149: There is no mention of plot replication within sites. How many plots were there for each treatment in each site?

Line 172: Organic carbon inputs by roots was set at 30% of above-ground biomass. Recent publications have estimated the average root input for corn at 16% and for wheat ~59%. Therefore, the average for these two crops would be ~37.5%.

Interactive comment on Biogeosciences Discuss., 6, 6539, 2009.

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