

Interactive comment on “Land-use changes influence soil bacterial communities in a meadow grassland in Northeast China” by Chengyou Cao et al.

Anonymous Referee #2

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General comments: In this study, authors investigated the effects of land-use changes on soil physicochemical properties and bacterial communities in a semi-arid region in Northeast China. The diversity and composition of soil bacterial community and the relative abundance of dominant taxa were detected in four land-use types (natural grassland, paddy field, upland field, and poplar plantation) through high-throughput Illumina MiSeq sequencing technique. The results provide useful information for microbial community composition under land-use changes in semi-arid environment. However, I have two major concerns: (1) In a given site, land-use type, land-use history (including duration), and land management practices (such as fertilization) are expected to impact the soil bacterial community by altering nutrient availability and environmental

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conditions. In this study, you have four land-use types: native meadow, 26-year paddy field, 50-year upland field, and 34-year poplar plantation (the three latter ones were all converted from the former one; with different use durations). You should discuss the possible effects of duration in the Discussion section (Page 13, L7-11) (2) Another concern is the sampling time. The soils were sampled in May 2016. You should add explanations why sampling in May is rational given that seasonal changes exist in many variables measured in this study?

Specific comments: Page 2, L3, change 'are converted' to 'have been converted' Page 2, L4, the meaning of 'response processes' is ambiguous. Page 2, L5, 'ecosystem services' is better than 'environmental services of ecosystems' Page 2, L9-10, the statement of this sentence (In the coming decades, many semi-arid grassland areas in Northeast China are expected to be converted for agriculture use) needs evidence to support. Page 2, L11, delete 'influencing' after 'key' Page 2, L24, Change 'have yet to be sufficiently assessed' to 'have not yet been sufficiently assessed' Page 4, L6, 'the effects of native grassland cultivation'? How did you cultivate the native grassland? Page 4, L7, change 'the future development of sustainable use of fragile ecosystem services' to 'the sustainable use of ecosystem services of fragile grasslands' Page 4, L7-10, delete '(namely, native meadow grassland, upland field, paddy field, and woodland)' Page 4, L20, Horqin Grassland? Is it a specific type of grassland or a name for a specific location? Page 5, L7, 'The meadow grassland is' Page 7 L11-12, you defined the abbr 'AEC' (abundance-based coverage estimator), but you used 'evenness (ACE)' again in Page 8, L14. Please clarify the abbr. Page 10, L11, '3.5 Relationship between microbial community composition and soil environmental factors' Page 14, L4, 'These changes may influence environmental functions'. What do environmental functions mean here? Page 14, L10-11 delete "However, soil type remains the same." It makes no sense. Page 16, L8, add a comma (,) after 'by pH'

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