

Interactive comment on “Short-term cropland responses to temperature extreme events during late winter” by G. De Simon et al.

G. De Simon et al.

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Reviewer #1

Comment #1 page 6494, line 14, there is no such thing as anticipation in seed germination, it is actually emergence which is observed in this study.

We agree with the reviewer that “seed germination” is not the proper term for the observed phenomenon. Thus we substituted “seed germination” with “emergence” throughout the text.

Comment #2 page 6497, line 15, is the 0 depth, the depth before the addition of the mulch material?

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The 0 depth is soil surface before treatment application (period I) and after ploughing (period V), while in the other periods (II, III and IV) the 0 depth is the layer between the gravel layer (thickness ≤ 0.5 cm) and soil.

Comment #3 page 6497, line 16, superficial should be surface and how were these sensors protected from direct solar radiation?

We changed “the superficial ones” into “surface ones” in the text. Thermocouples at 0 depth were protected from direct solar radiation by inserting them into a thin layer of soil fixed with some transparent glue. In this way, the surface thermocouples were included in a little layer of fixed soil with the same color (i.e. albedo) of field surface.

Comment #4 page 6498, line 7 and 9, seed birth is really emergence and the correct term should be used.

We agree with the reviewer and substituted “seed birth” with “emergence” in the text and in Figure 2.

Comment #5 page 6498, line 20, does the sum of the crop residues include the roots of the previous crop?

Yes, the roots of the previous crop are included in the CRy-1 term.

Comment #6 page 6501, line 1-3, what is really being stated is that the temperature variations occurred in the upper 10 cm and the fact that soil temperature decreases with depth is widely known.

We agree with the reviewer and modified the sentence into: “During this period, all treatments created a quite homogeneous soil temperature alteration along the soil profile, at least up to 10 cm depth (data not shown). Soil temperature diurnal fluctuations were wider in W and narrower in Co (compared to C)”.

Comment #7 page 6502, line 15, temperature doesn't have a transient effect on crop development it has a cumulative effect as evidenced by the effect of phenological de-

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velopment. Is this strictly an effect of temperature or a combination of temperature and soil water content.

We agree with the reviewer and modified the sentence into: "Treatments had an effect on crop development: cooling treatment caused a lower plant density compared to C at all sampling dates (figure 2(a)), even if not significant ($P > 0.05$), while in W, plant density was always higher than C (significantly only on May 13th, 9 days from sowing; $P = 0.015$)". This is strictly an effect of temperature alteration since, as reported at page 6501 line 20, "the crop is irrigated (a total of 310 mm during period II and III)" and thus "soil water content was always close to field capacity".

Comment #8 page 6505, line 24, need a space between winter and early spring.

We inserted a dash between "late winter" and "early spring" (late winter-early spring).

Interactive comment on Biogeosciences Discuss., 10, 6493, 2013.