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Interactive comment on "Viticulture microzoning: a functional approach aiming to grape and wine qualities" *by* A. Bonfante et al.

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We appreciate the reviewer comments that in general are in agreement with those reported by the other two referees. Principally, He/She requires an improvement of discussion and conclusion chapters and the style of the manuscript. All requests will be taken into account in the revised form of the manuscript. Here, a particular attention will be done to the specific proposals and requests not faced in the others discussions.

- Is it not available Climate Normals (30 years) for the experimental site?: Unfortunately, the weather station of Mirabella Eclano (near the study area) began the record of meteorological data in the 2003. Therefore there isn't a dataset of 30 years that should be referred to the period 1961-1990, taken as reference for the actual climate. However,

in our experience in working on crop adaptation to climate change in areas not so far from the study area (see two references on that at the end of this note), the reference period (1961-1990) is very different from the past ten years: global warming produced an increase of temperatures and also different rainfall (amount and distribution). Then, in our opinion, the use of the last 10 years is more representative of climate of this area. Moreover, in the last ten years there were very dry vintages (2003 and 2007) and very wet (2005 and 2010); so this 10-years period intercept a large climatic variability. Following it is shown the rainfall amount (fig.1) during the berry ripening in the years analyzed. This graph was used also for the reply to Reviewer 1.

- Please give some more details about estimation of 'Leaf Area Index'. : Information about the method used to estimate the LAI (ceptometer) will be added in the manuscript in the Material and Methods section.

- "In particular, of the 27 plants monitored, 12 were used to collect the grapes at harvest and 15 for sampling scalar grapes." -Considering the defined study area, it looks to me a small number of monitored vines: 27 plants were monitored in each fHZ, than 54 plants were monitored over less of 3 ha. We will clarify it in the revised manuscript.

- "six soil profiles and 25 augers were localized to include major variability" –Please clarify the methodology adopted. How many samples were collected from 'Cambic Calcisol' and 'Eutric Cambisol'?: On the base of identified HZs we performed 25 pedological observations. These qualitative observation were not recorded and aimed only to a preliminary evaluation of soil type variability. On the base of these qualitative observations we located, described and sampled 10 soil augers and 6 soil profiles. From each described soil horizon bulk and undisturbed soil samples were collected. We will clarify in the revised paper.

- "3.4 Vineyard records (crop/must measurements)" -Most of these data may be included in Table 2.: We will try to insert this information inside of the tab.2.

- Some statistical analysis is needed in Table 2 (between 'CAM' and 'CAL'). And about

differences among years? Some statistical information will be added inside of the table 2.

- Please add some considerations about the CWSI applicability to different grapevine varieties. Though with similar LAI and root depths, diverse crop responses can be found among varieties.: This is very interesting question. We will discuss it. The use of model output is useful to evaluate the CWS in different soils under the same climate and crop development (e.g. LAI), but also when the conditions are different. For this reason we use the output of model to differentiate the "soils suitability to grape production" by means of CWSI. Obviously, two varieties can have the same LAI under the same climate, reacting in different way to the stress. The output of the model can differentiate the different SPA systems analyzed, but if we want to say something about the most quality responses we need to know the specific cultivar relation between CWSI and quality parameters as anthocyanin, sugar, etc. of different varieties.. This concept is very similar to the approach reported in the already quoted references. Yield response functions of crop varieties (eg. Mais) were related to different levels of water stress (or water deficit) (see Menenti et al., 2014, or Monaco et al., 2014).

References: Menenti, M., S.M. Alfieri, A. Bonfante, M. Riccardi, A. Basile, E. Monaco, C. De Michele, and F. De Lorenzi. 2014. Adaptation of Irrigated and Rainfed Agriculture to Climate Change: The Vulnerability of Production Systems and the Potential of Intraspecific Biodiversity (Case Studies in Italy). In “Handbook of Climate Change Adaptation”. Springer-Verlag Berlin Heidelberg. DOI 10.1007/978-3-642-40455-9_54-1. Monaco, E., A. Bonfante, S.M. Alfieri, A. Basile, M. Menenti, and F. De Lorenzi. 2014. Climate change, effective water use for irrigation and adaptability of maize: A case study in southern Italy, Biosystems Engineering, http://dx.doi.org/10.1016/j.biosystemseng.2014.09.001

Interactive comment on SOIL Discuss., 1, 1203, 2014.

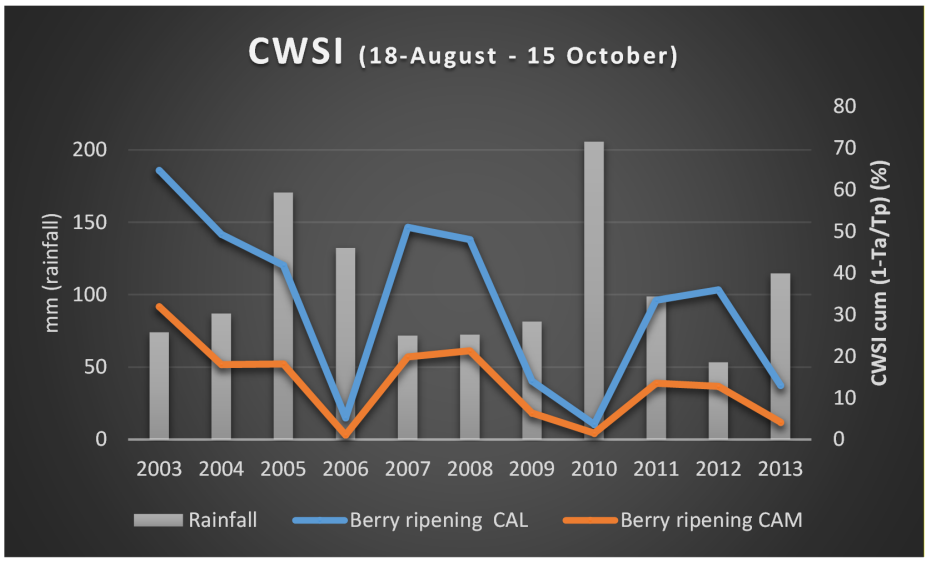

Fig. 1. Fig.1