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Grape berry quality parameters of Prokupac variety - Comparison between biodynamic and conventional management

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Summary

This study examined influence of two different vineyard management practices – biodynamic (BIO) and conventional (CON), applied in a vineyard of a red wine variety Prokupac, (Serbia, 43°18' 29" N 21°23'15"E), on grape berry quality parameters: soluble solids (SS), pH, total acidity (TA), total phenolic content (TPC), radical-scavenging activity (RSA), and total anthocyanin content (TAC). Both investigated vineyard management approaches were combined with two different winter pruning levels (the bud number per vine was 10 and 20, respectively). Soluble solids content was not influenced by different managements, but very significant differences were found in different bud loads treatments. SS showed significantly higher accumulation in berry in lower bud load treatment, 10 buds (23.8 °Brix) compared to the 20 bud load (21.7 °Brix). On contrary, TA showed significant differences between managements, BIO (6.65g L⁻¹) and CON (6.44g L⁻¹). There were differences in TPC between BIO and CON treatments (4.86 and 4.16 mg GAE g⁻¹ respectively). While TPC was significantly higher in the BIO management treatment, bud load treatments were not affected this characteristic. Total anthocyanin content (TAC) was affected only by the management practices and was significantly higher in CON management treatment. Mean value for TAC were 0.10 mg mal-3-glu g⁻¹ (BIO), 0.19 mg mal-3-glu g⁻¹ (CON). TPC, RSA and TA were significantly higher in the biodynamic management treatment compared to the conventional, whereas the pruning level did not affect these attributes. SS content was not influenced by different managements, but different bud load has had. There were not significant differences in pH between applied treatments. These results indicate that the Prokupac has achieved favorable results under the biodynamic management, in terms of quality of wine grapes. In both trailed pruning level treatments, the lower bud number per vine (10 buds) was more favorable. These results clearly justify further research of this topic, with the overall aim to get a full picture of the effect of biodynamic vineyard long management practice on grape quality in Prokupac variety.

Keywords: biodynamic management, Prokupac variety, SS, TA, berry polyphenols