



## Delayed winter spur-pruning in New Zealand can alter yield components of Merlot grapevines

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- Fruitset in grapevines is both genetically and climatically determined. Once a flower sets into a berry, 3 outcomes can take place: 1) If full fertilization proceeds successfully, the result is a normal, seeded berry; 2) If fertilization takes place but seed development is arrested, the result is a seedless berry (*stenospermocarpic*), which is naturally smaller than a seeded berry; 3) If pollination takes place but fertilization doesn't, the result is a small, hard, green, "shot" berry (*partenocarpic*), which the authors refer to as "live green ovary". (See original text for a photo of a cluster containing all three types of berries).
- Previous studies have shown that delayed winter pruning of spur-pruned vines can increase vine yields substantially. Therefore, late pruning can be an important consideration for cultivars known to crop erratically. However, it is not clear which yield components are affected. The goal of this study was to determine the impact of late pruning on yield and yield components.
- Shoot-positioned Merlot/5BB vines growing around Marlborough, New Zealand, were pruned at one of 4 different times: mid-July (normal pruning time in New Zealand, equivalent to mid-January in the Northern hemisphere); mid-August; mid September; and mid October (equivalent to mid-April, when shoots were 5 cm long, or 2"). The design was a Latin square, with 5 replicates and 4 vines per replicate. The trial ran for 3 seasons (1998-2000).

January pruning	February pruning	March pruning	April pruning
February pruning	January pruning	April pruning	March pruning
March pruning	April pruning	January pruning	February pruning
April pruning	January pruning	March pruning	February pruning
January pruning	April pruning	February pruning	March pruning

Latin square experimental design

- At harvest, the authors measured yield, cluster number and cluster weight, and number and weight of the 3 types of berries. This latter classification was done visually (large red berries were considered *seeded*; small red berries were considered *seedless*; and green, 3 mm diameter berries were considered *live green ovaries*).

- **Results**. 1) Delayed pruning increased yields by 93%, 63%, and 82% over the three seasons that the trial ran, respectively (7, 3, and 6 kg/vine, respectively; or 15.5, 6.5 and 13 lb/vine). For 2 of the 3 seasons, the highest yield corresponded to the October (April) pruning, whereas in the 1999-2000 season, the highest yield corresponded to the September (March) pruning. 2) There was no consistent effect on the number of clusters/vine. 3) However, cluster weight increased as pruning was delayed. 4) There was no consistent effect on the number of berries/cluster. 5) However, as pruning was delayed, the proportion of seeded berries increased, and that of seedless berries and live green ovaries decreased. As a result, **later pruning increased overall mean berry weight by increasing the number of seeded berries**. 5) Delayed pruning resulted in delayed sugar accumulation and higher TA (and lower pH, even though the difference was only significant for 1 of the 2 years this parameter was measured). These changes were related to higher vine yields on the later-pruned vines.

- The authors believe that late pruning inhibits the development of the basal nodes –causing delayed budbreak- due to apical dominance. This may have also postponed flowering and set to a time when climatic conditions were more favorable. The authors did not measure shoot length at pruning time, but others who did found that shoots remained shorter in the late pruning treatment.

- The authors' results agree, for the most part, with the literature, which reports yield increases anywhere from 10% to 122% with delayed pruning. However, they mention that 3 studies found decreased yields, or no change, with delayed pruning. In those studies, pruning had taken place well after budbreak. In the current authors' opinion, the fact that yields were highest on vines pruned in September –instead of October- in one of the 3 years of the current study, suggests that an excessive delay of pruning may reduce yields –by not leaving sufficient carbohydrate reserves for normal crop development.

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