



**Thesis Title: Preliminary Studies on Grapevine Planting Age and Its Impact on Vegetative and Some Generative Parameters**

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**Date and location of the oral examination (if known):**

**Confidential:**     Yes     No

**Abstract (max 300 words):**

**Topic position and objectives:** The objective of this study was to evaluate vigor parameters and grape quality of grapevines planted in different years in the same vineyard. The trials were performed during the 2014 vintage in Geisenheim, Germany, with the variety cv. Riesling, clone 239-17, and the rootstock 5C Teleki.

**Methods:** Three treatments consisting of young (planted in 2012), mature (planted in 1995) and old vines (planted in 1971) were compared throughout the season. Vegetative parameters were assessed including trunk diameter, leaf area, and leaf chlorophyll and nitrogen contents. Ripening was monitored by following the evolution of TSS, TA, pH, berry malic and tartaric concentrations, and NOPA. Yield and pruning data was collected for years 2011 to present in order to evaluate grapevine balance.

**Results:** Young vines showed different vegetative growth patterns than mature and old vines. Their average shoot length and number was markedly lower and their canopies were thinner, but their leaves had high chlorophyll content. Young vine berries had a higher pH and  $\alpha$ -amino nitrogen concentration. The general behaviors of mature and old vines were similar, especially when comparing shoot length, leaf area, and fluorescence index. However, old vines, which had a higher number of shoots, had slightly more open canopies as shown by PQA. Juice parameters examined for both treatments yielded comparable results. From 2011 to 2014, mature vines generally produced a larger crop, while old vines displayed a higher pruning weight, which resulted in superior yield to pruning weight ratios for mature vines.

**Main conclusions:** There were no significant differences in the parameters examined for vines that were 20 and 45 years old. Further investigation is required to better understand the ageing process of grapevines and its implications on vegetative parameters and wine quality, especially secondary metabolites. When adequately pruned, young vines will become a representative treatment that can be directly compared to their older siblings.

**Keywords (5):** vine age, vine balance, vigor, microclimate, grape quality.

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