Effects of vineyard management on flavour and aroma compounds in Vitis vinifera cultivars: A review with implications for Bacchus.

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18th February 2022

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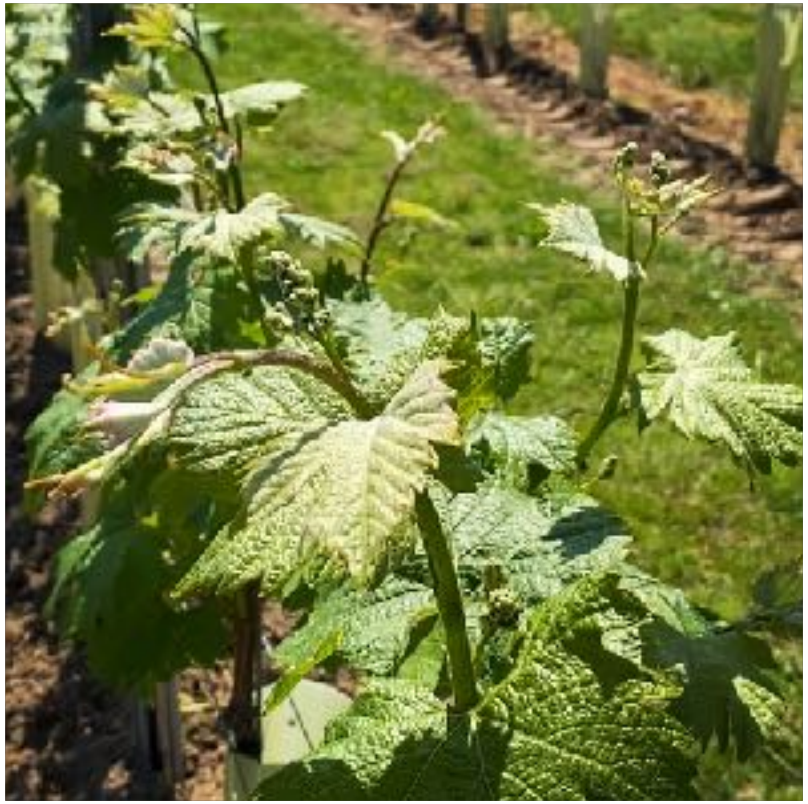
PLUMPTON COLLEGE



Why Bacchus?

Widely planted

8.5% of planted area in 2018 (1)

Proven track record

Over 20 years of successful cultivation & vinification

Existing market & consumer interest

Multiple producers and styles

Public awareness & desirability

Important to the UK wine industry

Profile

Parentage:

Bred in Germany by Peter Morio in 1933

Silvaner X (Riesling X Müller-Thurgau)

Common attributes: (2)

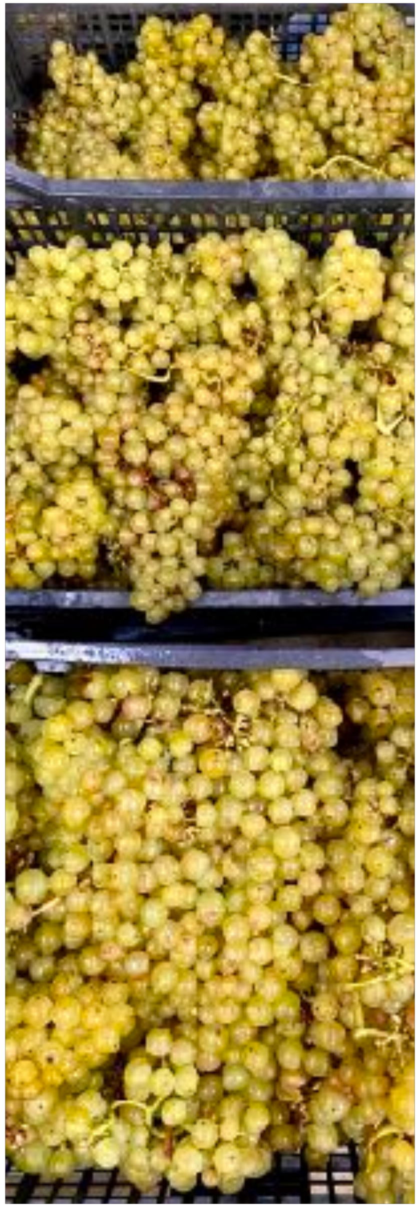
Early ripening

Productive

Pronounced aroma and flavour

Aroma and flavour profile compared to Sauvignon Blanc

Offers the UK an aromatic wine style



Review aims

Examine existing literature to ascertain what we know about **flavour and aroma compounds** in *Vitis vinifera.*

Particularly **THIOLS** and **TERPENES**

Use this information to suggest potential research to **further our understanding** and enable **better management** of Bacchus in the vineyard.

What we know - Thiols

Highly aromatic organic sulphur compounds which **positively** or **negatively** impact wine aroma

Volatile thiols consistently present in **Sauvignon Blanc** and **Bacchus** (3;4)

- **4-Mercapto-4-methylpentan-2-one (4MMP)**
- **3- mercaptohexylacetate (3MHA)**
- **3-mercaptohexan-l-ol (3MH)**

Volatile thiols **present in finished wines** are essentially **absent from grape berries** (5)

Vine synthesised precursors are cleaved into volatile thiols via yeast induced enzymatic activity during **fermentation** (6)

Biosynthesis influenced by **physiological** and **environmental** factors (7;8;9)

Precursors accumulate from veraison in Sauvignon Blanc (10)

What we know - Terpenes

Secondary plant **metabolites** - large and **varied group of compounds**

Present in berries in both **bound** and **free** forms

Monoterpenes perception thresholds are diverse, they are associated with **citrus** and **floral** aromas (11)

Biosynthesis is influenced by **physiological** and **environmental** factors (11;12;13)

Conflicting research (14;15) - generally meaningful terpene accumulation occurs post veraison

Sauvignon Blanc - aromatic profile studied

However **genetic**, **physiological** and **environmental** differences exist between Sauvignon Blanc and Bacchus

To better understand how to manage Bacchus, **viticultural UK field studies** could provide varietal and climate specific information

Multiple studies have concluded post-veraison is significant for **thiol precursor** synthesis

- **Fruit zone leaf removal** at veraison to alter bunch microclimate
  - Control (no removal), moderate & pronounced removal
  - As lack of direct correlation between precursors and final thiol analysis should be carried out on final wines not musts

Existing research shows **terpene** accumulation post-veraison is expected

- **Sequential harvest timings**
  - Berry composition analysis
  - Vinification and final wine composition analysis
  - Blind tasting - any variation from laboratory results

Oenological choices can considerably impact wine aroma

- Interest in low intervention winemaking
- Impact of fermentation of Bacchus using differing indigenous yeasts

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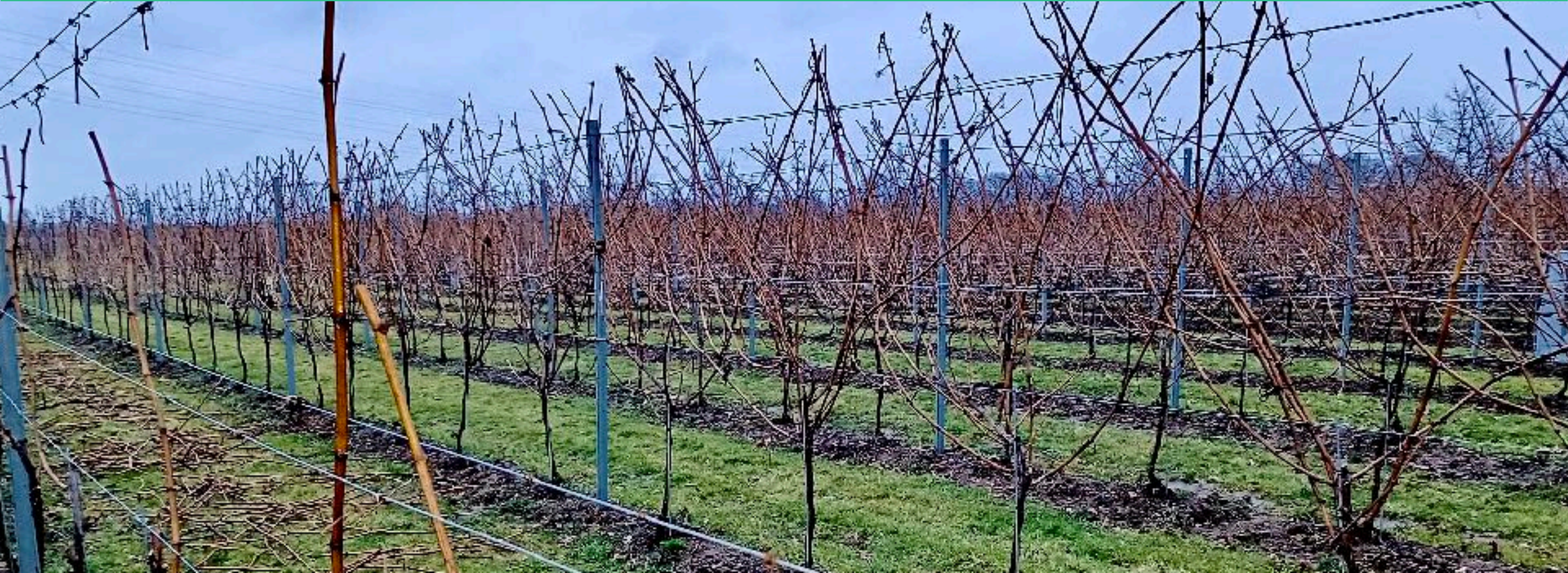
Further research

Any questions ?



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