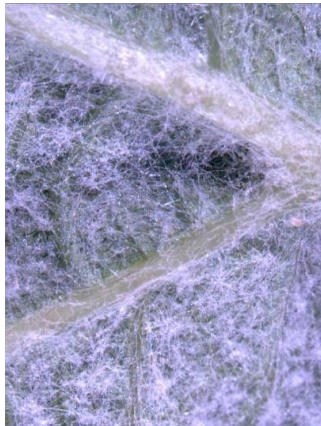


Performance of *Typhlodromus pyri* SCHEUTEN on 75 different Grape Varieties



Sampled vineyard



| |
|----------------------|
| ALIGOTE |
| ALVARINHO |
| ARAMON NOIR |
| ASSYRTICO |
| BARBERA |
| CABERNET FRANC |
| CABERNET SAUVIGNON |
| CARIGNAN NOIR |
| CARMENERE |
| CHARDONNAY |
| CHENIN BLANC |
| CINSAUT |
| CLAIRETTE BLANCHE |
| COLOMBARD |
| DOLCETTO |
| GAMAY NOIR |
| GRENACHE NOIR |
| MERLOT |
| Monastrell |
| MUSKATELLER |
| NEBBIOLO |
| PALOMINO FINO |
| PINOT NOIR |
| PLAVAC-MALI |
| PRIMITIVO |
| RIESLING |
| RKATSITELI |
| ROUSSANNE |
| SAPERAVI |
| SAUVIGNON BLANC |
| SEMILLON |
| SYRAH |
| TANNAT |
| TEMPRANILLO |
| TOURIGA NACIONAL |
| TREBBIANO TOSCANO |
| VELTLINER GRUEN |
| VOIGNIER |
| WELSCHRIESLING |
| Solaris |
| Grüner Silvaner |
| Scheurebe |
| Weißer Riesling |
| Rieslaner |
| Optima |
| Gelber Muskateller |
| Müller Thurgau |
| Morio Muskat |
| Kerner |
| Weißer Gutedel |
| Roter Traminer |
| Gewürztraminer |
| Faberrebe |
| Weißer Elbling |
| Chardonnay musque |
| Chardonnay |
| Weißer Burgunder |
| Grauer Burgunder |
| Bacchus |
| Auxerrois |
| Blauer Trollinger |
| Blauer Spätburgunder |
| St.Laurent |
| Regent |
| Blauer Portugieser |
| Müllerrebe |
| Blauer Limberger |
| Blauer Frühburgunder |
| Dunkelfelder |
| Dornfelder |
| Domina |
| Dakapo |
| Cabernet Mitos |
| Cabernet Dorsa |
| Acolon |

Assortment of international varieties planted 2004

Assortment of German varieties planted 2008

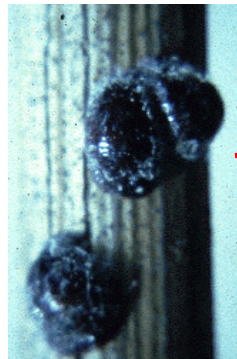
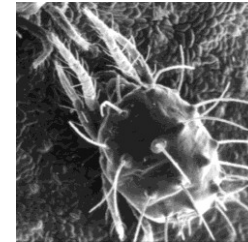
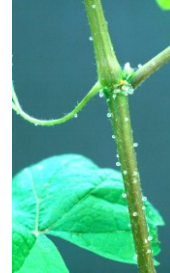
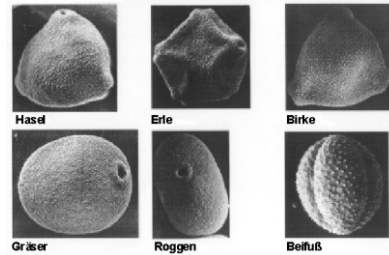
75 varieties

20 vines per variety

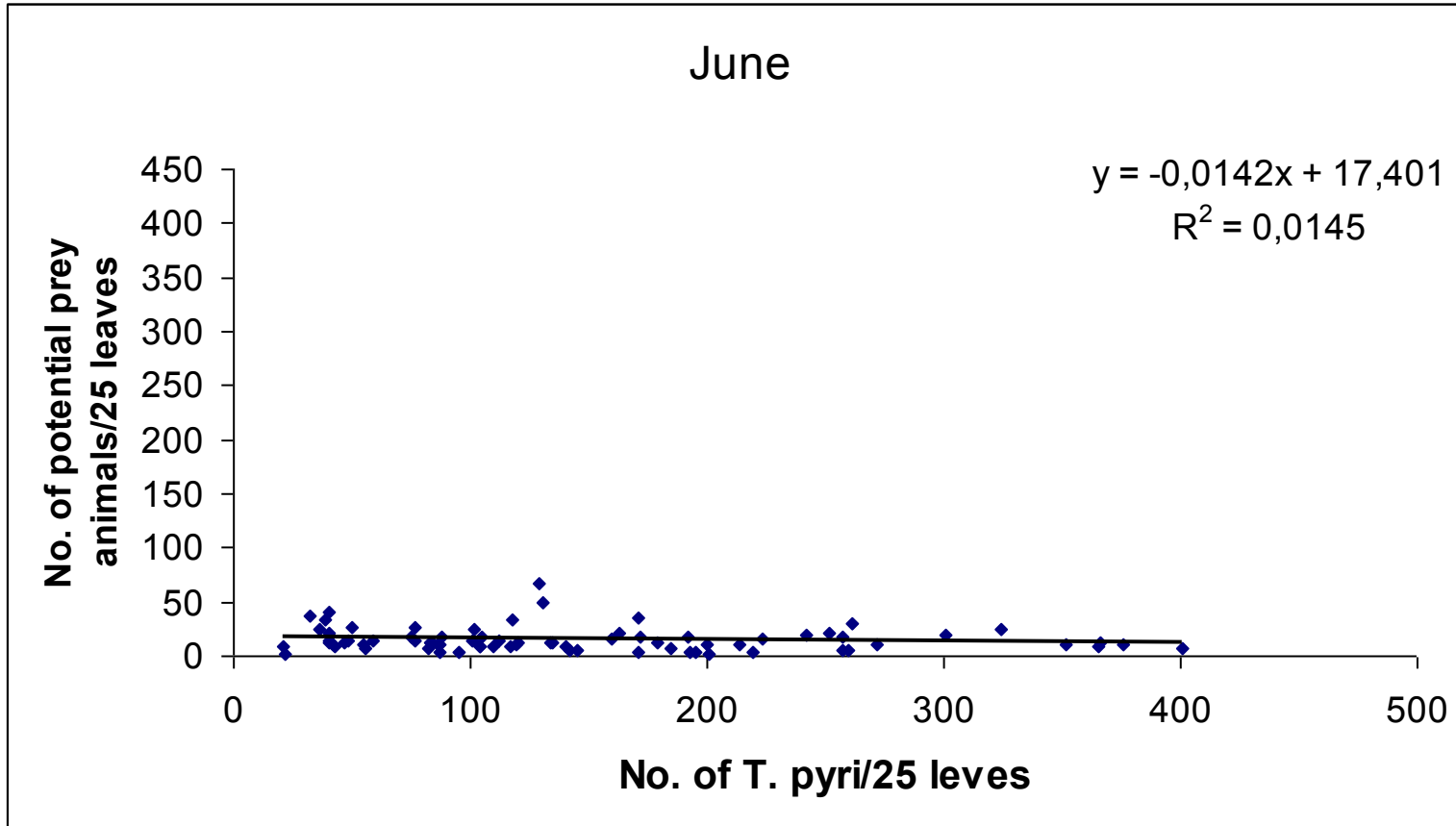
Plant protection and vegetation homogeneous within the field

- 25 leaves from the middle of the canopy
- 10 pieces of 10 cm long and 2 year old wood removed near the trunk
- Washing method according to Hill & Schlamp 1984
- Sampling time: June, August, September, Oktober (leaves);
December (wood)

Feeding of *T. pyri*



Is *T. pyri* abundance related to animal prey density? → No!!!



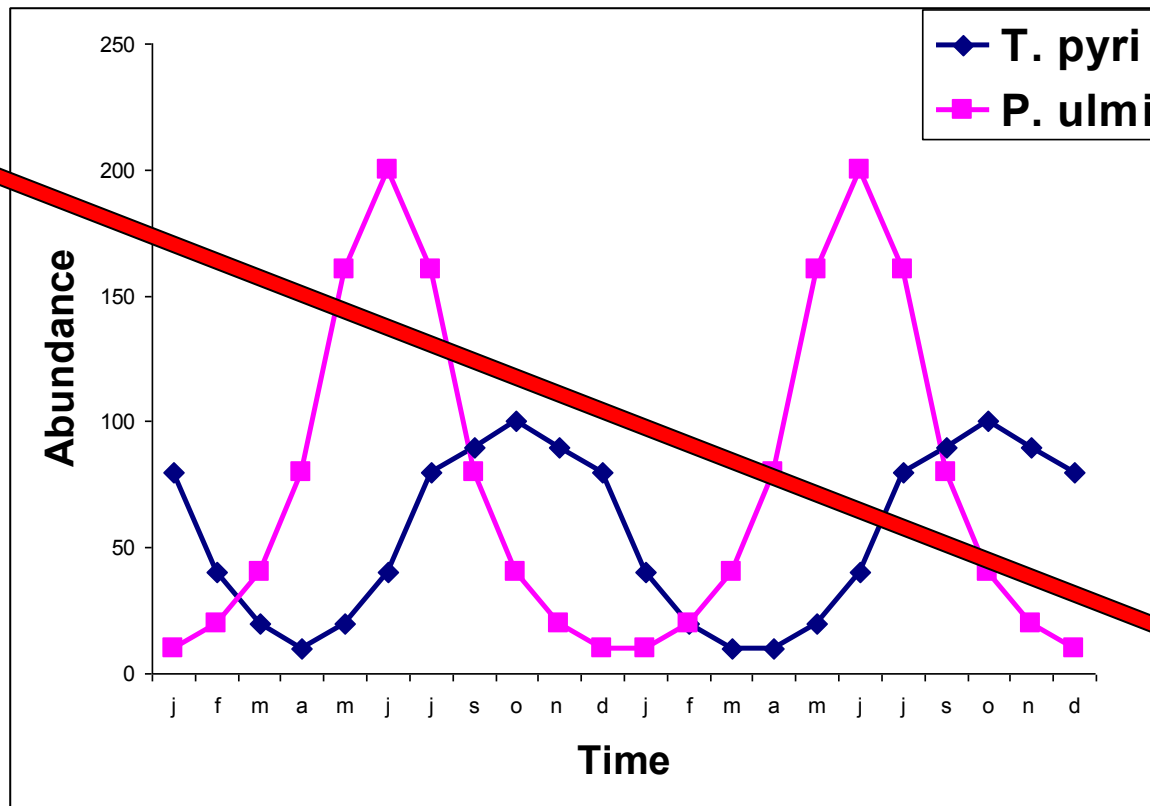
→Leaves: June: - ; August: - ; September: - ; October: -

→Winter cutting wood: -

Effect on Population Dynamics:

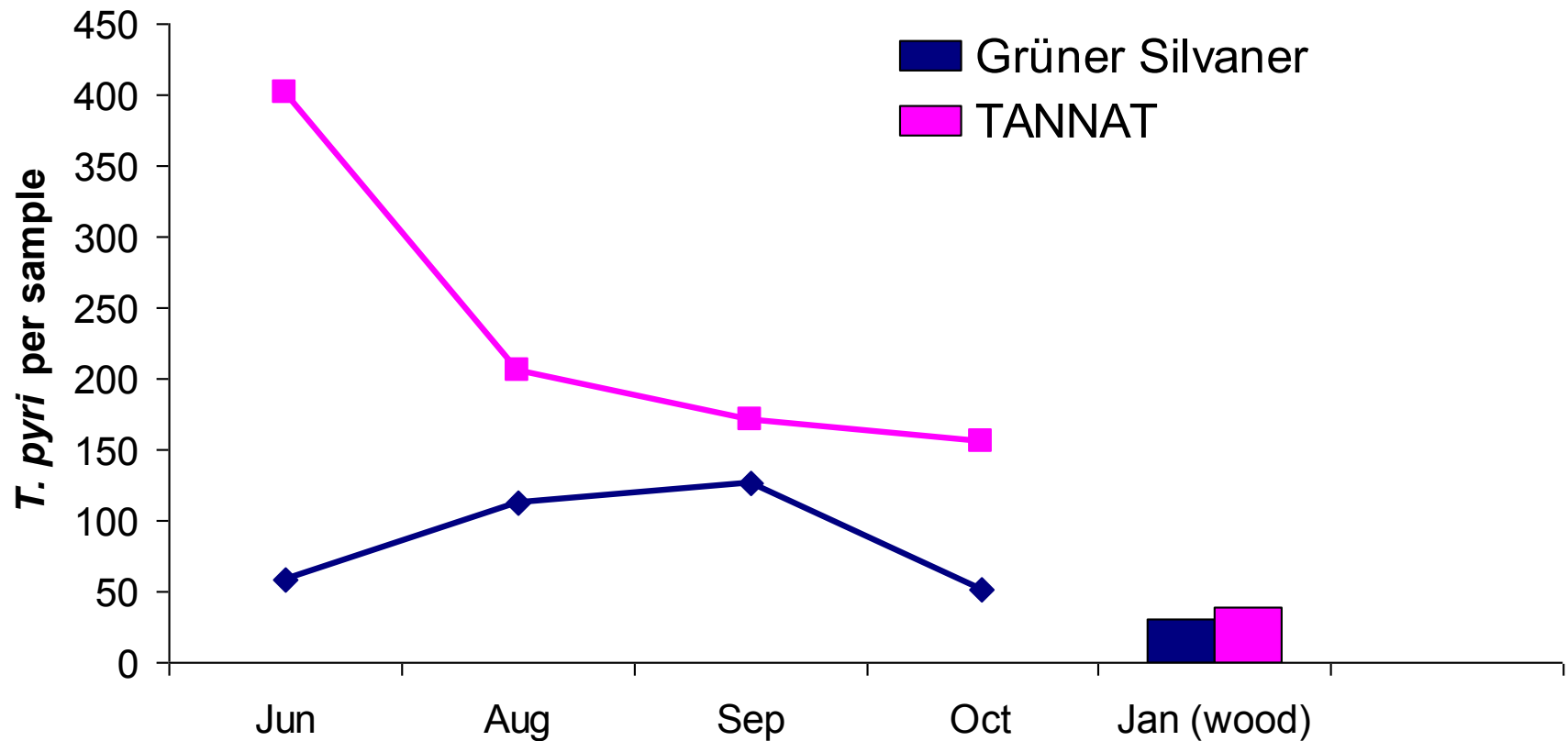


→ There is no classical predator-prey-dynamic



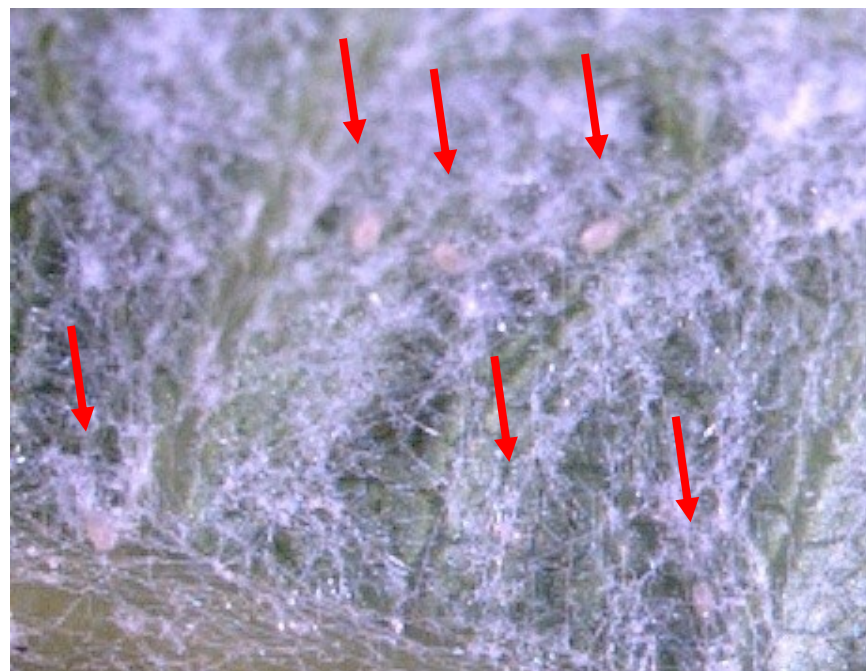
Different *T. pyri* abundance/dynamics in different vine varieties

(almost no animal prey present on leaves) Siebeldingen
2010



Are leaf structures determining *T. pyri* abundance?

Silvaner



Tannat

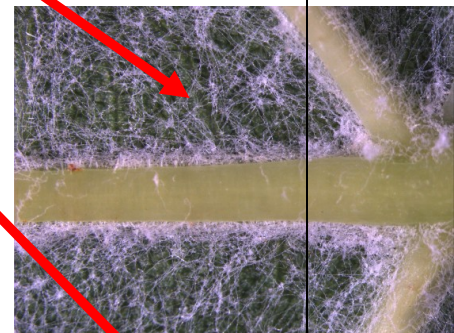


OIV-descriptors for hair structures on grapevine leaf

- Density of erect hairs between main veins (1-9)
- Density of erect hairs on the main veins (1-9)
- **Density of prostrate hairs between main veins (1-9)**
- Density of prostrate hairs on the main veins (1-9)



Problem of domatia?



Density of prostrate hairs between main veins

| | | | | |
|-------------------------|------------|---------|---------|-----------|
| OIV | 1 - 2,5 | 3 - 4,5 | 5 - 6,5 | 7 - 9 |
| JKI | 1 | 2 | 3 | 4 |
| Density prostrate hairs | none - low | medium | high | very high |



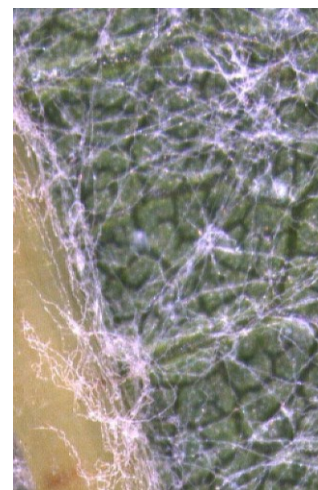
Chasselas



Carmenere



Merlot



Syrah



Tempranillo

Density of prostrate hairs between main veins



Density 1

| |
|--------------------|
| MUSKATELLER |
| PLAVAC MALI |
| Grüner Silvaner |
| Scheurebe |
| Rieslaner |
| Gelber Muskateller |
| Morio Muskat |
| Weißer Gutedel |
| Faberrebe |
| Auxerrois |
| Blauer Portugieser |
| Blauer Limberger |
| Dakapo |
| Cabernet Dorsa |
| CHARDONNAY |
| GRENACHE NOIR |
| Chardonnay |
| CARMENERE |
| GAMAY NOIR |
| PINOT NOIR |
| Chardonnay musque |
| Blauer Trollinger |
| Regent |
| Acolon |
| Müller Thurgau |
| Weißer Burgunder |
| Grauer Burgunder |

Density 2

| |
|----------------------|
| ARAMON NOIR |
| CARIGNAN NOIR |
| DOLCETTO |
| RIESLING |
| SEMILLON |
| Blauer Spätburgunder |
| Domina |
| WELSCHRIESLING |
| Solaris |
| Weißer Elbling |
| Blauer Frühburgunder |
| CABERNET FRANC |
| CINSAUT |
| MERLOT |
| RKATSITELI |
| St.Laurent |
| CABERNET SAUVIGNON |
| Gewürztraminer |

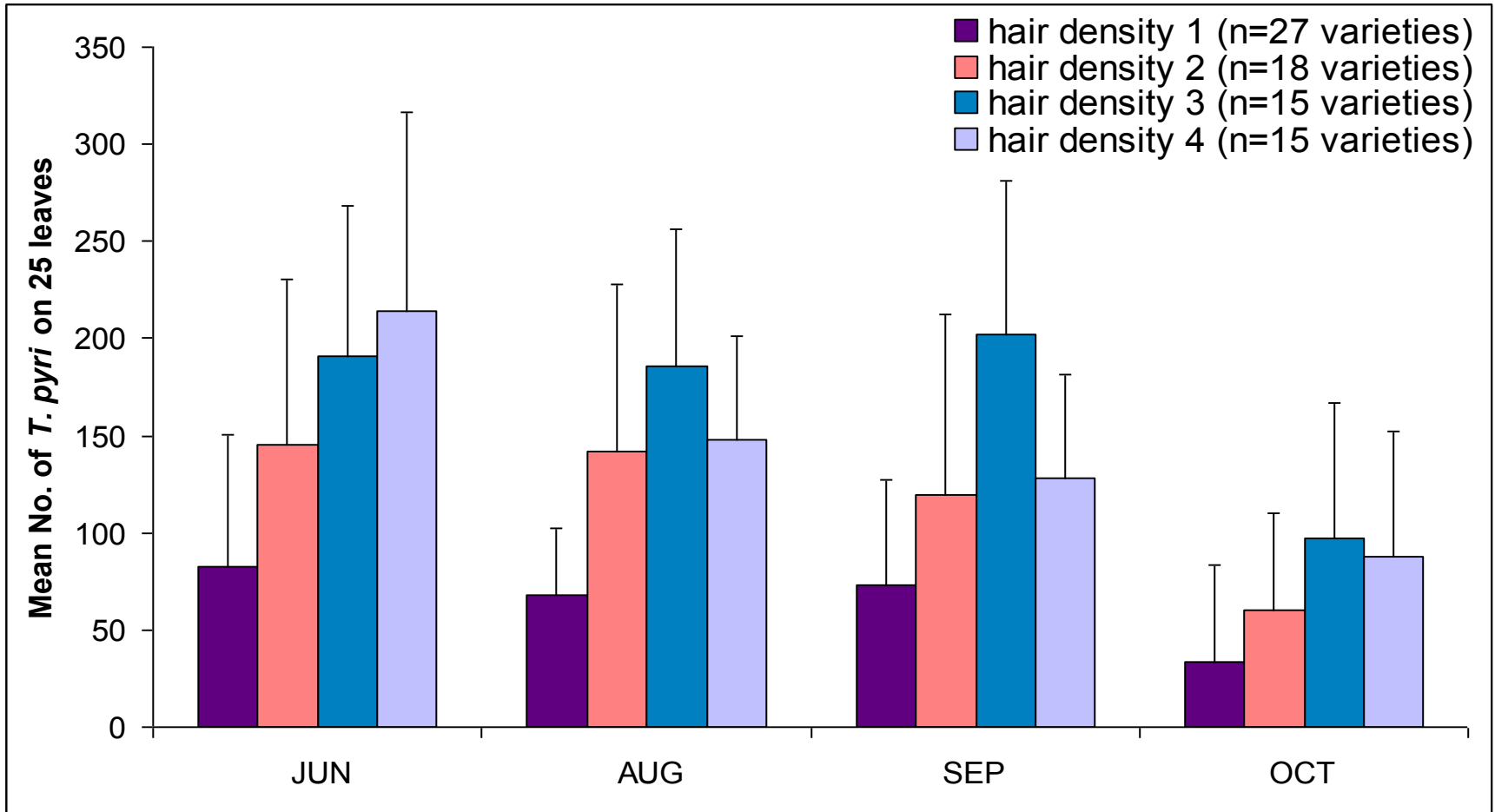
Density 3

| |
|-----------------|
| ALIGOTE |
| ASSYRTICO |
| SAUVIGNON BLANC |
| Weißer Riesling |
| COLOMBARD |
| PALOMINO FINO |
| Bacchus |
| ALVARINHO |
| ROUSSANNE |
| SYRAH |
| VELTLINER GRUEN |
| SAPERAVI |
| VIOGNIER |
| Optima |
| Roter Traminer |

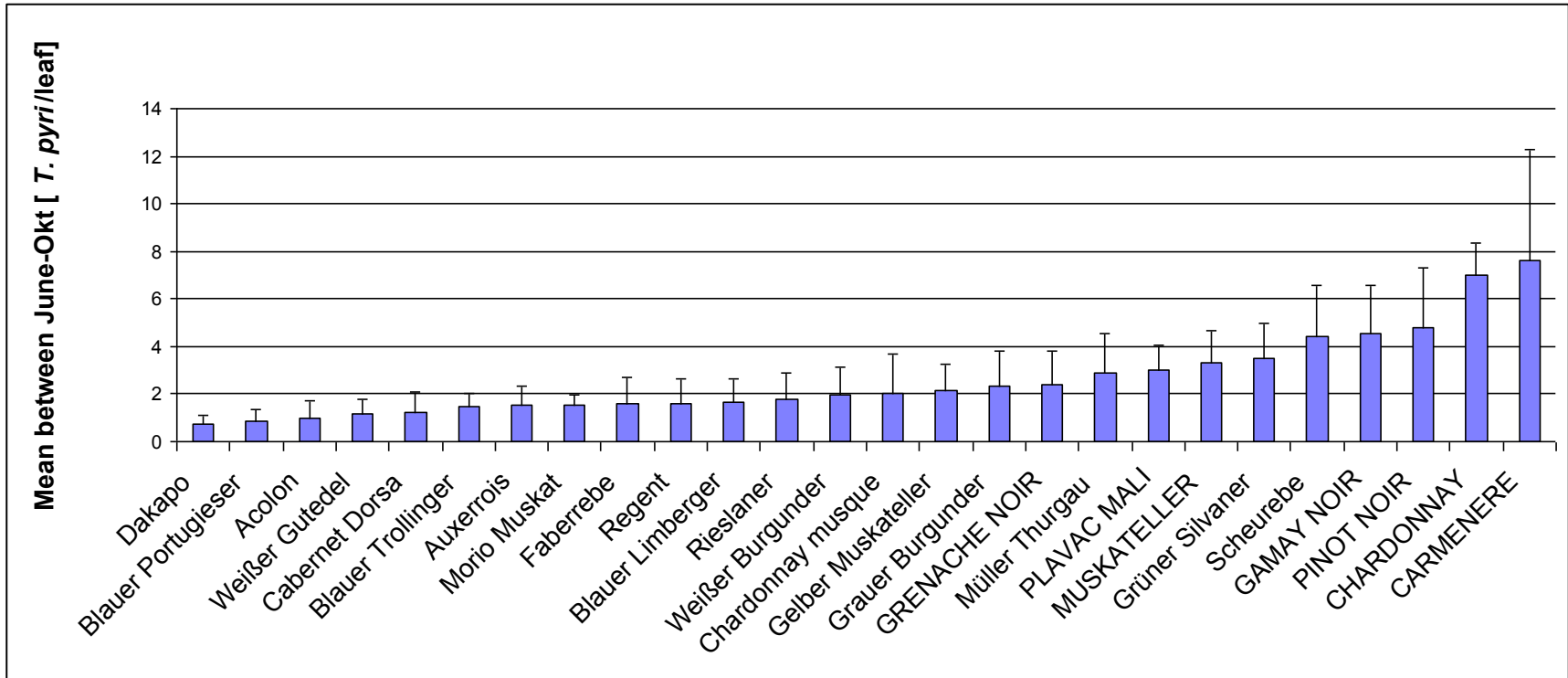
Density 4

| |
|-------------------|
| CHENIN BLANC |
| NEBBIOLO |
| PRIMITIVO |
| Kerner |
| Dornfelder |
| BARBERA |
| TANNAT |
| TOURIGA NACIONAL |
| TREBBIANO TOSCANO |
| Cabernet MitoS |
| CLAIRETTE BLANCHE |
| Monastrell |
| TEMPRANILLO |
| Müllerrebe |
| Dunkelfelder |

Relation between prostrate hairs between the main veins and the abundance of *Typhlodromus pyri* on the leaves

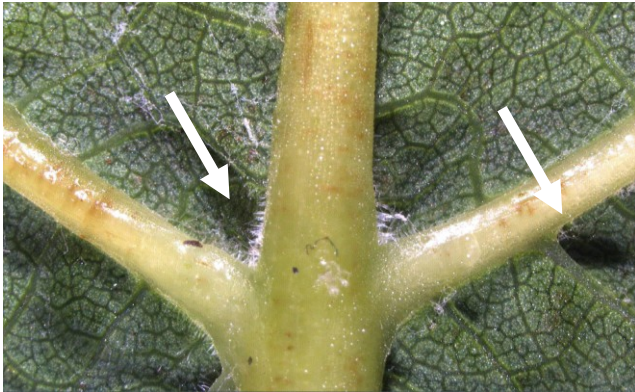


Mean no. of *T. pyri* on the varieties with no to few prostrate hairs between the main veins (Density 1)



There must be further parameters affecting the abundance on different varieties → age of the grapes, domatia

How about domatia on leaves without hairs?



Grenache Noir



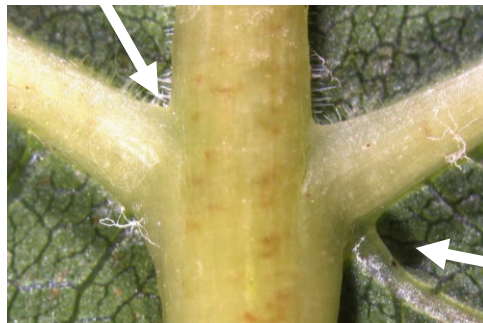
Chardonnay



Carmenera



Dakapo



Blauer Portugieser



Chasselas

→ They all have some domatia but apparently no effect on *T. pyri* abundance!

Discussion:

What could be the limiting biological factors for *T. pyri*?

a. Pollen

→ enhancement of mites by greencover → pollen effect?

→ pollen accumulates evtl. more on hairy leaves

b. Prey like spider mites and eriophyid mites played no significant role in the present study

c. Perl hairs → to be examined

d. Role of domatia → more important for egg deposition than for food purposes?

Abiotic factor affecting *T. pyri* abundance: Dehydration

→ between hairs: Evtl. elevated relative humidity

Conclusion

- There is an apparent effect of leaf hairyness on the population density of *T. pyri* with a hair density optimum
- Further years of observation are necessary to get a more precise picture about the role of leaf structures on the *T. pyri* performance
- The results may be used for breeding purposes or as decision support for choosing the proper variety for integrated production