

Do management strategies of dairy farming clash with floristic diversity of dairy production?

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Introduction & Hypothesis

Contrasting strategies are discussed in dairy farming:

Maximizing milk yield per cow: high input of concentrates and other farm resources

Maximizing roughage performance: lower resource requirements, intensive use of grazing on permanent pastures

→ These contrasting strategies differ in their impact not only on productivity but also on grassland botanical diversity at farm scale

Material & Methods

Investigation of 110 organic dairy farms across Germany

- agricultural structure & management data (feeding, roughage production) (interviews)
- climate data (German Weather Service)
- performance data (milk yield recording)
- botanical relevés from 880 permanent grassland sites before 1st cut

Identifying farm types (agricultural structure & site conditions) by cluster analysis → 4 Groups

- Grassland-based farms in lowlands (G_L)
- Crop-based farms in lowlands (C_L)
- Grassland-based farms in highlands (G_H)
- Crop-based farms in highlands (C_H)

A We know ...

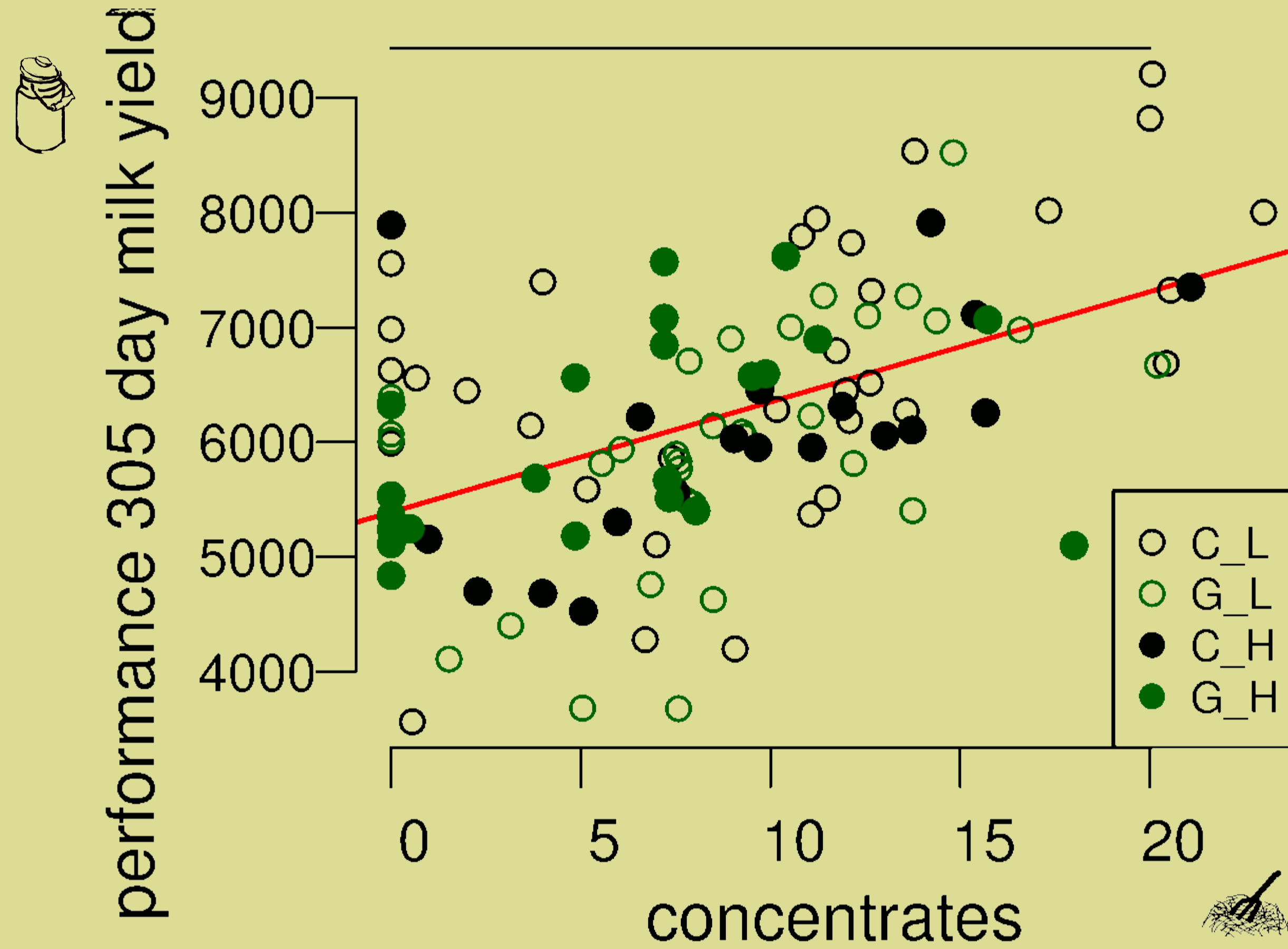


Figure 1: Performance (305 day milk yield per cow [kg]) increases with the intensive use of concentrates [decitonnes]

B And thus ...

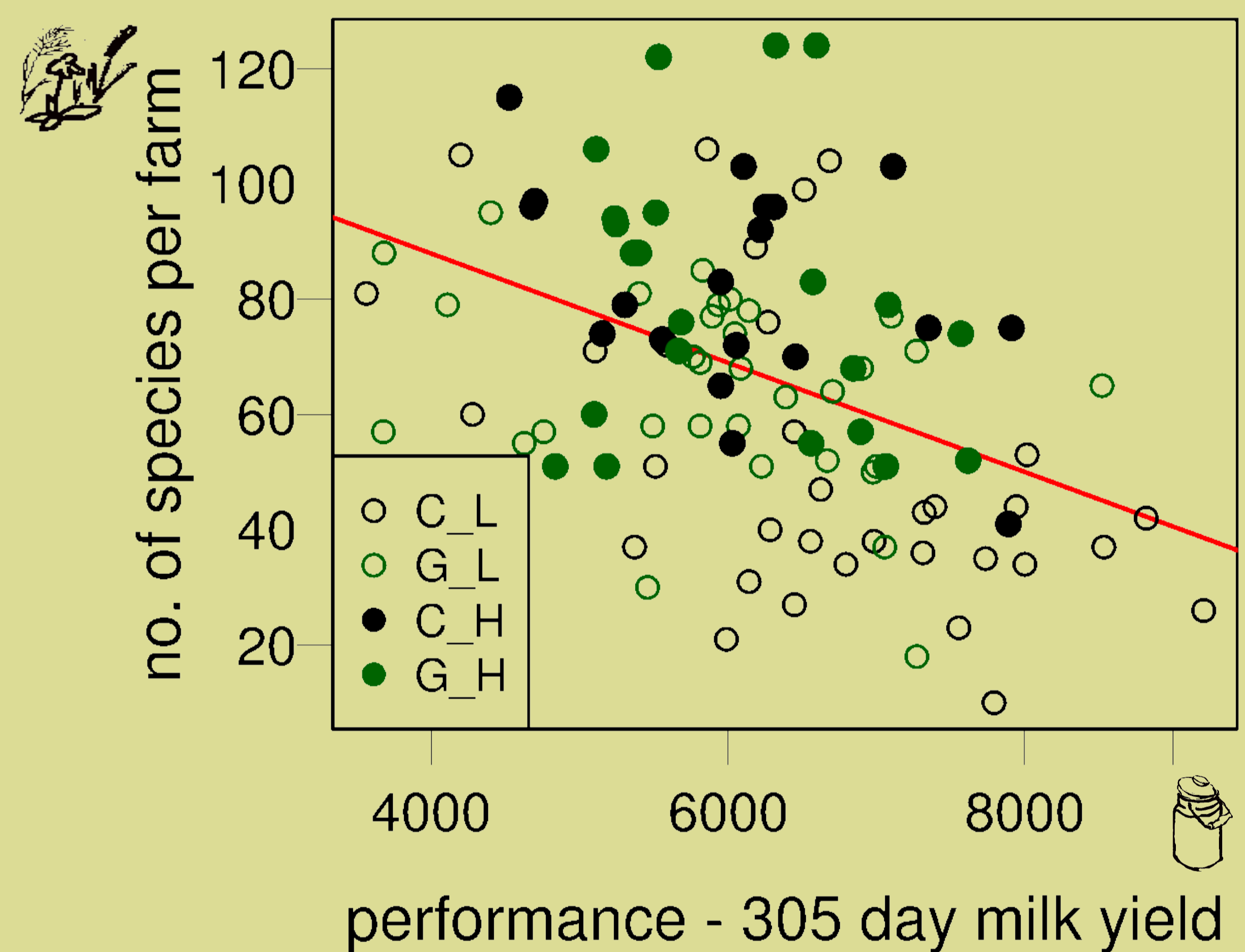


Figure 2: Phytodiversity decreases with the intensity of production (here 305 day - milk performance per cow [kg])

C However...!

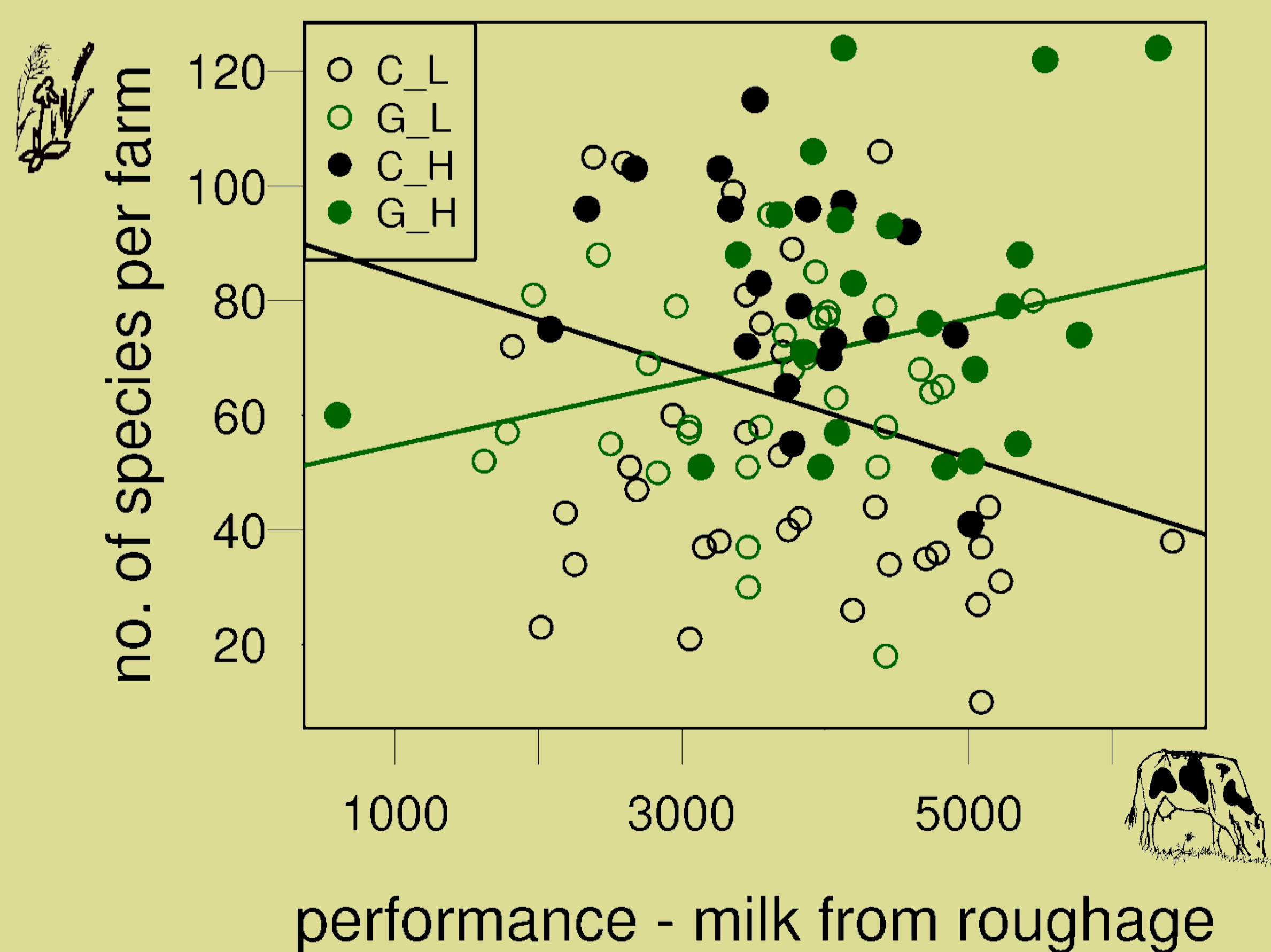


Figure 3: The relation between whole-farm diversity and roughage performance [kg milk per 305 days per cow] differ for different farm types

Possible explanations from PCA*

Availability & quality of resources (e.g. farm area per worker, feeding area per dairy cow, site conditions) are estimators of the intensity of resource use and farming strategy with consequences for whole farm diversity

e.g intensive crop-based farms with suboptimal site conditions and large farm size afford moderate use of grassland and therefore higher diversity per farm

*principal component analysis

Conclusion

→ Hypothesis seems correct, but interactions are more complex.

Acknowledgments

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