Oikos

O17724
May, F., Grimm, V. and Jeltsch, F. 2009. Reversed effects of grazing on plant diversity: the role of below-ground competition and size symmetry. – Oikos 118: 1830–1843.

Appendix 1

Model structure

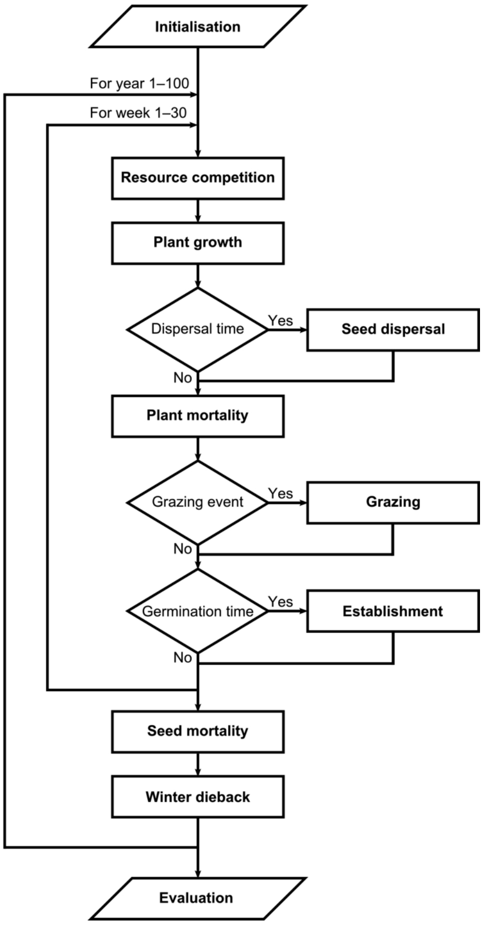

Figure A1. Flow-chart representing process scheduling in the grassland model. Resource competition, plant growth and mortality are executed each week, while seed dispersal and seedling establishment are restricted to certain weeks of the year (Table 2 in main text). Grazing events occur stochastically with a fixed probability per week. Seed mortality and winter dieback are only considered once at the end of each year. State variables of all plants are updated synchronously after each process. Simulations were run for 100 years with 30 weeks vegetation period per year.

Response of trait attributes to grazing

One layer model

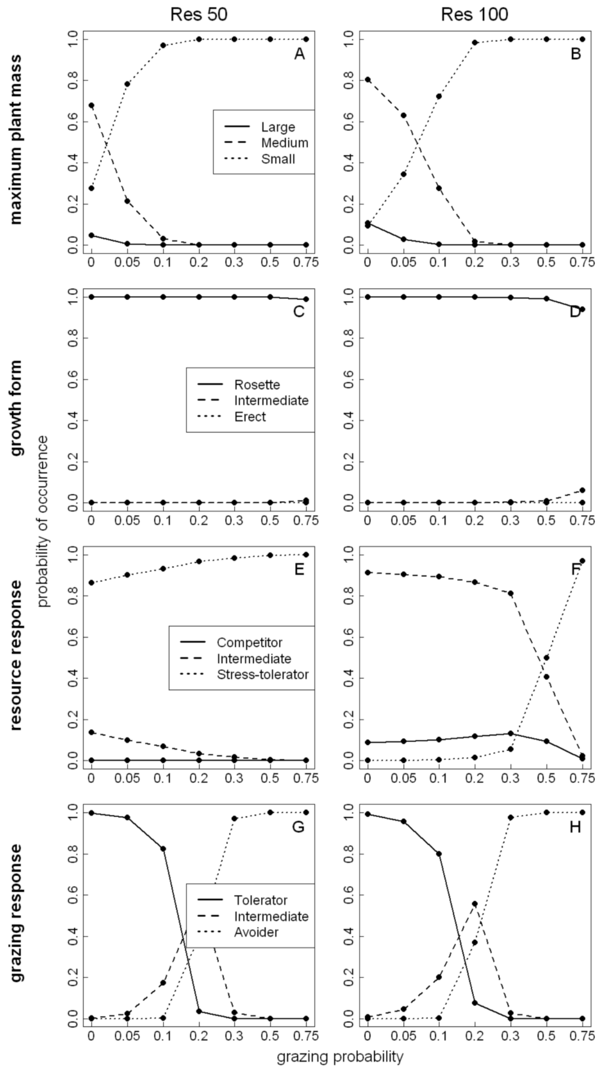

Figure A2. Probability of occurrence for trait attributes at different grazing frequencies. Results for the one layer model without niche differentiation and size-symmetric competition. Each row of panels shows one trait syndrome (Table 3 in main text) and the columns show low and high resource availability, respectively. Probabilities of occurrence were estimated by fitting multinomial models to simulated trait attribute distribution among individuals. For more details see the Methods section 'Design and analysis of simulation experiments'.

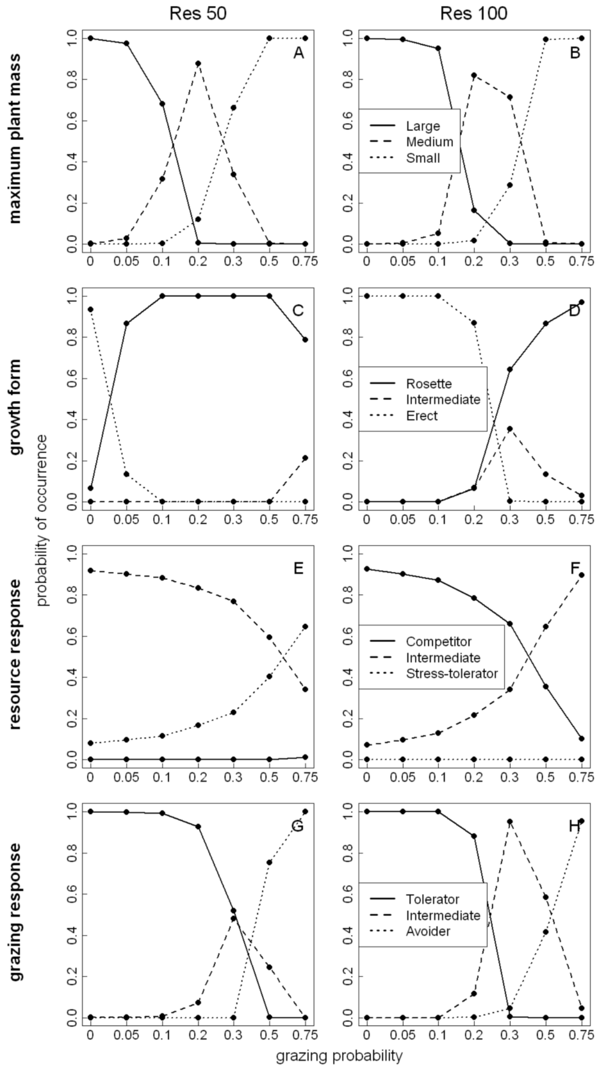

Figure A3. Probability of occurrence for trait attributes at different grazing frequencies. Results for the one layer model without niche differentiation and size-asymmetric competition. For more details see Fig. A2.

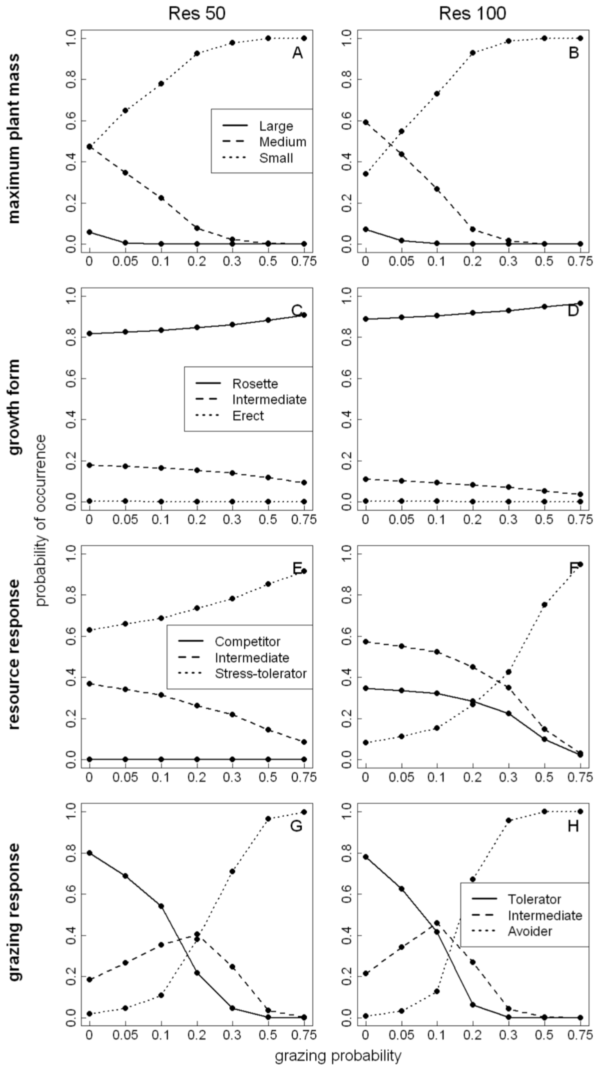

Figure A4. Probability of occurrence for trait attributes at different grazing frequencies. Results for the one layer model with niche differentiation and size-symmetric competition. For more details see Fig. A2.

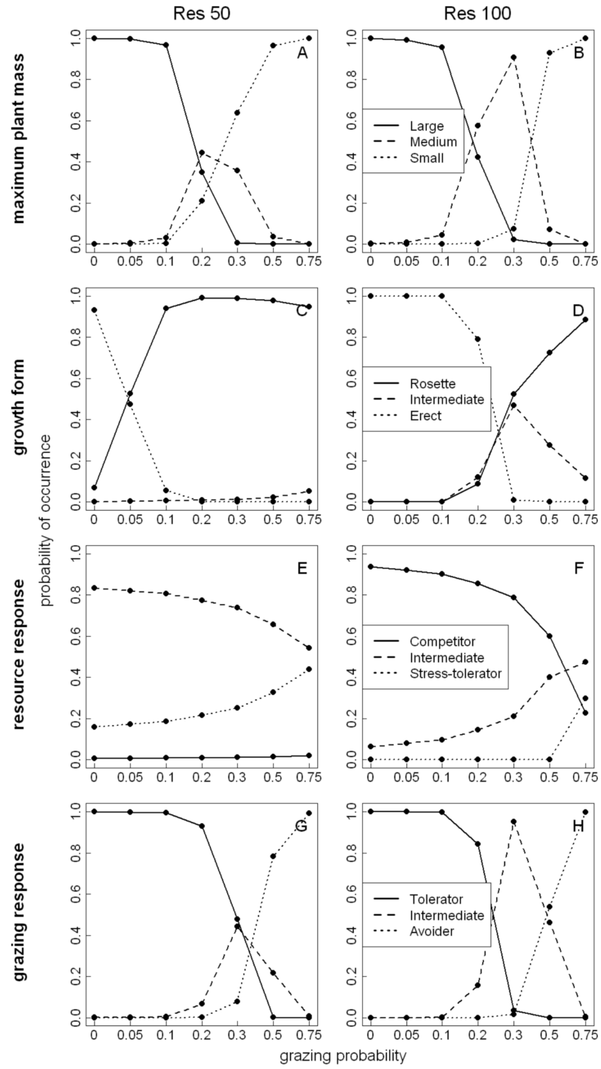

Figure A5. Probability of occurrence for trait attributes at different grazing frequencies. Results for the one layer model with niche differentiation and size-asymmetric competition. For more details see Fig. A2.

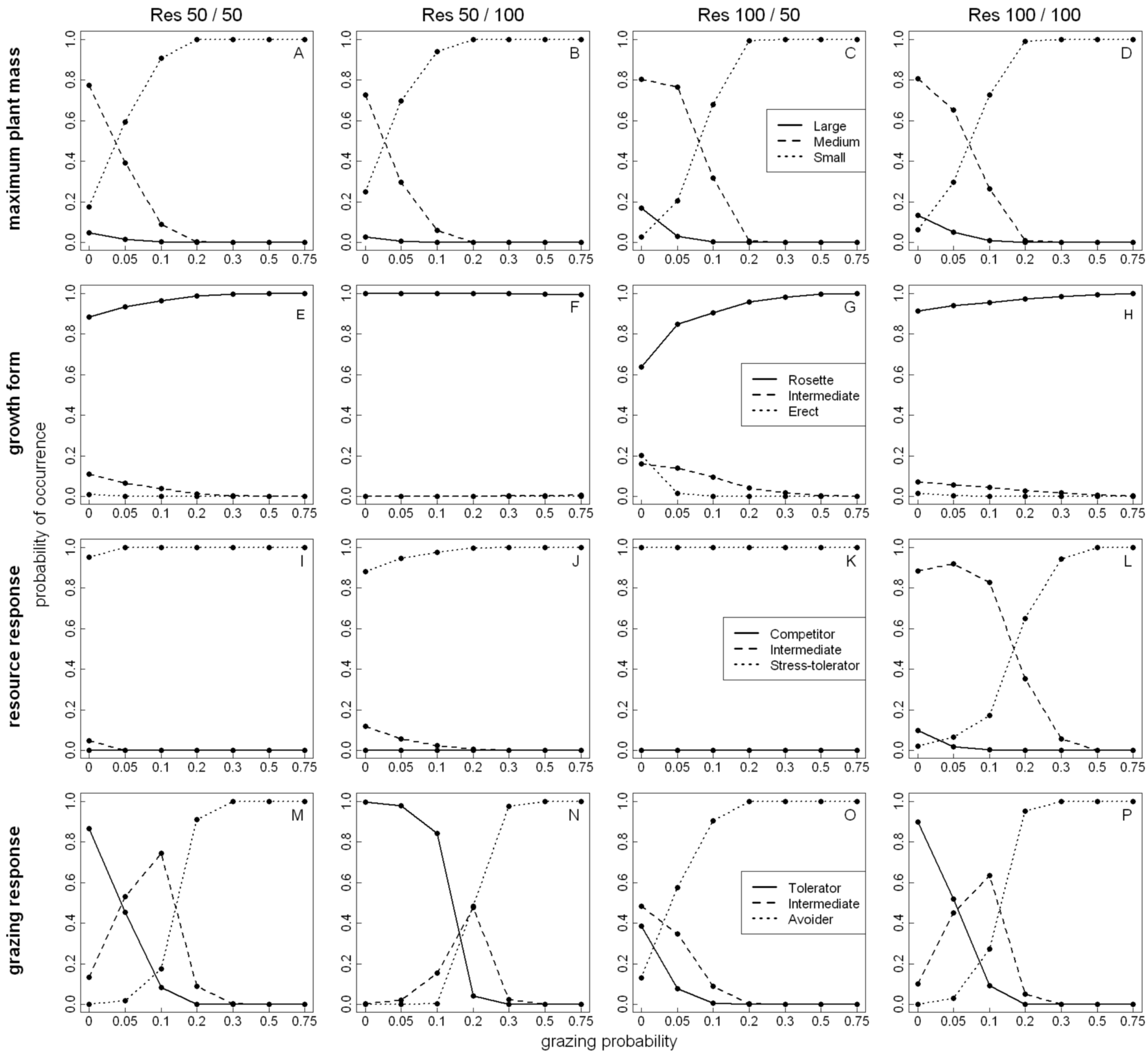

Figure A6. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model without niche differentiation and size-symmetric above- and below-ground competition. Each row of panels shows one trait syndrome and each column shows one combination of above- and below-ground resource availability (abbreviations in Fig. 3). For more details see Fig. A2.

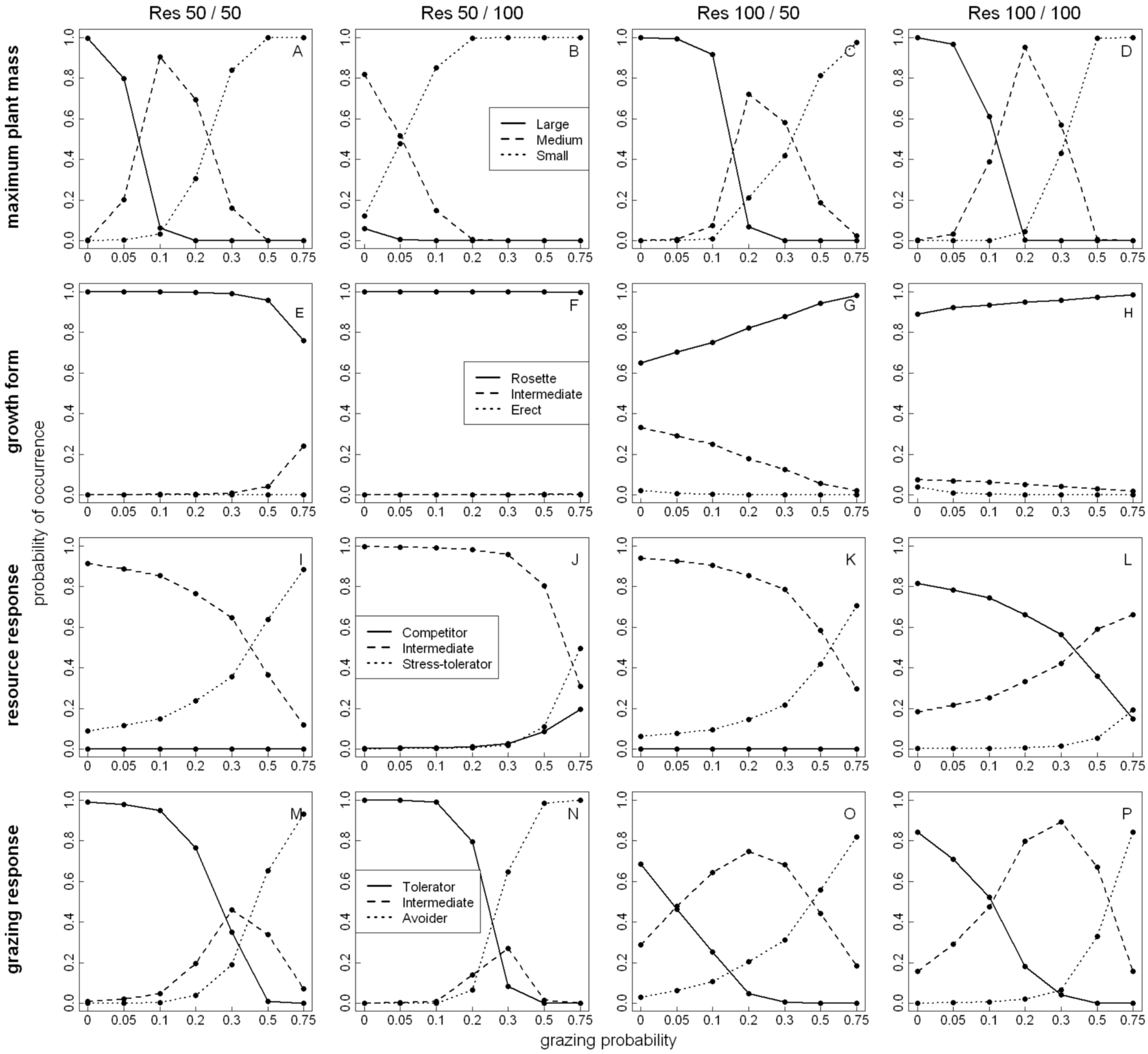

Figure A7. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model without niche differentiation and size-symmetric above-ground and size-asymmetric below-ground competition. For more details see Fig. A2.

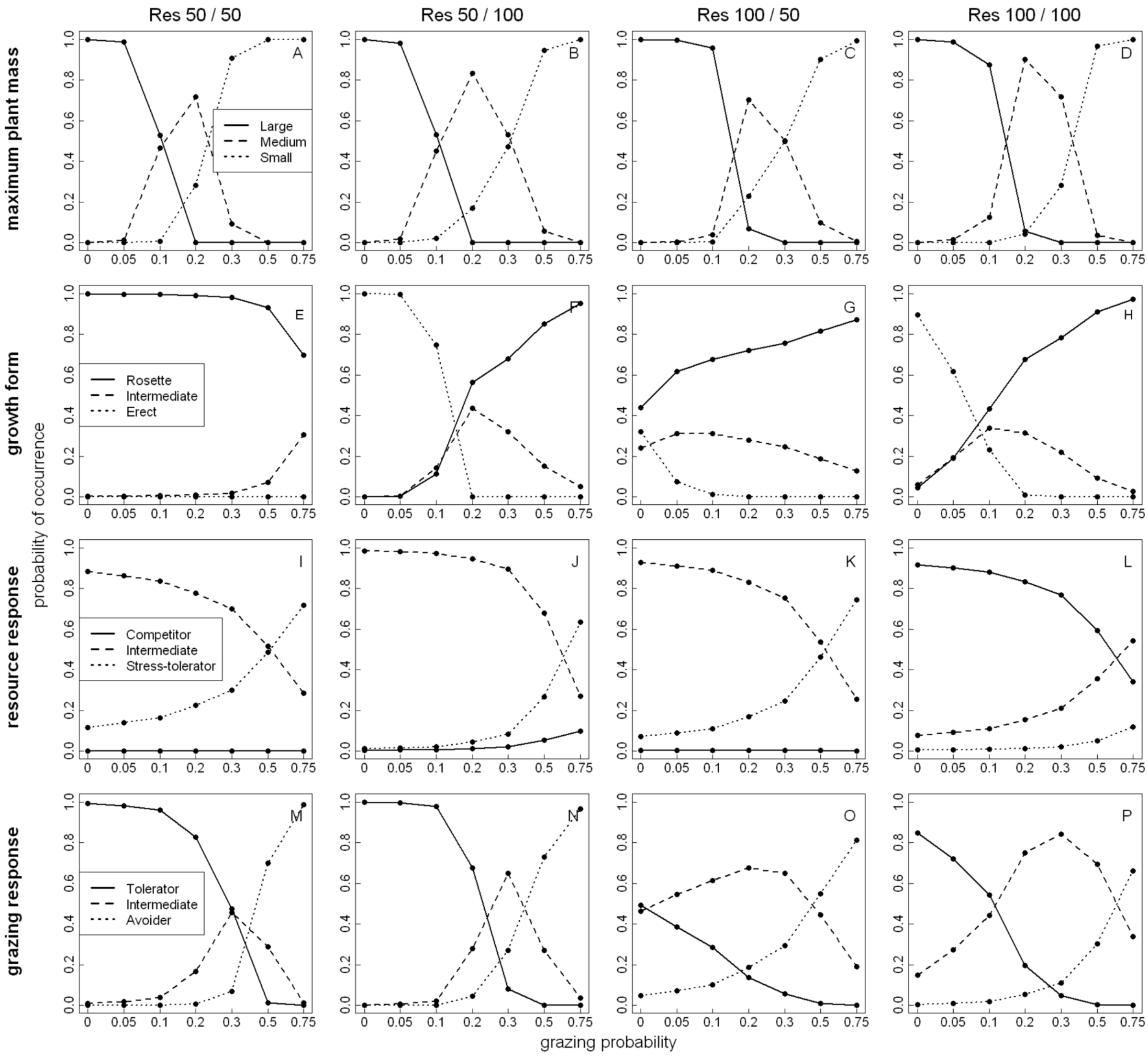

Figure A8. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model without niche differentiation and size-asymmetric above- and below-ground competition and. For more details see Fig. A2.

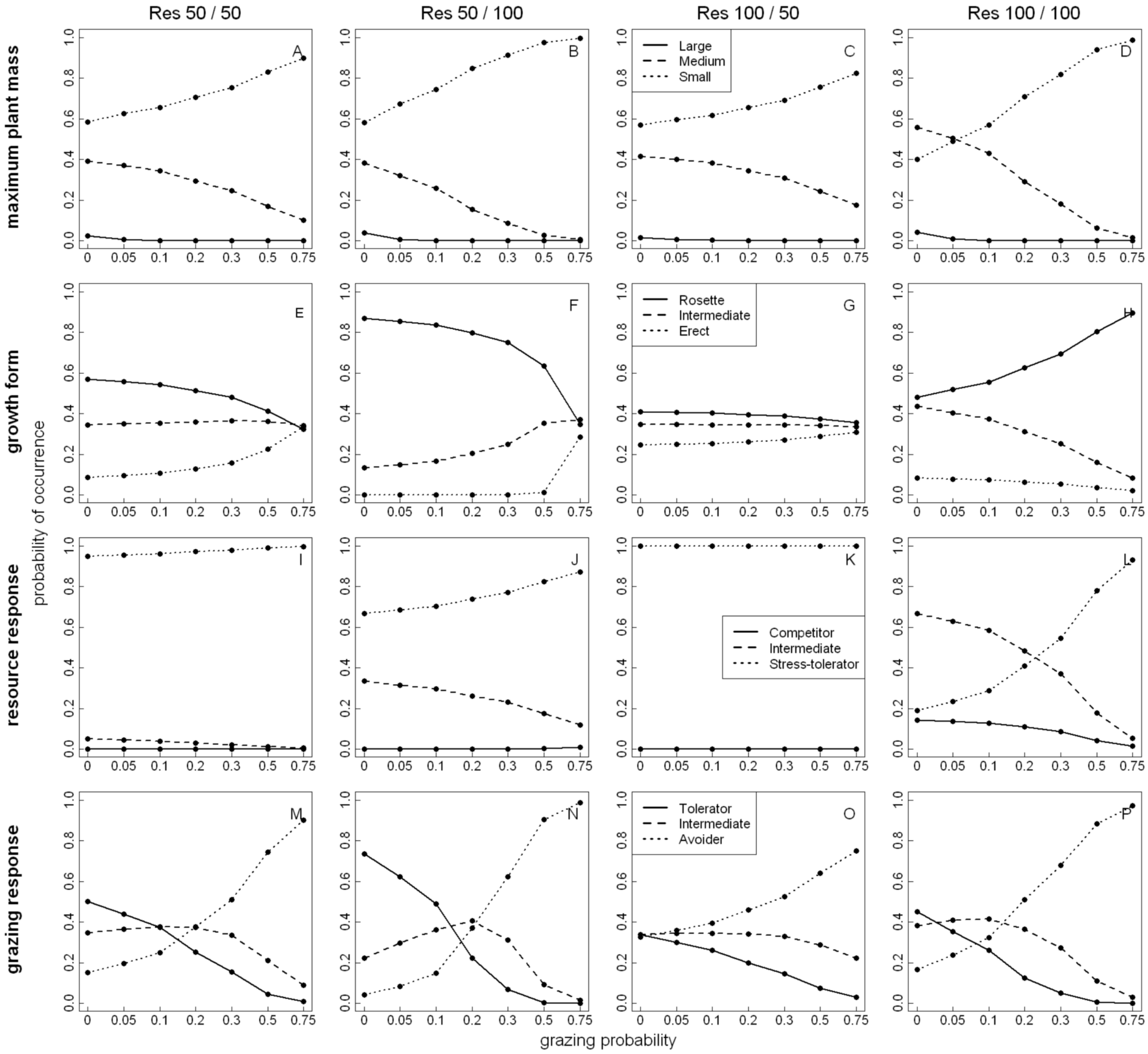

Figure A9. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model with niche differentiation and size-symmetric above- and below-ground competition. For more details see Fig. A2.

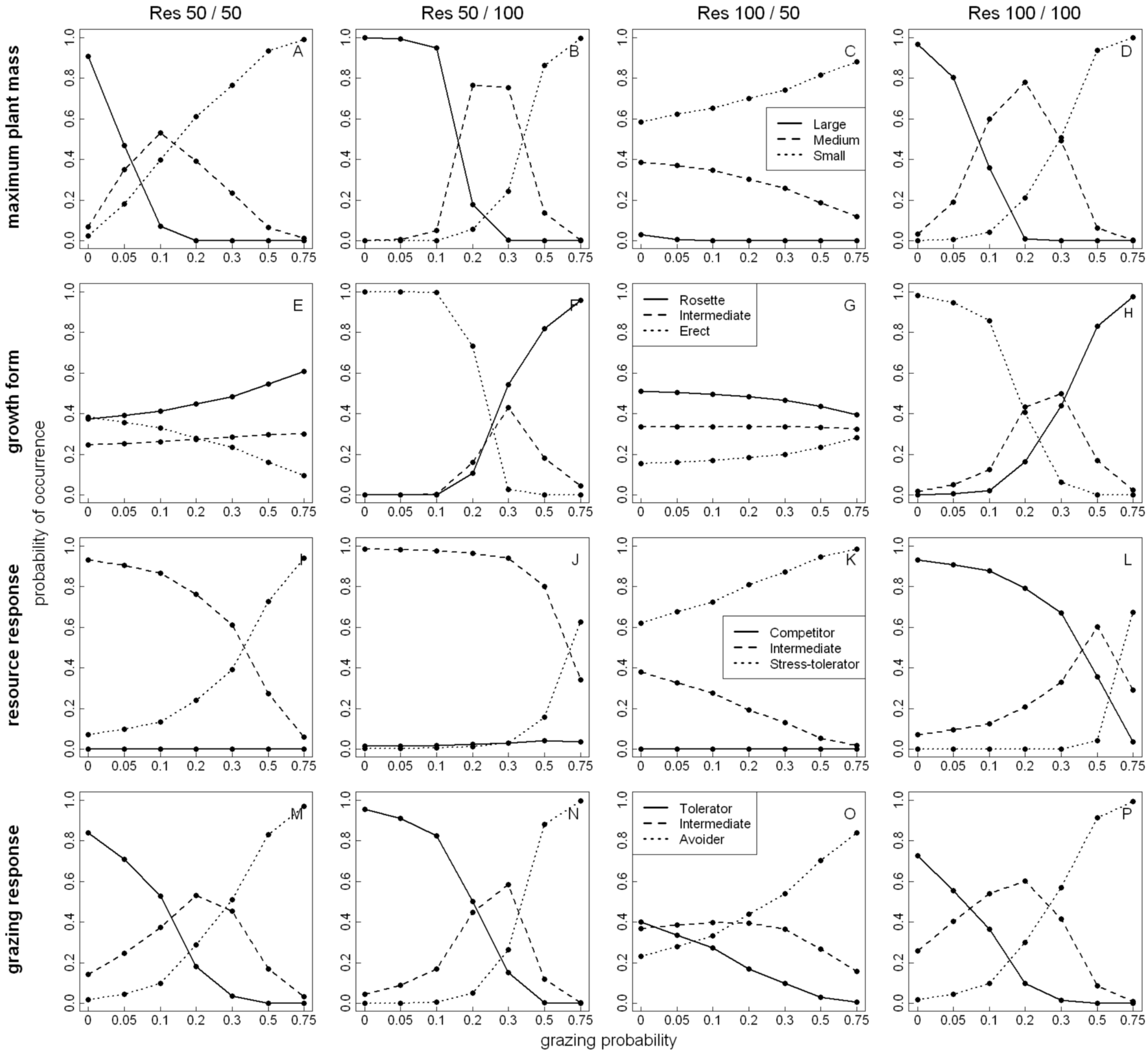

Figure A10. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model with niche differentiation and size-asymmetric above-ground and size-symmetric below-ground competition. For more details see Fig. A2.

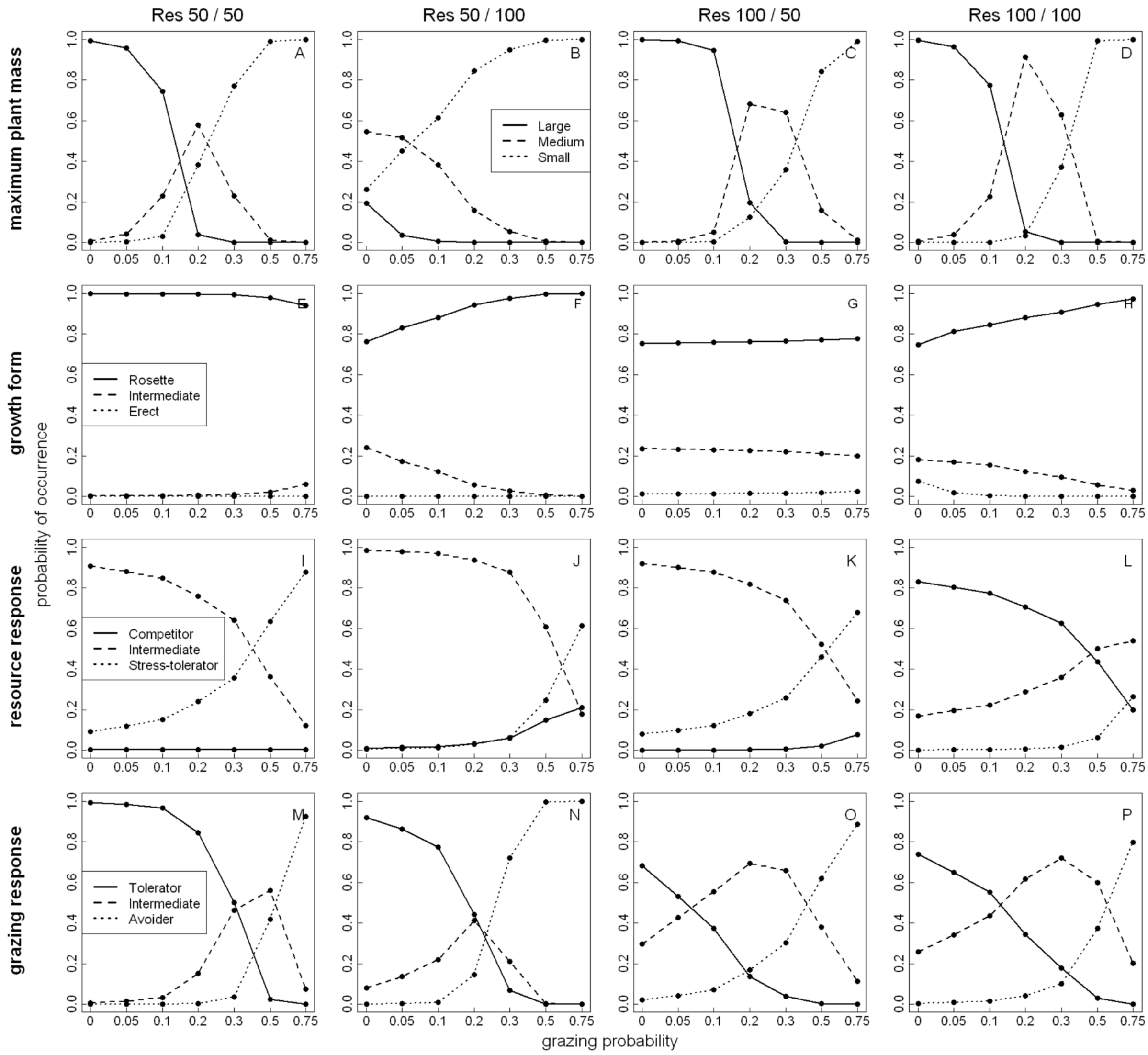

Figure A11. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model with niche differentiation and size-symmetric above-ground and size-asymmetric below-ground competition. For more details see Fig. A2.

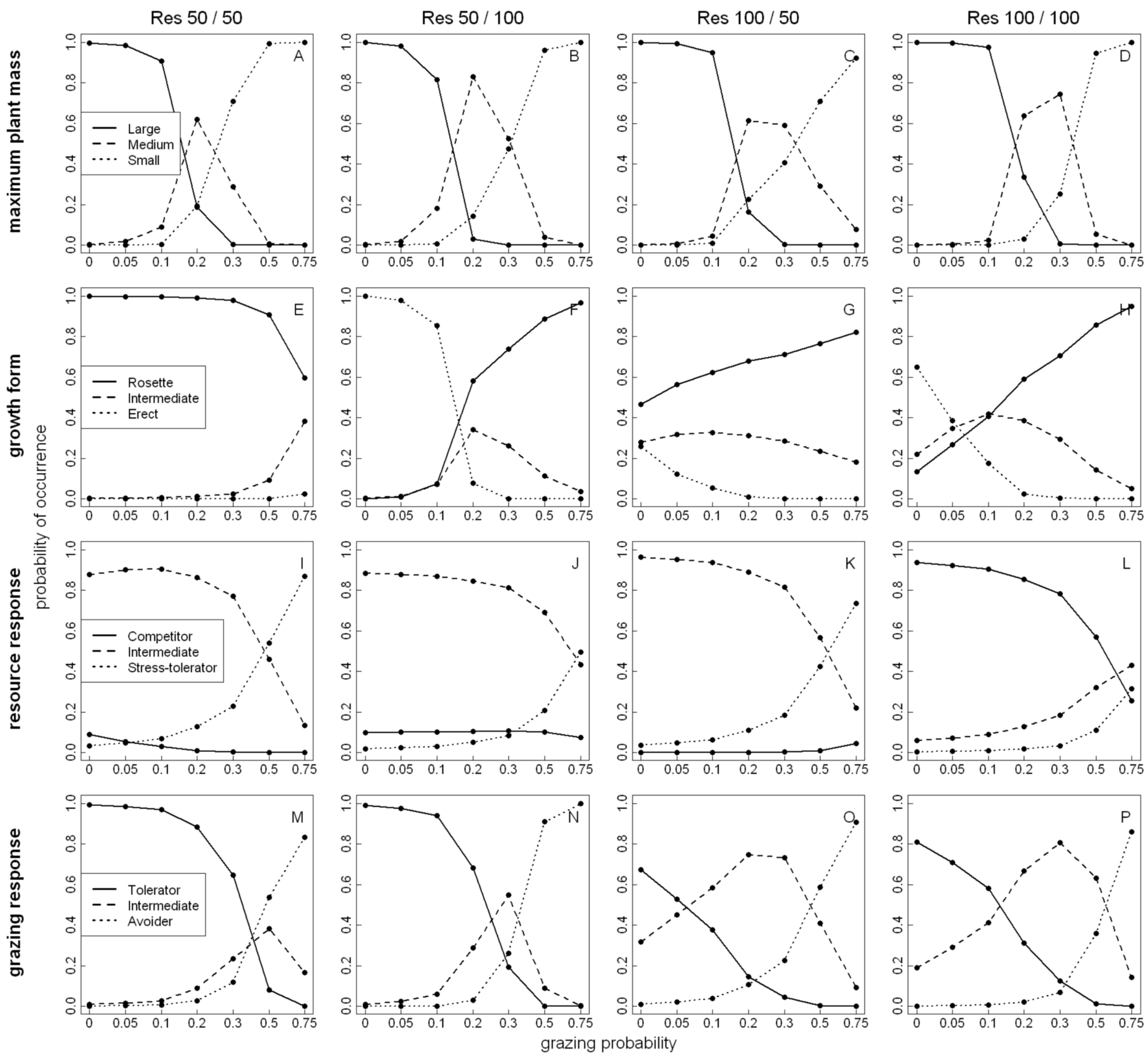

Figure A12. Probability of occurrence for trait attributes at different grazing frequencies. Results for the two layer model with niche differentiation and size-asymmetric above- and below-ground competition. For more details see Fig. A2.