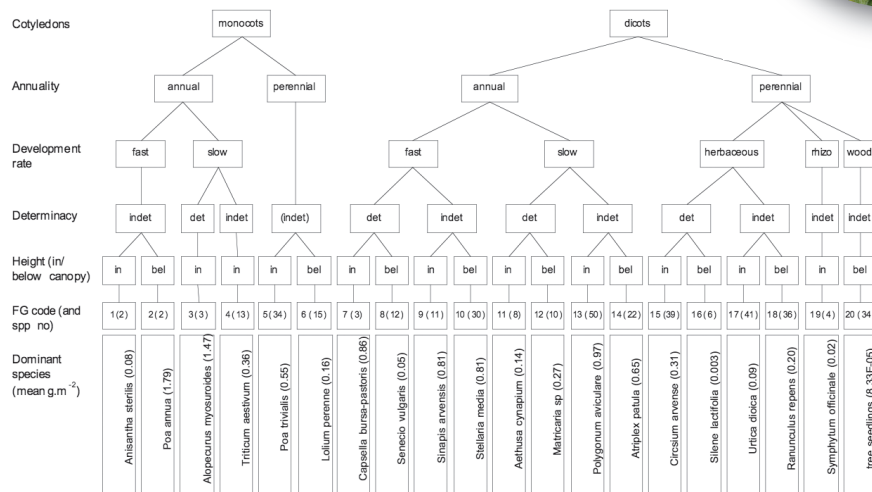
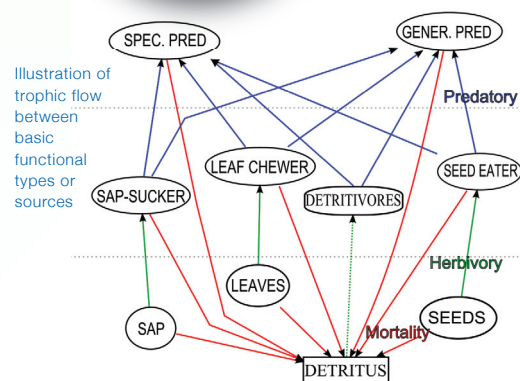


A functional approach to modelling biodiversity

Roger Humphry‡, Pernille Thorbek*, Geoff Squire‡, Alan Raybould*, Cathy Hawes‡, Alison Houghton‡, Geoffrey Caron-Lormier‡, David Bohan‡

‡Scottish Crop Research Institute; *Syngenta, Jealott's Hill; †Rothamsted Research;

- Prediction of changes in biodiversity following crop management are usually made in terms of effects on single species
- A single species approach is computationally unfeasible for large numbers of species modelled simultaneously when interactions among species are considered, making accurate predictions especially difficult
- Grouping by function simplifies the ecosystem
- This LINK project will employ a tritrophic individual-based modelling (IBM) of energy flow between functional types to predict impacts of management on the abundance and composition of functional types
- Early results regarding model structure of ecological IBMs demonstrated little consequence of a difference in ordering of updating individuals' characteristics



Dendrogram illustrating the most probable functional weed types with a species example in each type

Using lab & field ecotoxicology data, the complete model will be used to examine trade-offs between inputs (labour, pesticides, opportunity, costs etc.) yield and biodiversity

Management strategies to achieve desired combinations of yield and biodiversity will be obtained from the model

This project is sponsored by BBSRC & SEERAD through the Sustainable Arable LINK programme