O.15 - Modelling management, yield, diversity and abundance in agricultural ecosystems

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Using an individual based model we examine the abundance and variability between arable crop, weed and invertebrate groups trophically linked. Individual organisms within the model have mass and we evaluate how changes in abundance and biomass at one level ramify to different trophic levels. We also introduce stochastic inputs to the crop and weeds to investigate the effects of perturbation on the ecosystem. The dynamics of this ecosystem emerge from the local interactions between individuals of the different trophic-functional groups. In this talk we will present the results of this modelling exercise. We will discuss the conditions for extinction, regulation and co-existence between groups. Furthermore, we will highlight the consequences of stochasticity on crop yield, ecosystem abundance, biomass and diversity. This model can be useful for a better understanding of the complex dynamics of (within-field) arable agricultural ecosystems.