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Research headlines:

[Applied production economics](#), [crop production](#) and [crop protection](#)

Build a model and simulate farmer's rational behavior in relation to new technologies and regulation

Thesis ideas:

1. Optimal crop rotation – How?

Build a crop production model to assess optimal crop rotation, optimal use of catch crops, optimal reallocation of N fertilizer quotas, marginal value of sugar beet quotas etc.

2. Optimal regulation of nitrogen leaching: Subsidies, taxes or quotas?

Build a model to simulate farmer's adoption and costs to different regulation scenarios in a catchment area.

3. Site specific crop protection and fertilizer application – Is it profitable?

How to evaluate the value of specific crop protection and fertilizer application based on data from ATV's, satellites (cropsat.dk) and drones (UAV).

4. Is farmer's pesticide use just a simple function of farm size, soil quality, and crop rotation?

Compulsory pesticide-use reports hold a lot of detailed information about individual Danish farmer's pesticide use, but how to identify the general drivers for their pesticide use. Why does big farms consume 100 pct. more pesticides per ha than the average farm, and could farmers or environment profit from a benchmarking model for pesticide use?

5. Pesticide tax and pesticide resistance – What are the threats, options and costs?

The new Danish pesticide tax introduced in 2013 has changed the product mix of pesticides. Harmful pesticides are to a high extent substituted with a few less harmful pesticides. Does this change lead to new and higher risk of pesticide resistance, what are the potential losses from wide spread resistance and what are the mitigation options and costs?

6. Biodiversity – Estimate the farm economic value of bees and wild pollinators?

Pollination from bees and other insects are important, and for some crops essential, input for the farmer. Improved conditions for the wild pollinators and payment for the bee keepers providing the bees may increase the pollination and subsequently the crop yield. The economic value of more and better pollination is, however, often questioned. What are the general perception of the economic value of pollinators among farmers and their advisors? Could bee keepers and farmers profit from increased cooperation? What are the obstacles, costs and benefits for the farmers and the beekeepers?