
FACCE-MACSUR

# Report on the comparison of model linking protocols in different test cases

# Climate change impact and adaptation research requires integrated assessment and farming systems analysis: a case study in the Netherlands

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## Abstract/Executive summary

Rather than on crop modelling only, climate change impact assessments in agriculture need to be based on integrated assessment and farming systems analysis, and account for adaptation at different levels. With a case study for Flevoland, the Netherlands, we illustrate that 1) crop models cannot account for all relevant climate change impacts and adaptation options, and 2) changes in technology, policy and prices have had and are likely to have larger impacts on farms than climate change. While crop modelling indicates positive impacts of climate change on yields of major crops in 2050, a semi-quantitative and participatory method assessing impacts of extreme events shows that there are nevertheless several climate risks. A range of adaptation measures are, however, available to reduce possible negative effects at crop level. In addition, at farm level farmers can change cropping patterns, and adjust inputs and outputs. Also farm structural change will influence impacts and adaptation. While the 5th IPCC report is more negative regarding impacts of climate change on agriculture compared to the previous report, also for temperate regions, our results show that when putting climate change in context of other drivers, and when explicitly accounting for adaptation at crop and farm level, impacts may be less negative in some regions and opportunities are revealed. These results refer to a temperate region, but an integrated assessment may also change perspectives on climate change for other parts of the world.

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