

# Economic analysis of plant protection strategies in winter rye based on long-term field trials in Dahnsdorf

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Plant protection strategies are often evaluated with respect to their efficacy to reduce pest incidence and to improve yield loss relationships. But, the decision on their practical application is based on the economic advantage. Such economic analyses require comprehensive data like those provided by long-term field trials conducted by JKI in Dahnsdorf on "Comparing strategies for environmentally sound plant protection". These experiments compare two different plant protection intensities over a period of 11 years since 1997: "normal" pesticide application according to the observed pest situation (100% strategy) and a reduced dosage with only half of the "normal" pesticide dosage (50% strategy). Both intensities are applied to herbicides (H), fungicides (F) and a combination of herbicides and fungicides (HF). Additionally, two farming systems BS1 and BS2 with slight differences in pesticide application are studied. To identify the economically most efficient plant protection strategy

additional costs and revenues caused by the use of pesticides are determined. The treatments H, F and HF for both the 100% and 50% strategies are compared to the untreated control. The additional costs comprise expenses for pesticides and their application. Extra earnings are calculated and presented as net present value (NPV). Analysing the NPVs show that only the HF treatment leads to considerable positive NPVs throughout both strategies and farming systems. Sole herbicide application (H) yields to positive NPVs within the 50% intensity. The positive effect of higher yields of the 100% strategy is outweighed by higher costs for pesticide usage. HF BS2 turned out to be less efficient than BS1. In H no considerable difference between the farming systems can be observed. F BS1 leads to positive NPVs with the 100% strategy being more efficient. Further analyses of climate and pest occurrence data is required to explain some of the observed differences.