Title: **“Utilizing ExpertN Crop Model for Evaluating Multiyear Crop Growth and Simulations in Heidfeldhof”**

This research project focuses on using advanced crop modeling tools, in particular the ExpertN crop model, to evaluate and simulate crop growth in the Heidfeldhof site. The study aims to provide valuable insights into optimizing agricultural practices to improve sustainability, resource efficiency and yield increase. The ExpertN model will be used to analyze the key factors influencing crop development and nutrient utilization.

Objectives:

1. Evaluate the performance of the ExpertN crop model in predicting crop growth parameters.
2. Assess the impact of environmental factors on crop development in Heidfeldhof.
3. Simulate various agricultural scenarios using ExpertN to optimize resource utilization.

Methodology:

1. Acquire relevant data on soil characteristics, climate, and historical crop performance in Heidfeldhof.
2. Implement and calibrate the ExpertN crop model using local data to ensure accuracy.
3. Conduct field experiments to validate the model predictions.
4. Simulate different scenarios, such as varying fertilizer applications, irrigation strategies, and crop rotations, using ExpertN.
5. Analyze simulation results and compare them with observed data to assess model reliability.

Expected Outcomes:

1. Improved understanding of the factors influencing crop growth.
2. Validation and optimization of the ExpertN crop model for the specific agricultural context.
3. Insights into sustainable agricultural practices tailored to specific regions.
4. Contribution to the broader scientific knowledge on precision agriculture and crop modeling.