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Chapter 5: Data assimilation with crop models; Chapter 6: Representing and optimizing management; Chapter 7: Using crop models for

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Chapter 11: Model-assisted genetic improvement of cropsChapter 12: Parameterization and evaluation of a corn crop model; Chapter 13:

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a model for studying the effect of cropping systems on gene flow;

Chapter 17: Data assimilation and parameter estimation for precision agriculture using the crop model STICS

Chapter 18: Application of Extended and Ensemble Kalman Filters to soil carbon estimationChapter 19: Analyzing and improving corn irrigation strategies with MODERATO, a combination of a corn crop model and a decision model; Chapter 20: Managing wheat for ethanol production: a multiple criteria approach; Appendix: Statistical notions; Answers to Exercises; Index

Sommario/riassunto

Mathematical models are being used more and more widely to study complex dynamic systems (global weather, ecological systems, hydrological systems, nuclear reactors etc. including the specific subject of this book, crop-soil systems). The models are important aids in understanding, predicting and managing these systems. Such models are complex and imperfect. One fundamental research direction is to seek a better understanding of how these systems function, and to propose mathematical expressions embodying that understanding. However, this is not sufficient. It is also essential to have