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SEIR – Application for Crop Through Water and Soil Texture

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Crop is a backbone of agriculture economy of any country. Soil and water are two key resources that directly or indirectly affect the crop production. The actual capacity of soil to retain the water makes that soil fertile which is necessary for ideal crop growth. To assess the effect of water and soil on the crop production, we have formulated the system of non-linear differential equations. The model is followed by its stability by finding equilibrium points; it gives the conditions which should be satisfied to maintain crop growth. The proposed model is validated through numerical simulation. The important economical results are deduced.

8.1 Introduction

8.1.1 Dynamical System

Mathematical modeling plays a significant role in controlling disease spread. One can observe the dynamic behavior of original data given in the model to see the perspective results. Of all mathematical modeling, the model using compartments is very useful technique. In this technique, the population is divided into compartments. There are many models like SIR, SIS, SEIR,