عنوان مقاله:

Modeling Banana Xanthomonas Wilt with Protection

نویسندگان:

Taye Faniran - *Department of Computer Science, Lead City University, Ibadan, Nigeria*

Abayomi Ayoade - *Department of Mathematics, University of Lagos, Lagos, Nigeria*

Abdulahi Falade - *Department of Mathematics, African Institute for Mathematical Sciences, Mbour, Senegal*

خلاصه مقاله:

Banana Xanthomonas Wilt (BXW) is an infectious disease caused by Xanthomonas campestris pv. musacearum. The model incorporates a new class of protected banana plants into banana plant population. This new class are the susceptible banana plant that are treated with fertilizers. The basic reproduction number, Ro , is obtained using next generation matrix. The model analysis is done and equilibrium points are analysed to establish the local and global stability of disease-free and endemic equilibrium solution. It is shown that if the basic reproduction number, Ro≤۱, then banana xanthomonas wilt is cleared from banana plantation and is globally asymptotically stable and if Ro>۱, the endemic equilibrium point is globally asymptotically stable and the disease persists in banana plant population. The impact of parameters in BXW model is investigated using sensitivity analysis. Numerical simulations are performed to justify the analytical findings.

کلمات کلیدی:

stability of periodic orbits, treated susceptible plant, NPK fertilizers, Banana Xanthomonas wilt

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/1589942