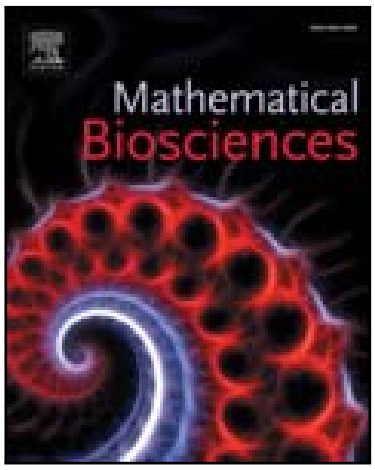

EXPLAINING COEXISTENCE OF NITROGEN FIXING AND NON-FIXING RHIZOBIA IN LEGUME-RHIZOBIA MUTUALISM USING MATHEMATICAL MODELING

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Highlights

- Nodulation by ineffective rhizobia is an example of cheating by a partner mutualist.
- Bacterial competition and gene horizontal transfer is proposed and modeled.
- Results show that the model including strain competition can explain the coexistence of fixing and non-fixing.
- The model explores a range of competition coefficient values, providing an interesting scenario for agricultural practices.
- Even slight improvements in nodulation competitiveness of the fixing strains used in inoculants could result in a reduction in the use of nitrogen fertilizers.