Modeling Commodity Flow in the Context of Invasive Species Spread: Study of *Tuta absoluta* in Nepal

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Trade and transport of goods is widely accepted as a primary pathway for the introduction and dispersal of invasive species. However, understanding commodity flows remains a challenge owing to its complex nature, unavailability of quality data and lack of systematic modeling methods. A robust network-based approach is proposed to model seasonal flow of agricultural produce and examine its role in pest spread. It is applied to study the spread of *Tuta absoluta*, a devastating pest of tomato in Nepal. Further, the long-term establishment potential of the pest and its economic impact on the country are assessed. Preliminary analyses indicate that *T. absoluta* will invade most major tomato production regions within a year of introduction and the economic impact of invasion could range from $17-25 million. The proposed approach is generic and particularly suited for data-poor scenarios.