development and sustaining limited agricultural resources, especially farmlands.The GIM was selected as a study area because (1) nearly 40% of Jordan's primary croplands located in Irbid, (2) it is the second-fastest-growing urban area in the country, (3) it has been experiencing rapid socioeconomic and demographic transformations, and (4) its zoning and urban planning policies are not well designed, not fully enforced, and their sustainability perspectives are not pronounced.Since 2001, the GIM area has undergone significant land cover changes to support the growing urban population resulting from (1) economic development (2) domestic rural-urban migration, (3) changing demographic structure, (4) changing lifestyle, and (5) the influx of Syrian refugees during the Arab Spring of 2011 [58].The SLEUTH model is applied for the first time in Jordan, providing a robust approach for making long-term sustainable urban planning strategies that integrate spatially explicit models and geospatial technologies.While numerous case-studies investigated urban growth in Irbid using remote sensing and GIS [59-63], no study has yet used the SLEUTH model to predict urban dynamics and quantify the past, present, and future urban expansion on agricultural land of Jordan.Nevertheless, and due to increasing conversion rates of farmlands to urbanization, countless efforts have been paid towards modeling long-term land-use/cover dynamics, in general, and urbanization, in particular, in these countries [44-47].Accordingly, the municipal boundary of Irbid city was adjusted resulting in integrating agriculturally dominant rural districts to the city limits.This becomes more problematic when the Arab countries neglect the importance of proper management through balancing between available agricultural lands and conversion for urban use [44].