Urban food insecurity prevails, predominantly in the lower wealth segments. Policies to empower urban poor though the exploitation of home or allotment gardens seems a viable answers they enable the production of healthy and nutritious food and earns some extra income from surplus production. Yet, political support for implementing allotment gardens is significantly constrained by persistent information gaps regarding availability, allocation, and suitability of potential sites. This study addresses this knowledge gap by presenting fundamental building blocks for a site allocation tool that optimizes spatial planning of allotment gardens in urban and peri-urban areas. The model underlying the tool explores a fully georeferenced database of independent variables (e.g. soil, water, distance to markets) while a randomly selected subset expert judgments (dependent variable) assess site suitability. The estimated model uses the independent data to explain the ordered categorical expert judgments. Parameter estimates are tested for consistency, reproducibility and stability (robustness). The model is converted into a tool for impact evaluation of site suitability for allotment gardens under various policy scenarios.