

EGU22-7137, updated on 13 Aug 2022

<https://doi.org/10.5194/egusphere-egu22-7137>

EGU General Assembly 2022

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A Model Approach Assessing The Soil Properties Of Raised Bed Landscapes

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Common anthropogenic surface features across Scotland and Ireland are raised beds, which are agronomic ridges and furrows created prior to the 20th century to improve agricultural yield. Creating a raised bed improves yield by providing to the root zone better soil drainage, suitable micro-climatic conditions, and enrichment of organic matter and nutrients. Raised beds are structurally identifiable and can be examined using remote sensing techniques such as LIDAR imagery or aerial photography to analyze different dimensions of raised bed units. We examined the geomorphic parameters (height, length, breadth, ridge shape, furrow depth, unit orientation and block size) of raised beds found in the Fancroft region of County Offlay, Ireland. We developed a model of raised bed structural components and the distribution and change in soil properties including soil drainage, texture, horizon differentiation, soil colour, nutrient distribution, organic matter movement and the carbon influx and outflow have been provided. Our study aims to elucidate the typical geomorphic properties of raised bed landscapes, their basic chemical and physical soil properties and the landform attributes that may influence soil properties. Overall, the conceptual basis of raised bed landscapes have been visualised and presented to formulate an ideal raised bed theoretical model. Such a comprehensive model can be further extended to learn more about ancient agricultural practices, heritage, a causal link between present day and historical farming practices.