

Modelling the population emergence dynamics of the western corn rootworm, *Diabrotica virgifera virgifera*, using the Gompertz curve and Bayesian hierarchical models.

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The Problem



(a) The beetle

(b) The corn

sourced from: a. https://en.wikipedia.org/wiki/Western_corn_rootworm b. <https://www.penmai.com/community/threads/makka-cholam-and-cholam.84211/>

The Problem



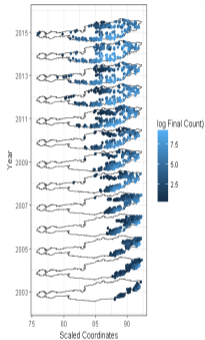
(c) The beetle



(d) The corn

sourced from: a. https://en.wikipedia.org/wiki/Western_corn_rootworm b. <https://www.penmai.com/community/threads/makka-cholam-and-cholam.84211/>

Implications



(e) The spread



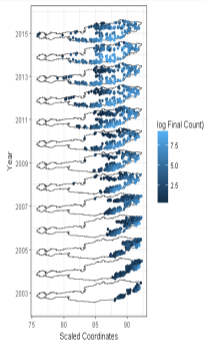
(f) The destruction



(g) The farmer

sourced from: d. <https://www.vectorstock.com/royalty-free-vector/country-farmer-cartoon-vector-2115095> e. <https://agriculturewire.com/western-corn-rootworm-resistance-to-bt-corn-confirmed-in-more-illinois-counties/>

Implications



(h) The spread



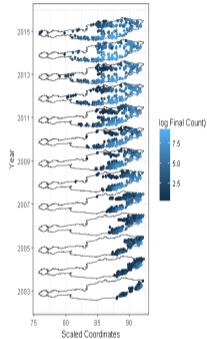
(i) The destruction



(j) The farmer

sourced from: d. <https://www.vectorstock.com/royalty-free-vector/country-farmer-cartoon-vector-2115095> e. <https://agriculturewire.com/western-corn-rootworm-resistance-to-bt-corn-confirmed-in-more-illinois-counties/>

Implications



(k) The spread



(l) The destruction



(m) The farmer

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- Goal is to understand populations dynamics
- What environmental factors affects
- How do these dynamics change over space and time?

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What can we use?

- Bayesian Hierarchical models
- incorporating the Gompertz curve to understand the dynamics
- add spatial effects to evaluate differences over space

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