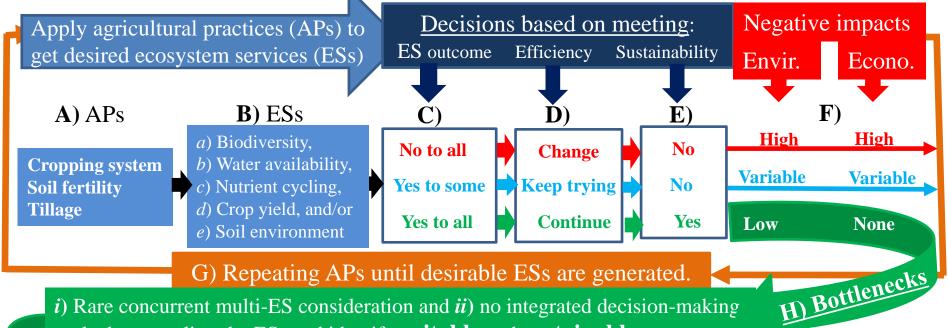
Models that Identify Suitable and Sustainable Soil Health Outcomes.



- i) Rare concurrent multi-ES consideration and ii) no integrated decision-making tools that can align the ESs and identify suitable and sustainable outcomes.
- Nematode community analysis based models as decision-making tools.
- 1) SFW model  $\rightarrow$  suitable outcomes based on changes in abundance and functions.
- 2) FUE model  $\rightarrow$  sustainable outcomes based on changes in abundance and ESs.
- 3) IPE model  $\rightarrow$  sustainable outcomes based on changes in abundance, functions, and ESs.

Conceptual understanding of the cycle of soil health degradation (A - H) and how the SFW, FUE and IPE models (I) can be the tools to overcome the challenges. APs (A) influence soil health components to generate ESs (B) and management decisions are based on ES outcomes (C) and variable definitions of efficiency (D) and sustainability (F) and without concurrently weighing the environmental and economic impacts (F). When the ES outcome is negative (red letters and arrows) or variable (blue letters and arrows), the decision is often is to repeat until desirable ES outcomes are achieved and the cycle of soil health degradation continues (G). Only when the ES outcomes are desirable (green letters and arrows) is sustainability achieved, but rarely are multiple ESs analyzed concurrently in ways that identify suitable and sustainable soil health outcomes (H). The SFW, FUE and IPE models can be the step-by-step integration platforms (I).