

Dynamic Integration of an Economic Model with SWAT

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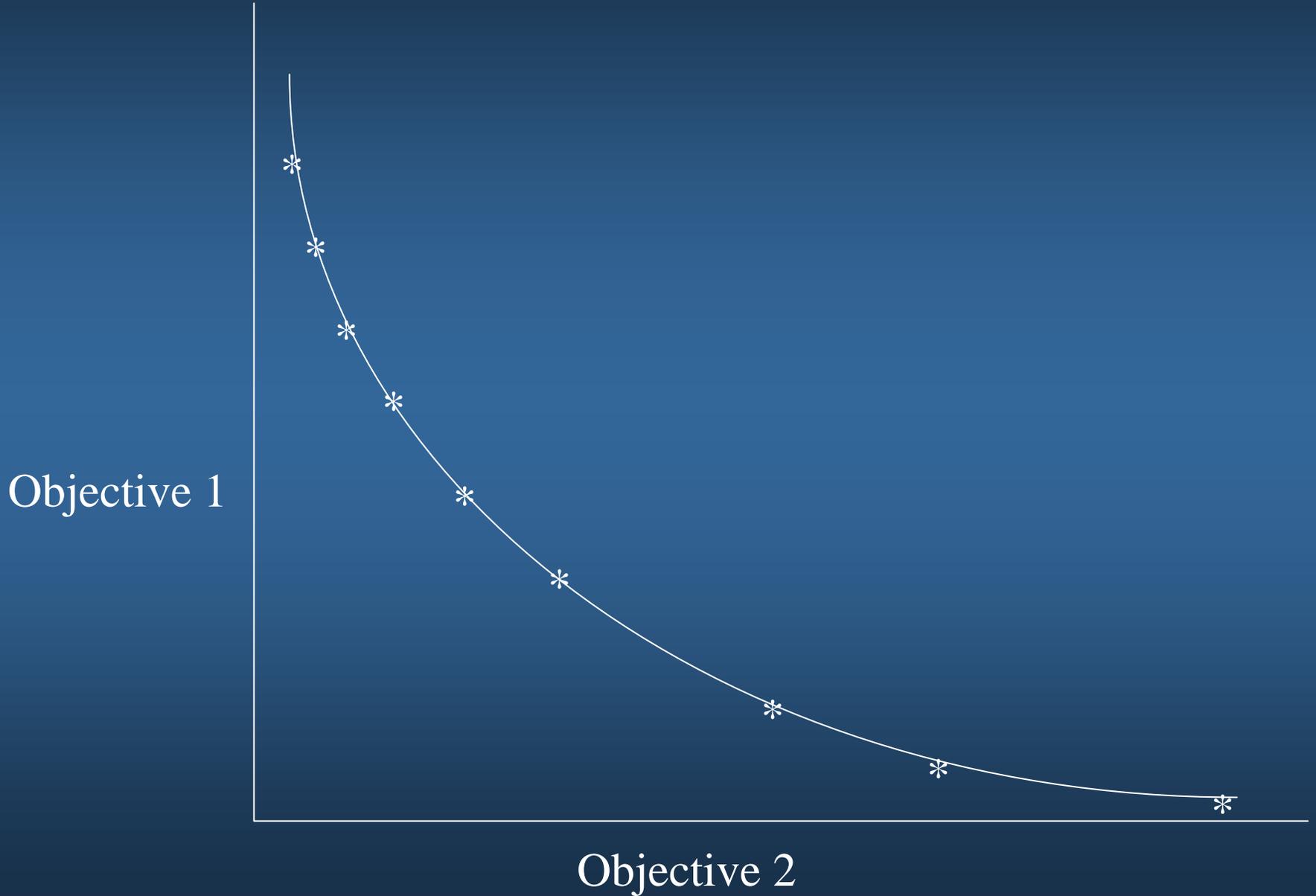
Shawna Grosskopf, Economics Dept., Oregon State Univ.

CEAP Objective 4: Economic Analysis

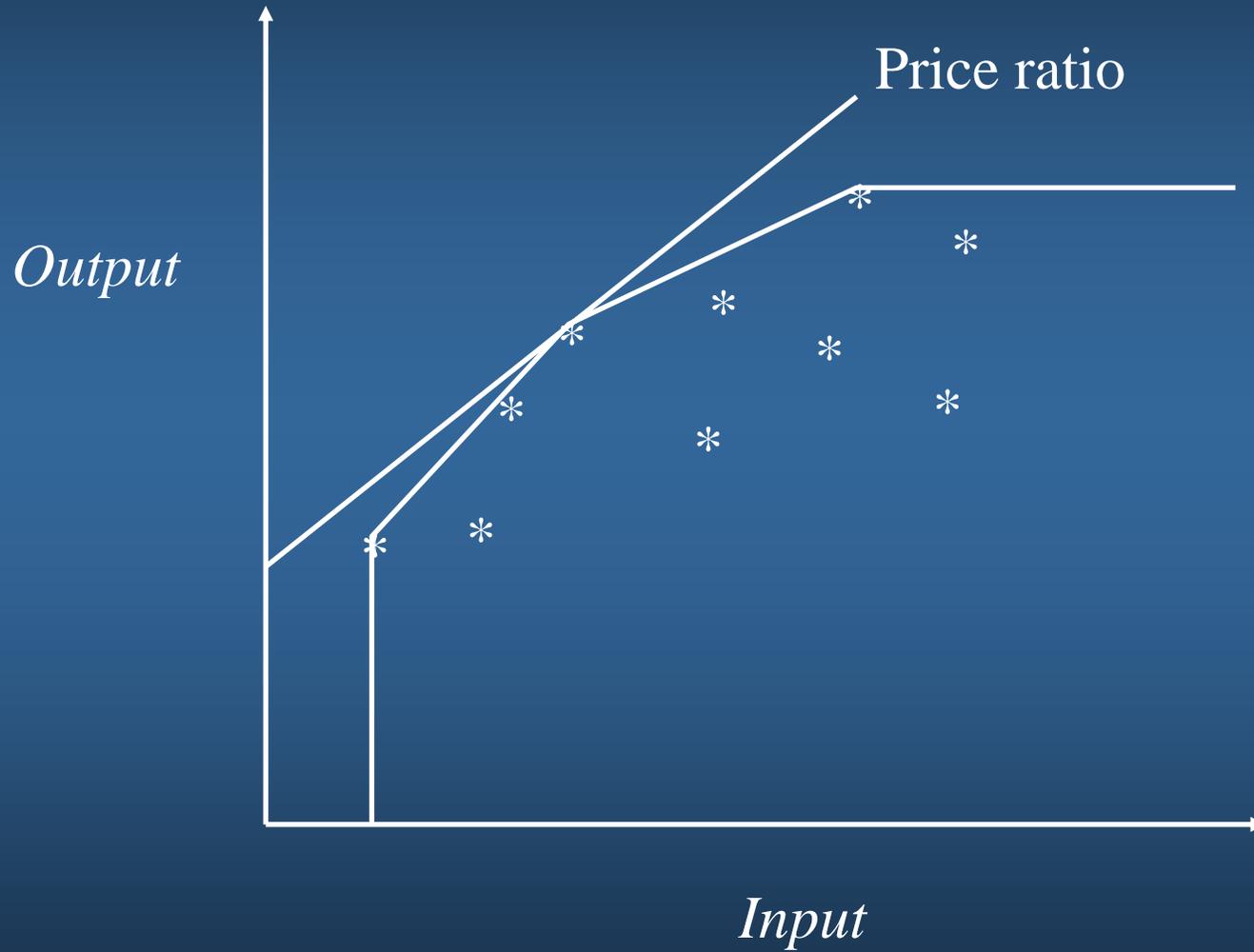
Selection and placement of conservation practices to optimize:

- 1) Profit maximization at the farm level
- 2) Environmental outcome at the watershed level
- 3) Program efficiency

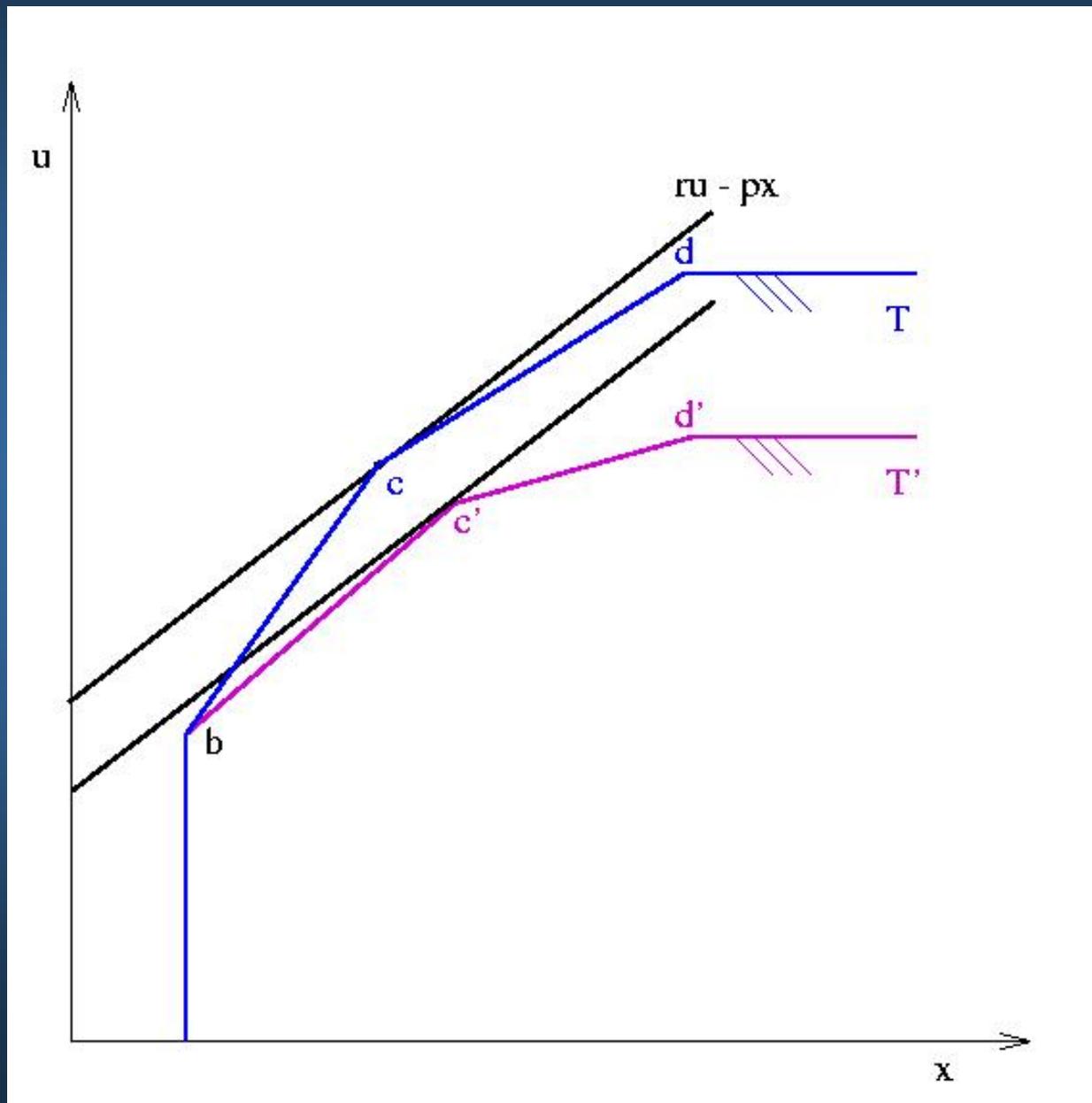
Optimization of Multiple Objectives



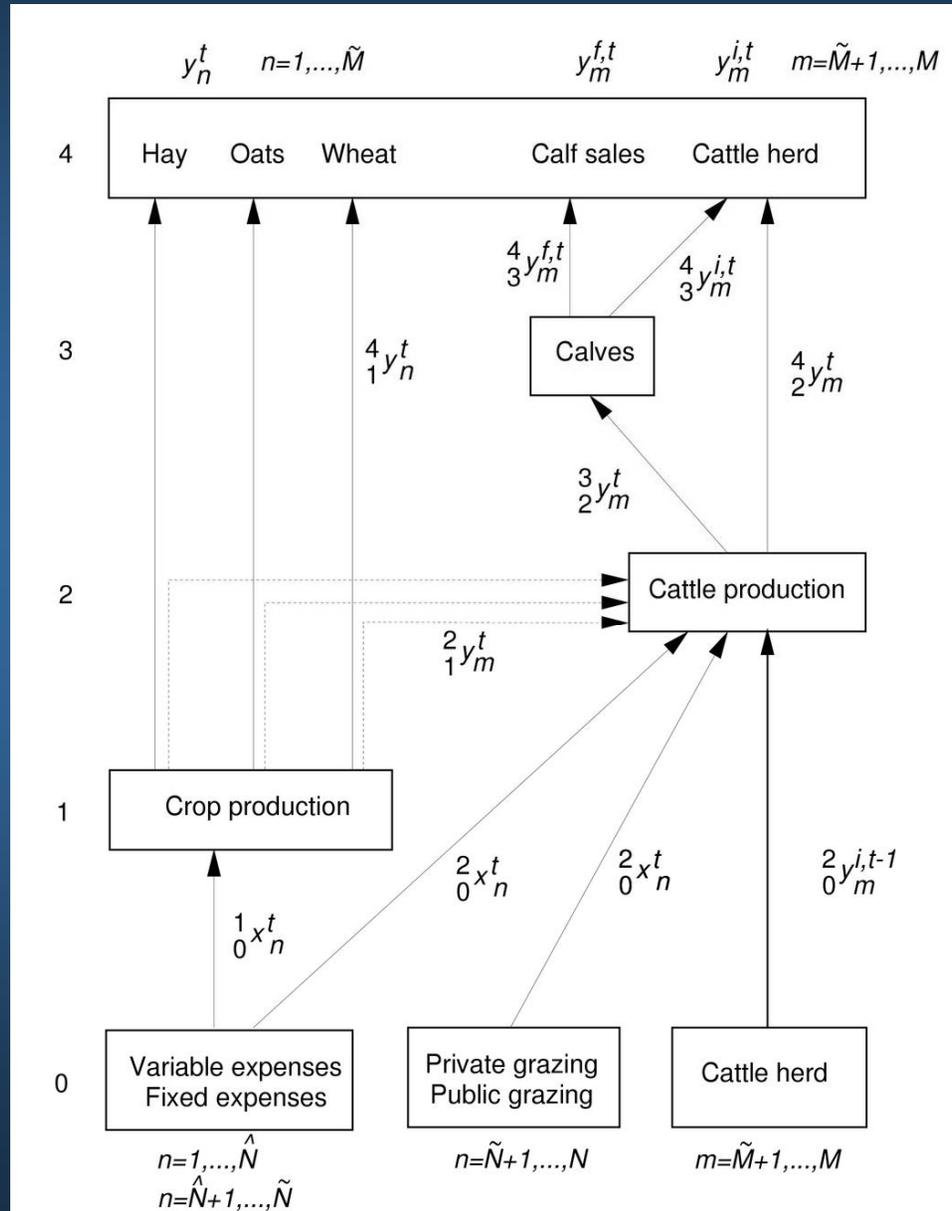
Data Envelopment Analysis



Economic comparison of alternative technologies



Data envelopment analysis model of cow-calf production

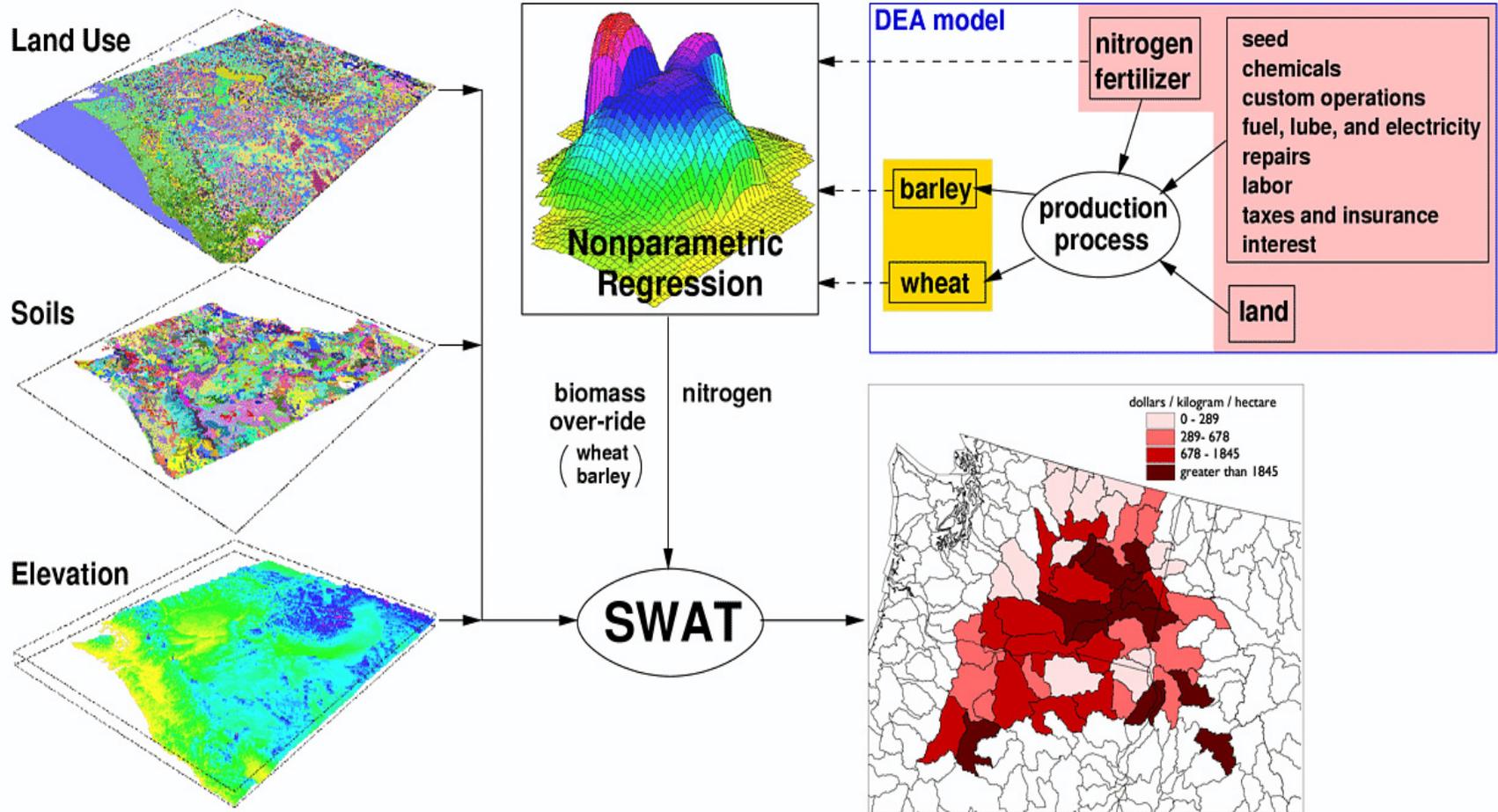


Linkage of Economic and Environmental Models

Static Link: Run economic (optimization) model, use results in environmental model

Dynamic Link: Information passed between environmental model and economic model during optimization.

Static integration of DEA and SWAT



Links from Economic Model to SWAT

Static Links

Crop

Chemical inputs to production

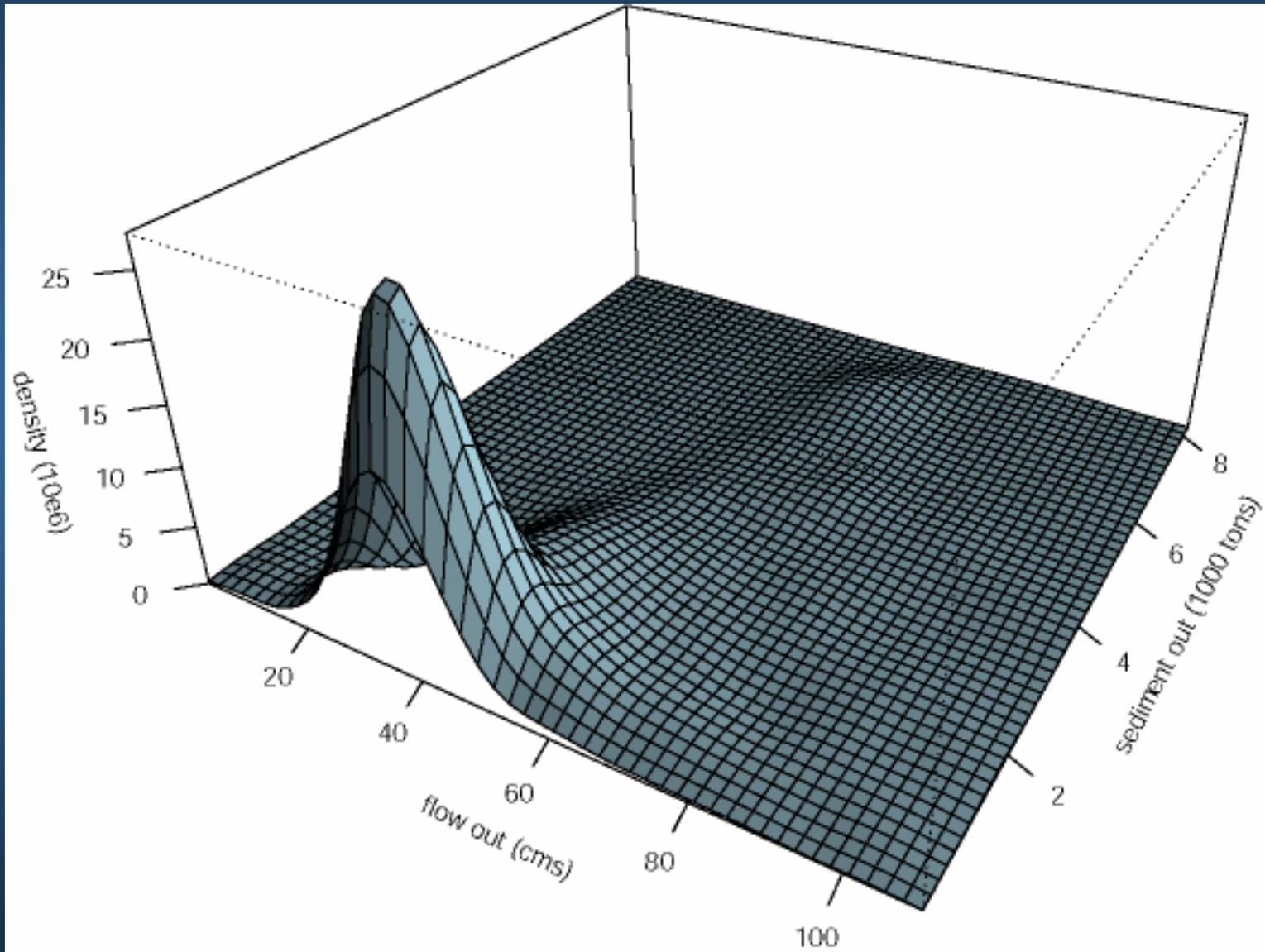
Yield: BIO_TARG – biomass target

HITAR – harvest index target

Dynamic Links

Runoff from fields (SWAT outputs)

Hill Climbing Optimization Algorithms



Multi-objective Optimization Using a Genetic Algorithm

