Thresholds: Situational Dependent?

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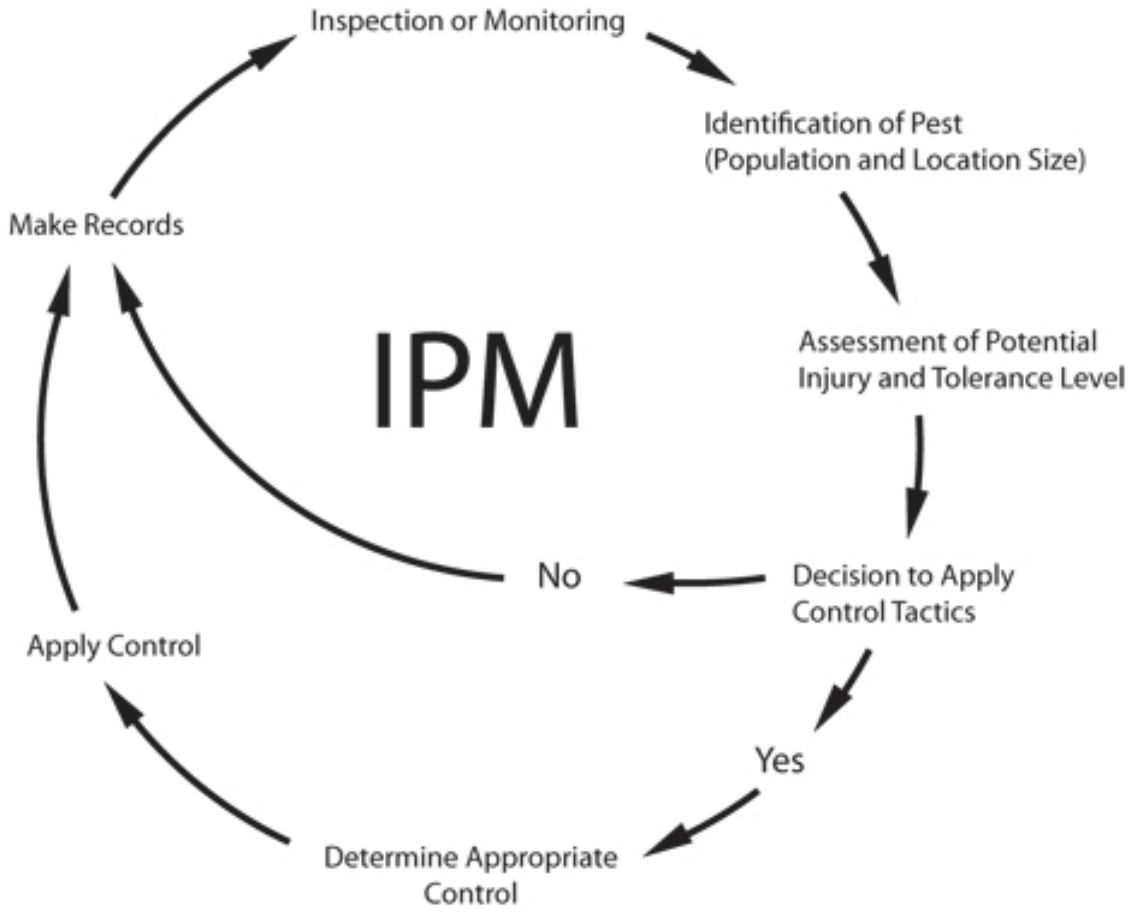
Introduction

Number One Goal

- Best management practices
  - Economically sound

Decision Making Process

The Decision-Making Process



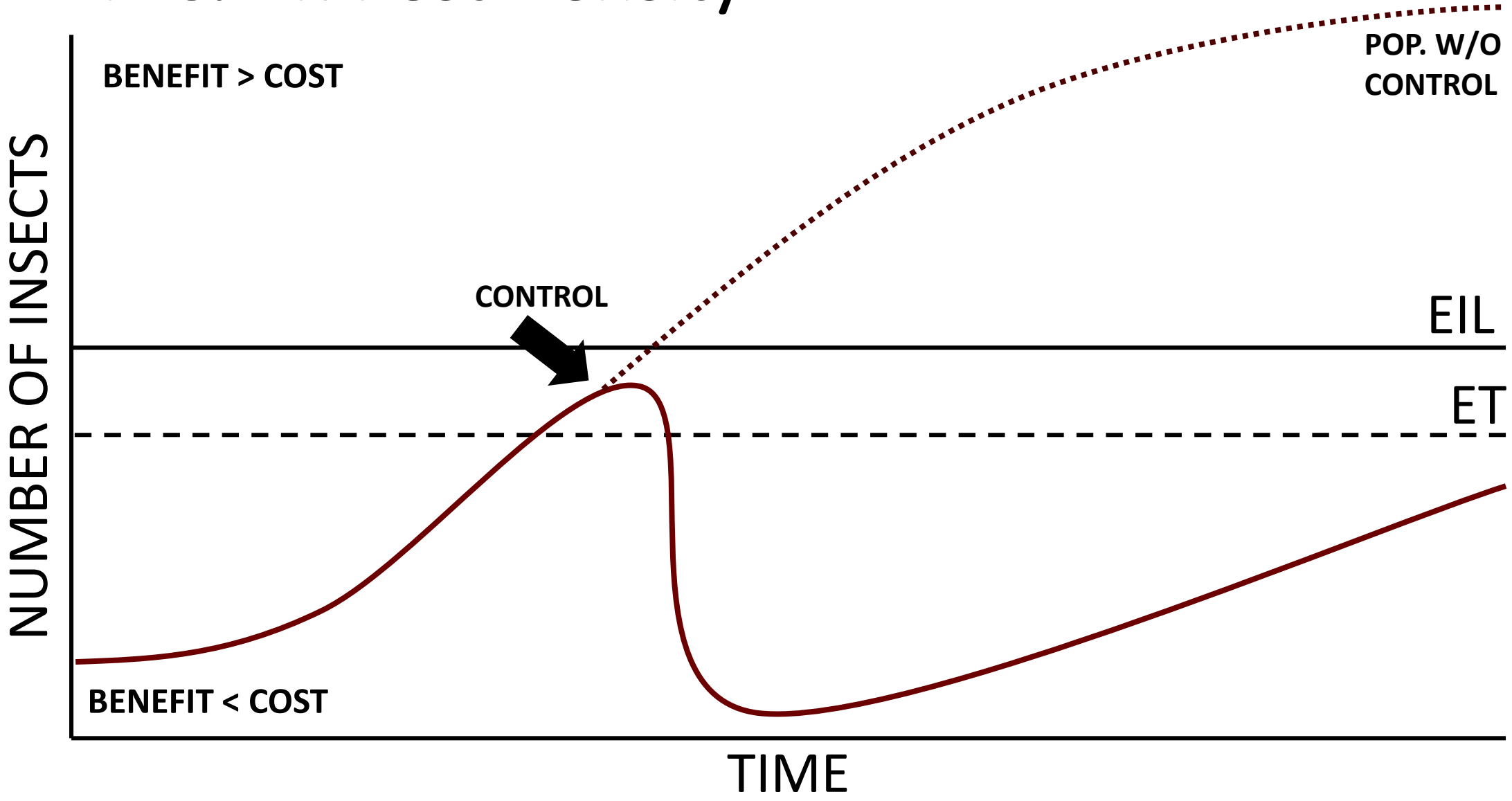
Economic Injury Level (EIL)

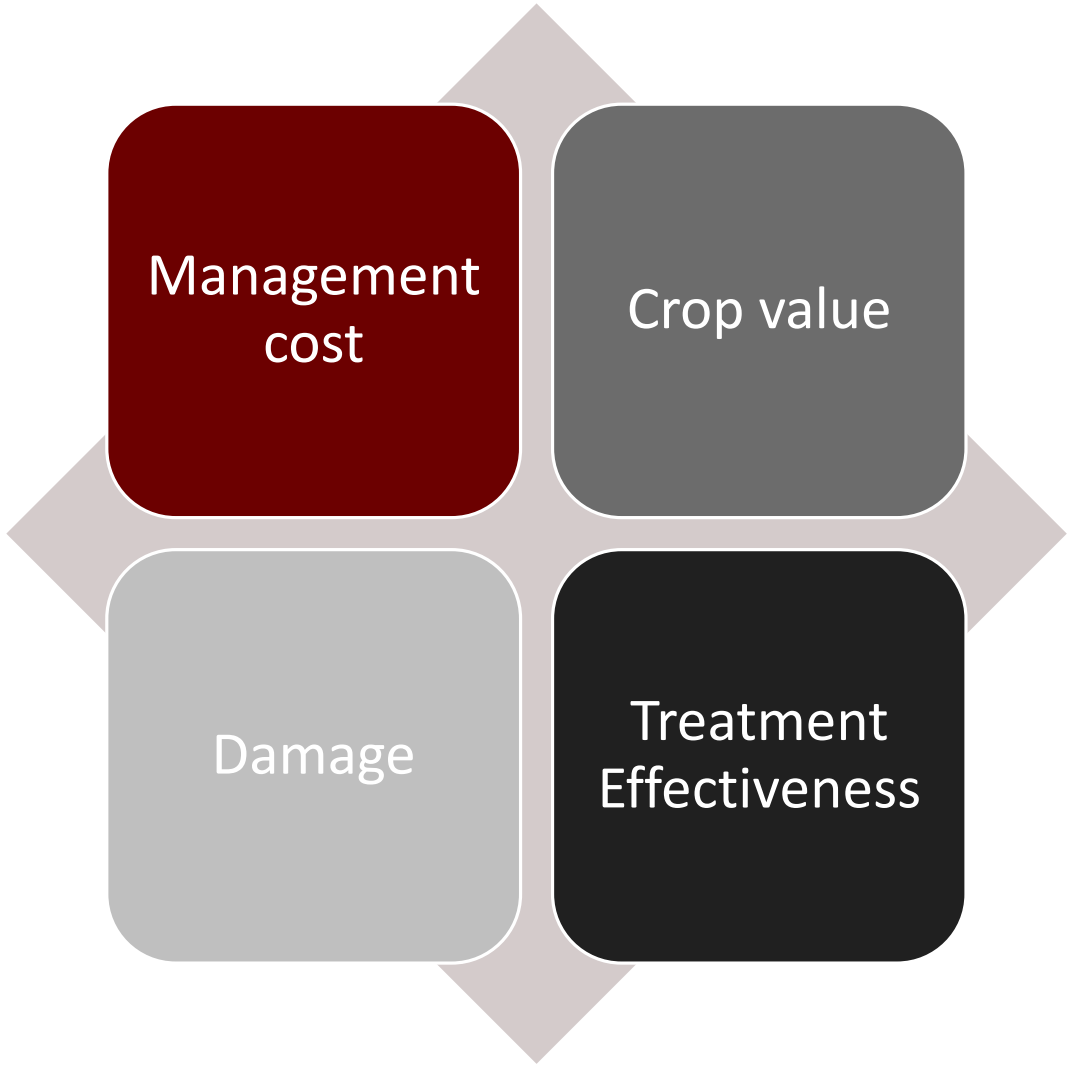
(EIL) = "The lowest population density of a pest that will cause economic damage; or the amount of pest injury which will justify the cost of control."

Economic Threshold (ET)

The level of pest infestation at which management action is justified

EIL & ET: Pest Density





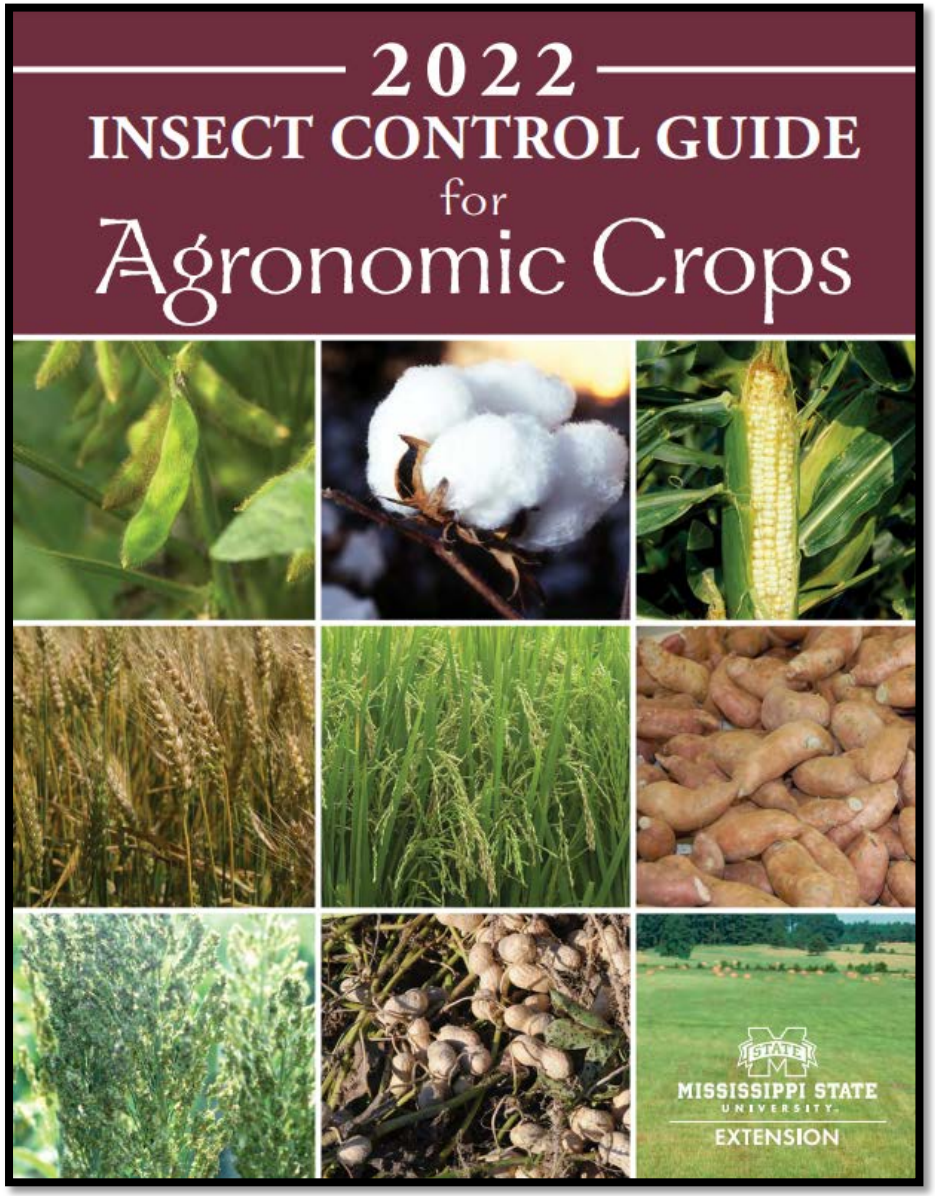
FACTORS THAT IMPACT ET

Dynamics of Economic Pest Densities

	Higher Pest Populations (more pest tolerated)	Lower Pest Populations (fewer pest tolerated)
MANAGEMENT COST	↑	↓
CROP VALUE	↓	↑
DAMAGE	↓	↑
TREATMENT EFFECTIVENESS	↓	↑

University of California, Sacramento Valley Orchard Source

Recommendations are built on research



Does one size fit all?

- No
- Guideline for management
- Every situation is different
- The end goal doesn't change

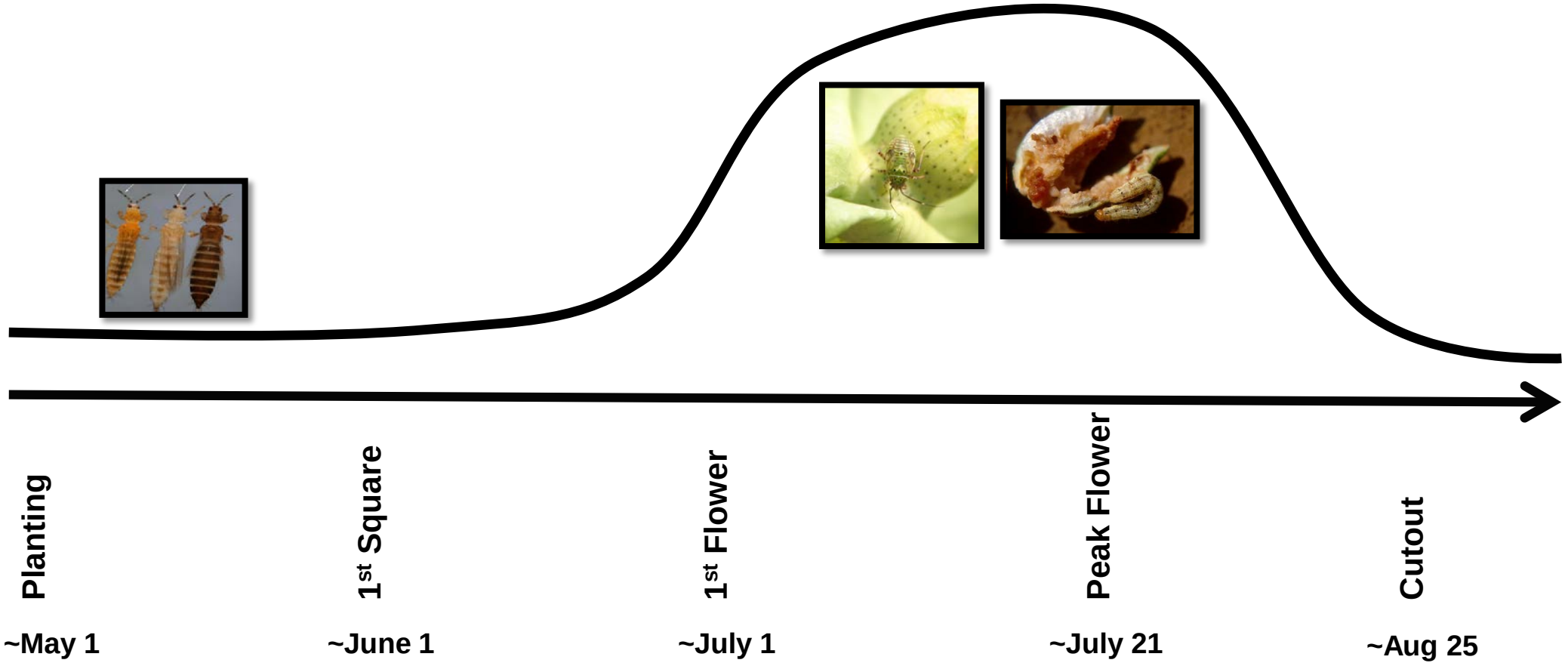
Potential Topics for Consideration

Environmental conditions

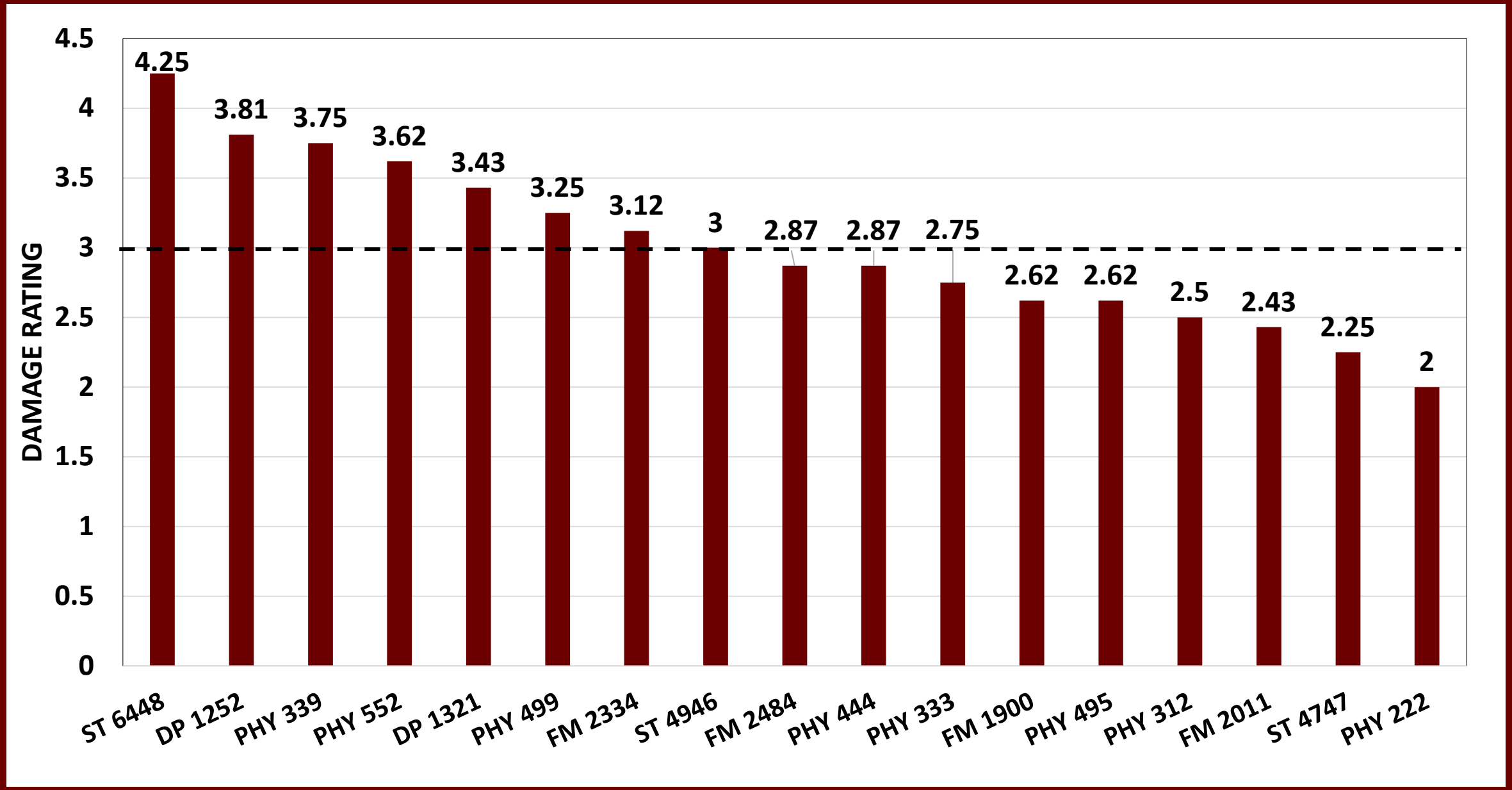
- Compensation
- Stresses
- Tolerance

Budgets and yield

Compensation and/or Stresses



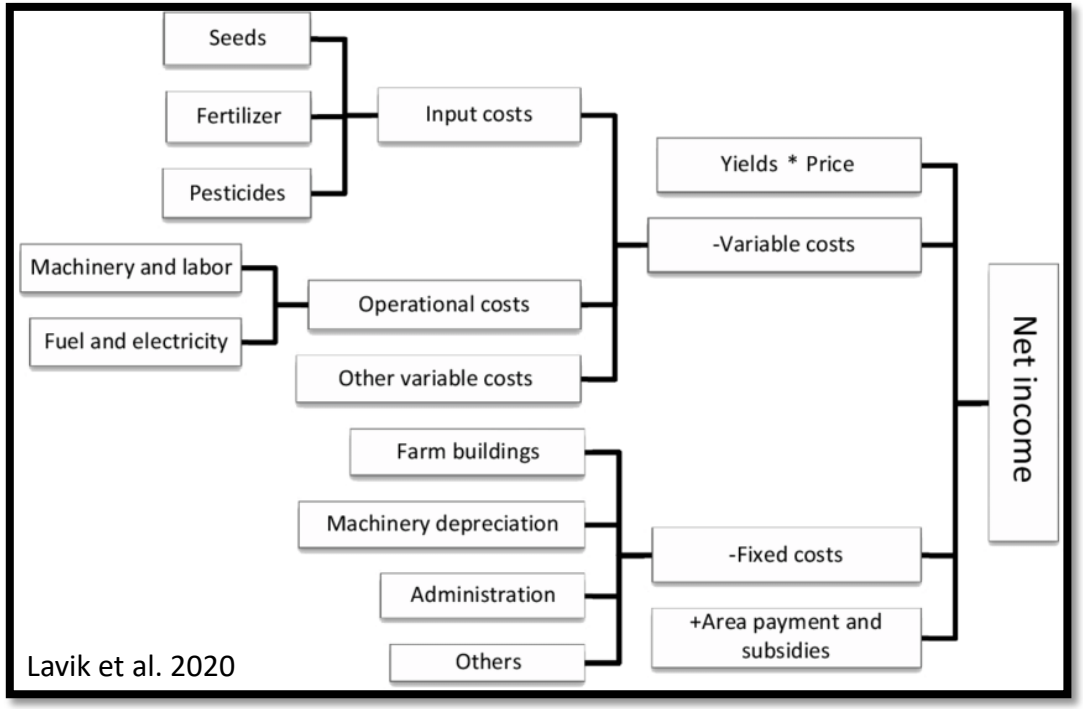
Increased Plant Tolerances



Yield Potential and Budgets

- Example:
  - Yield Goal: 100 bushels
  - Market: $5
  - Budgeted Expenses: $300

	100 Bushels	50 Bushels
Value	500	250
Expenses	300	300
Profit	200	-50



Adjusting Insect Management

- Rice Stink Bug in Sorghum (https://extensionentomology.tamu.edu/sorghum-rice-stink-bug-calculator/)
  - Cost, Value, and Heads/A

High	Grain Value, $/100 LB			
	6	7	8	10
Control Cost $/A	Rice Stink Bug Per Head			
6	0.63	0.56	0.48	0.39
8	0.84	0.72	0.63	0.51
10	1.06	0.9	0.79	0.63
12	1.29	1.09	0.95	0.76

Low	Grain Value, $/100 LB			
	6	7	8	10
Control Cost $/A	Rice Stink Bug Per Head			
6	1.7	1.12	0.96	0.78
8	1.68	1.44	1.26	1.02
10	2.12	1.8	1.58	1.26
12	2.58	2.18	1.9	1.52

THRESHOLD: Treat when fields average four to five stink bugs per head.

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Table 1. Economic thresholds for corn earworm larvae based on sweep net sampling.

	Larvae/25 sweeps				
	Control Costs ($/acre)[1]				
Crop value ($/bu)	10	15	20	25	30
6	7.4	11.0	14.7	18.4	22.1
7	6.3	9.5	12.6	15.8	18.9
8	5.5	8.3	11.0	13.8	16.5
9	4.9	7.4	9.8	12.3	14.7
10	4.4	6.6	8.8	11.0	13.2
12	3.7	5.5	7.4	9.2	11.0
13	3.4	5.1	6.8	8.5	10.2

Based on early-planted Maturity Group IV soybean varieties with >50 bu/acre yield potential.
[1]Including application costs.

Table 2. Economic thresholds for corn earworm larvae based on drop cloth sampling.

	Larvae/row foot				
	Control Costs ($/acre)[1]				
Crop value ($/bu)	10	15	20	25	30
6	1.0	1.5	2.0	2.4	2.9
7	0.8	1.3	1.7	2.1	2.5
8	0.7	1.1	1.5	1.8	2.2
9	0.7	1.0	1.3	1.6	2.0
10	0.6	0.9	1.2	1.5	1.8
12	0.5	0.7	1.0	1.2	1.5
13	0.5	0.7	0.9	1.1	1.4

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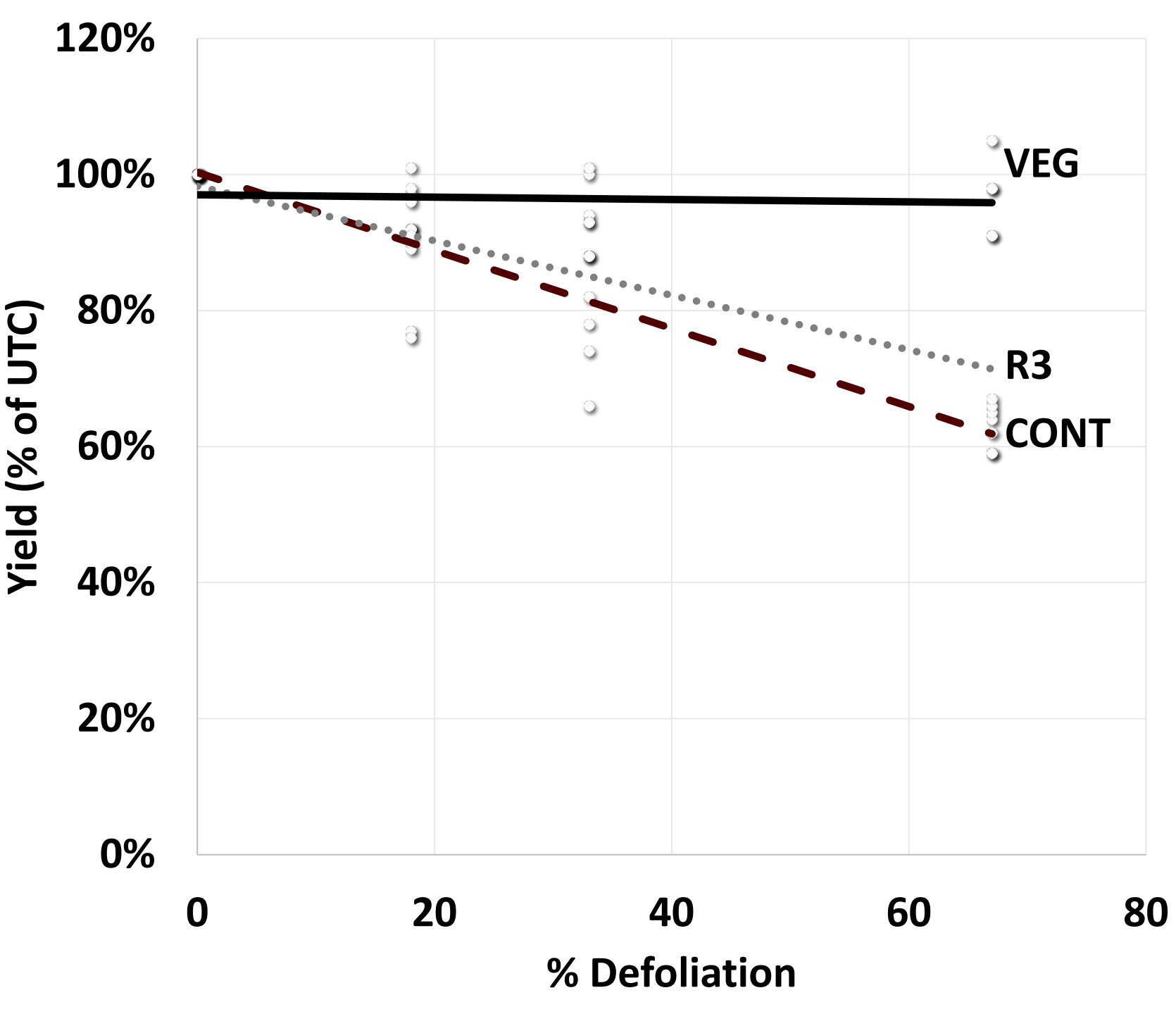
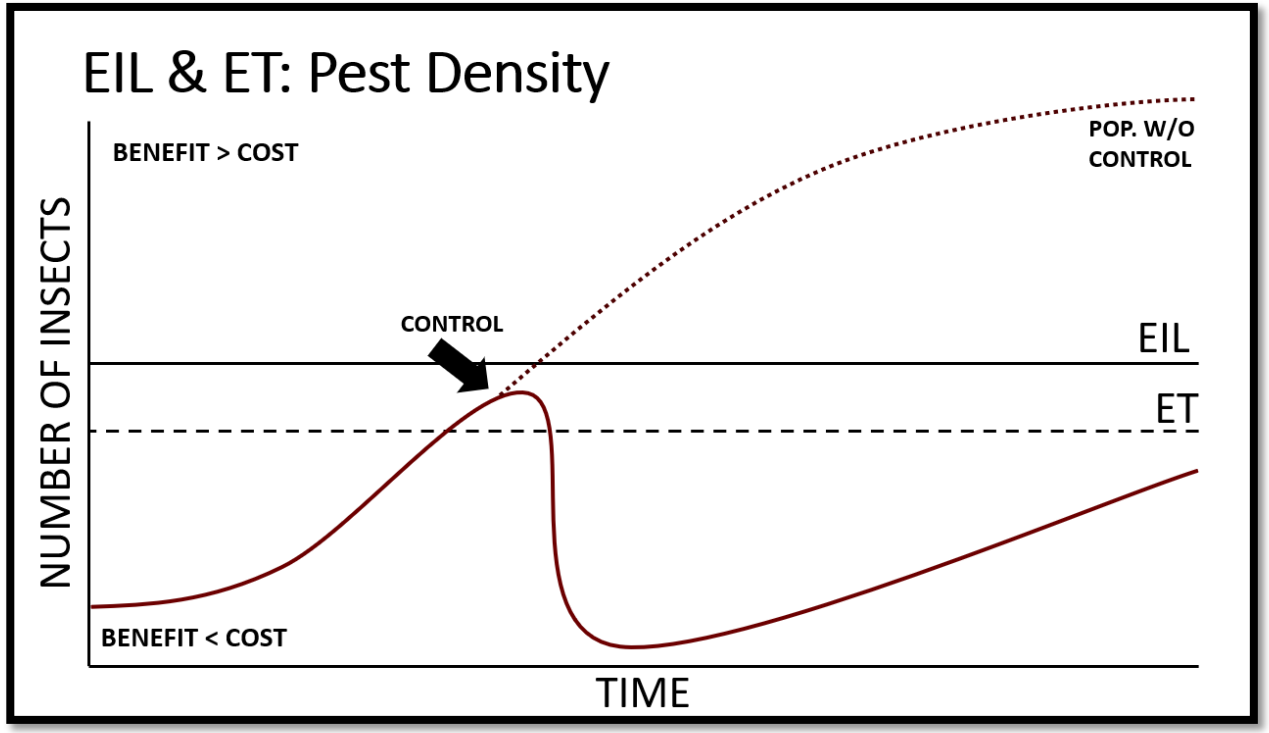
Dynamic Thresholds

Continuous Defoliation on Soybean Yields



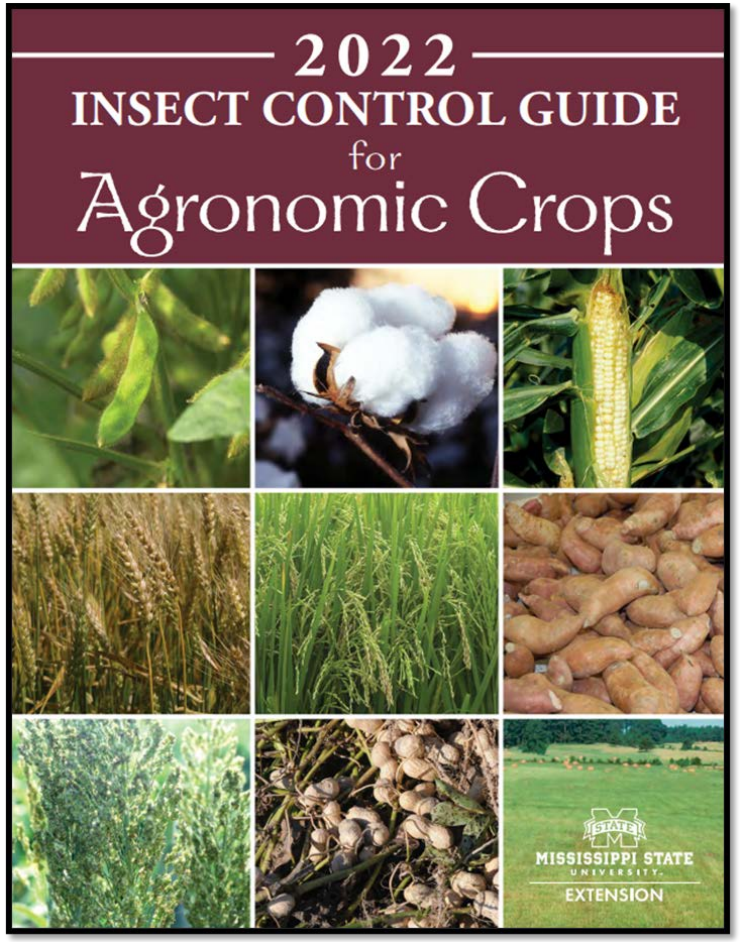
Remember:

- Dynamic thresholds
  - Great
  - Not always feasible
- ET and EIL
  - Take time
  - Complex



At the end of day:

- Remember ETs
  - Serve as a guideline
  - Start point for the decision-making process
- Goal
  - Economically sound decision



QUESTIONS?

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