Is IPM Delivering on the Promise?

Economic Evidence from the United States and Abroad

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Purpose of the Session

- Summarize accumulated evidence of the economic impacts of IPM in the United States and abroad
  - Review results of past impact studies
  - Highlight the evolution of approaches to IPM impact assessment
  - Summarize economic benefits of IPM, value of environmental benefits, and cost effectiveness of alternative IPM diffusion methods.
- Session aimed at IPM scientists and coordinators, as well as practitioners of IPM impact assessment.

Audiences for IPM Impact assessment

- Farmers (for IPM adoption decisions)
- Scientists (for priority setting)
- Extension workers (for recommending)
- National and International Funding Agencies (for accountability, resource allocation, generating support for IPM)

Nature of IPM Impacts

- **Field and Farm-household Levels** – yield, costs, income, risk, human health and environment, nutrition
- **Watershed and Market levels** – production, prices, trade, income, human health and environment

Diversity of Impact Assessment Methods

- Budgeting
- Econometric analysis
- Economic surplus analysis
- Calculation of indices (poverty, environmental, nutritional)
- Math programming and simulation

Budgeting

- Partial budgets
- Enterprise budgets

Test for statistically significant differences

Partial Budget

Additions to Net Revenue

Increased Returns:

1. _____ $_____
2. _____ $_____
3. _____ $_____

Total $_____ (A)

Decreased Costs:

1. _____ $_____
2. _____ $_____
3. _____ $_____

Total $_____ (C)

A+C = $_____ (E)

Reductions in Net Revenue

Decreased Returns:

1. _____ $_____
2. _____ $_____
3. _____ $_____

Total $_____ (B)

Increased Costs:

1. _____ $_____
2. _____ $_____
3. _____ $_____

Total $_____ (D)

B+D = $_____ (F)

Change in Net Returns = E - F = $_____

Enterprise Budget

	Units	Price or cost per unit	Quantity	Value or cost
Gross receipts				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Variable costs				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Income above var. costs	_____	_____	_____	_____
Fixed costs				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Total costs	_____	_____	_____	_____
Income above all costs	_____	_____	_____	_____

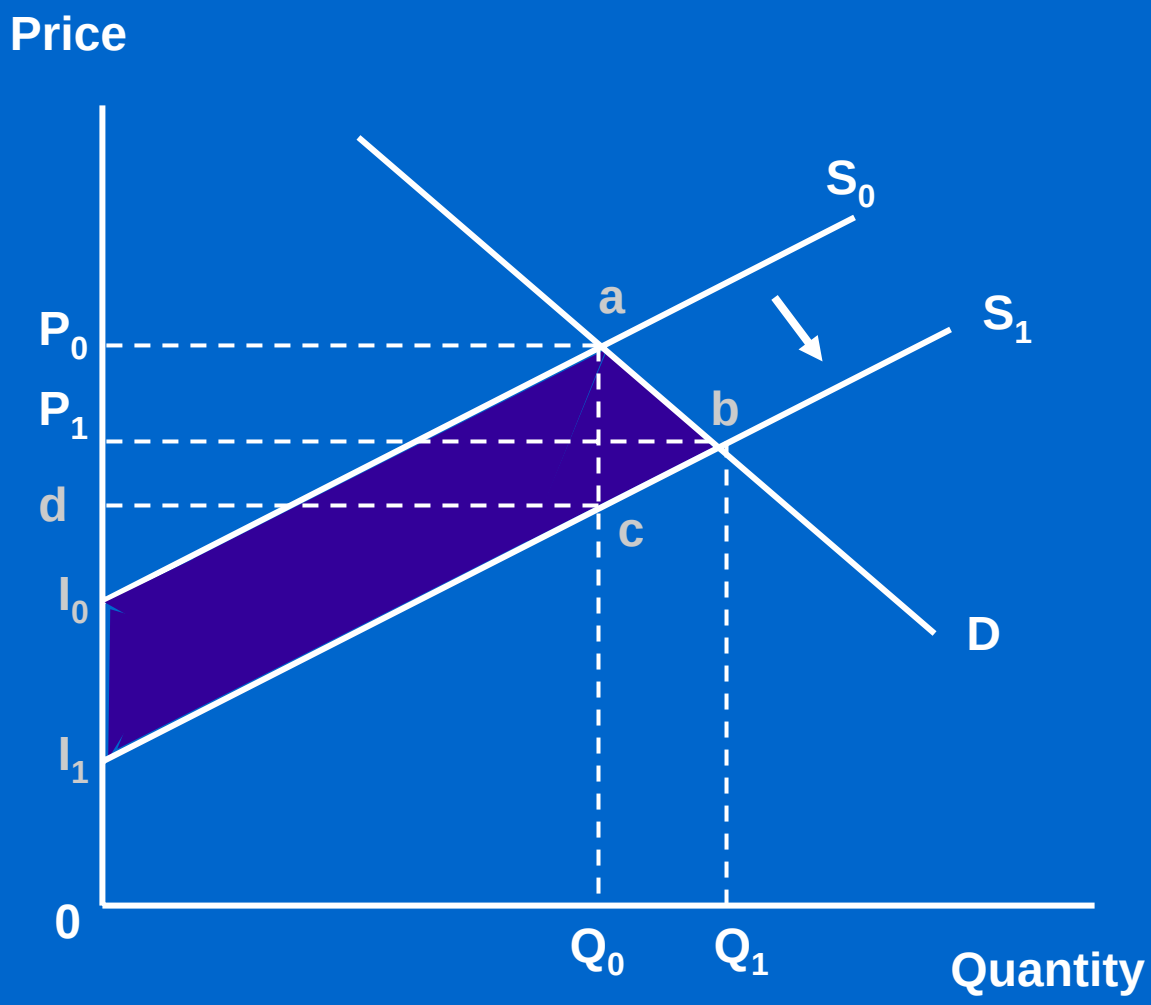
Econometric Analysis

- Regression analysis (of survey data) often required to assess factors influencing adoption (and projecting future adoption)
  - Often use probit or multinomial logit
  - Useful for assessing if participation in an IPM program affects adoption
  - Must be careful to assess how people are selected for the program

Economic surplus analysis

- Combines budget information, adoption information, secondary data on prices, quantities, and trade to estimate market level income effects and their distribution.
- Economic surplus benefits and program costs can be discounted over time in a benefit cost analysis

Economic value of productivity gains from IPM adoption



Indices

- Poverty -- $$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - y_i}{z}\right]^\alpha$$
- Nutrition – Estimation of changes in consumption and associated changes in calories, protein, etc.
- Health and Environment – assessing changes in pesticide quantity and risk and valuing those changes
  - EIQ
  - CV analysis
  - Experimental

Presentations

1. **Economic Impacts of IPM: Review of Empirical Evidence: Jorge Fernandez-Cornejo, USDA, ERS and Atanu Rakshit, Virginia Tech**
2. **Economic Impacts of Farmer Field Schools, Evidence from Latin America: Ricardo A. Labarta and Scott M. Swinton, Michigan State**
3. **Cost-effectiveness of Alternative IPM Technology Transfer Methods: Jeffrey Alwang, Virginia Tech**
4. **Environmental Benefits of IPM: Evidence at home and abroad: George Norton**