

Economic Forces and Progress with Postharvest Methyl Bromide Alternatives

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OVERVIEW

- Define Economics
- What Economics Says about Research
- Economic Feasibility and Critical Uses
- Economic Perspective on Adoption of New Technology
- Economics and Other Policy Issues

Economics

DEFINITION: Economics studies the problems of the allocation of scarce resources between alternative and competing ends.

MICRO VS MACRO

CONSUMER/FIRM



INDUSTRY



SECTOR



NATIONAL ECONOMY



GLOBAL ECONOMY

Economics

- Economic Research, Theory, and Models
- Equity and Efficiency
- Institutions and Law
- Policy

Economics and Research

- Research should be publicly funded when
 - Private sector provides too little
 - Risk high / Rewards low
 - Scale is too big
 - Intellectual property rights limited
 - Large externalities benefiting society
 - Essential to National Security
 - Statutory mandate or Treaty obligation

Economics and Research

- Strong property rights enforcement encourages private research
- Theories of competition and efficiency suggests public resources be allocated by competition
- Equity side of economics suggests allocation to achieve a distribution goal
- Economics of Public Choice notes roles for political process, citizen preferences, ...

Feasibility

Technical

Economic

Physical measures

Monetary measures

Published research on efficacy, e.g., yield, percent survival

Proprietary business data;
Forecast costs, prices, quality;
Representative firm

Experimental plots and field trials; experiments and site evaluations

User assessments; Observed market outcomes--adoption

Tends to focus on single production period or trial

Sustainability is critical

Unclear how variable performance affects technical feasibility

Even small negative deviations could be catastrophic

Feasibility

- If an alternative is not technically feasible, it cannot be economically feasible.
- Thus, CUN's that claim lack of technically feasible alternative, frequently do not report economic data.
- Both technical and economic feasibility may have large situational aspect.
- Thus, must determine on case by case basis.

Approaches to Economic Feasibility

- Partial Budgeting
- Net Revenue Analysis
- Transferability/Adoption Models
- False or Pseudo-economic Reasoning

Alternative results in

	Lower costs	Higher costs
Lower gross revenue	<p>Ambiguous. Alternative is economically feasible if costs decrease more than revenues. If revenues decrease more than costs, the alternative may or may not be economically feasible</p>	<p>Alternative may be marginally or significantly inferior. May be cases where alternative is deemed economically feasible</p>
Higher gross revenue	<p>Alternative is superior. Maybe a little, maybe a lot.</p>	<p>Ambiguous. Alternative is economically feasible if revenues increase more than costs. If costs increase more than revenues, the alternative may or may not be economically feasible.</p>

CRITICAL USE NOMINATIONS

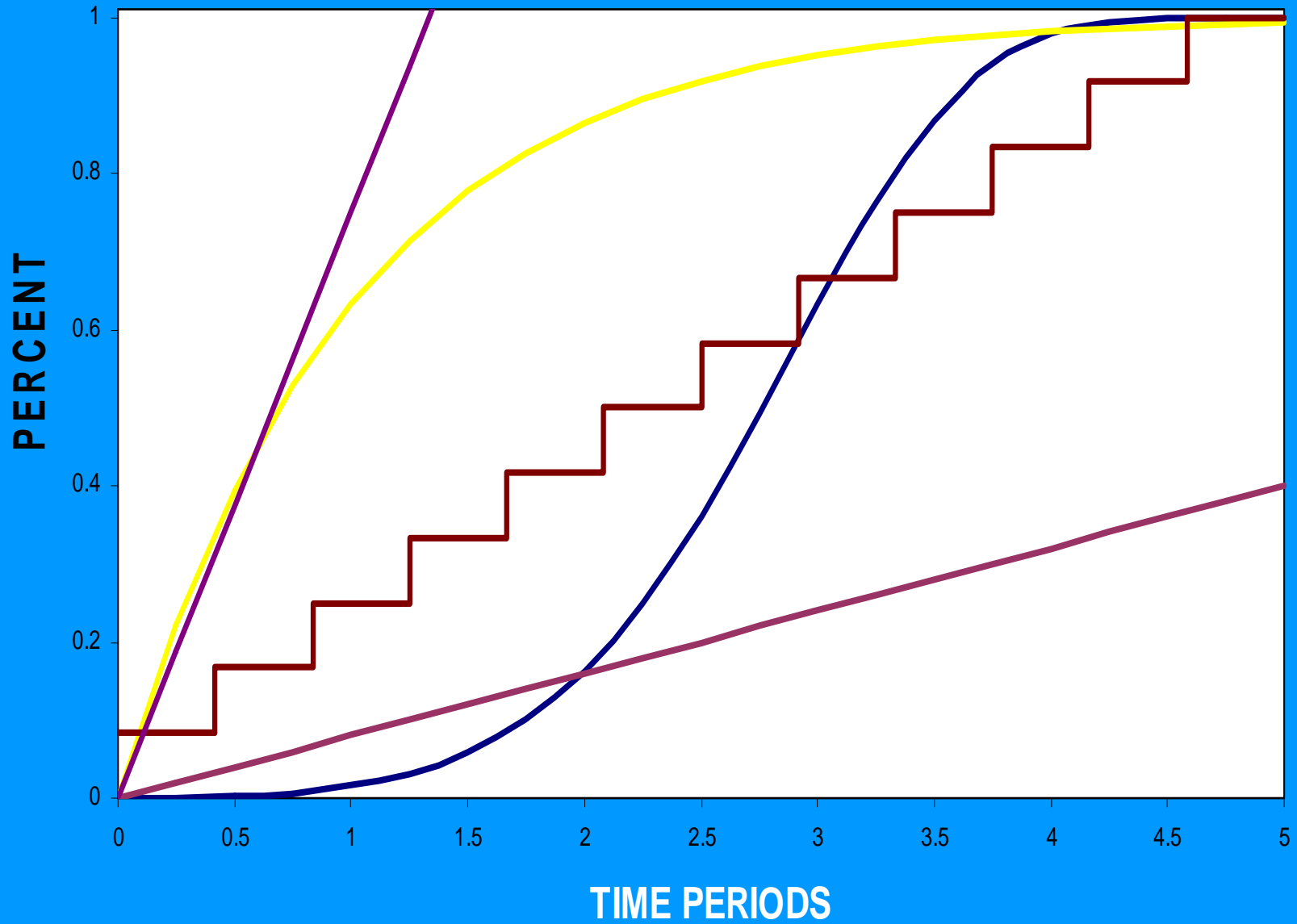
- The United States 2004 Critical Use Nominations are posted on the EPA website
- www.epa.gov/spdpublic/mbr/2004_nomination.html
- I am not reporting any MBTOC findings regarding the U.S. nominations.

Table E.1: Economic Impacts of Methyl Bromide Alternatives for Rice Miller's Association

Loss Measure	Methyl Bromide	Heat Treatment
Gross Revenue (US\$/1000 m³)	\$29,385	\$27,720
- Operating Costs (a+b) per 1000 m³	\$27,916	\$28,274
a) Cost of MB or Alternative	\$427	\$640
b) Other Operating Costs	\$27,489	\$27,634
Net Revenue (US\$/1000 m³) (net of operating costs)	\$1,469	\$(554)
Loss Measures		
Time Lost (days)	0 days	17 days
Loss per 1000 m³ (US\$/1000 m³)	\$0	\$2,023
Loss per Kilogram MB (US\$/kg)	\$0	\$62
Loss as a % of Gross Revenue (%)	0%	18.25%
Loss as a % of Net Revenue (%)	0%	138%

- Potential economic losses were estimated for ...facilities that have not been converted to heat treatment.
- ...where heat treatment may potentially be technically feasible...
- Economic costs ...arising from three ... factors.
 - ...in most cases ...heat treatment is more expensive, and labor is increased
 - ...capital expenditure
 - ...additional production downtimes

Adoption of Methyl Bromide Alternatives



ADOPTION

- Market Forces Only
 - What time path?
- Government Involvement
 - Training, Extension
 - Regulation
 - Taxes and Subsidies
 - Insurance

Policy Issues with Economic Content

- Is there a bright line to define economic feasibility? What is sufficient evidence?
- Approving CUN's reduces economic incentives for research and commercialization of alternatives. How can Parties maintain economic incentives?
- What rates of commercialization and adoption should Parties look for? No longer a phase out of MB; now a phase in of alternatives.
- How should Parties value risk tradeoff of alternatives for MB? Human and environmental consequences compared to destruction of zone.

Policy Issues with Economic Content

- How should Parties value risk tradeoff of alternatives for MB? Human and environmental consequences compared to destruction of zone.
- How should Parties ensure equity across users?
 - New entrants
 - New owners
 - Growing or expanding enterprises
 - Old facilities versus new facilities

THANK YOU

THE END