

GEORGE MORRIS CENTRE

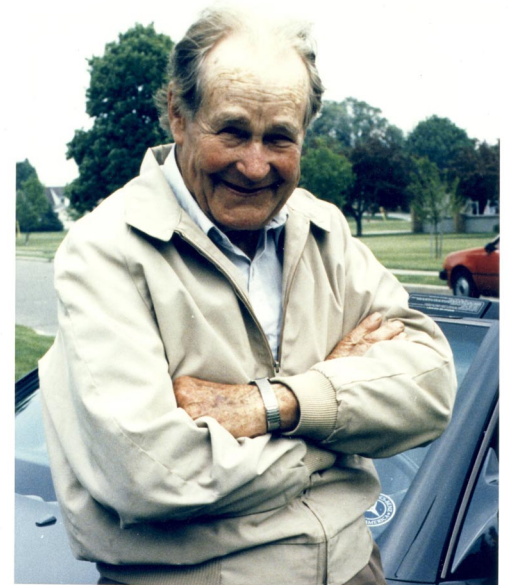
Assessing New Technologies: Case Study of Water Management Systems in Hog Operations

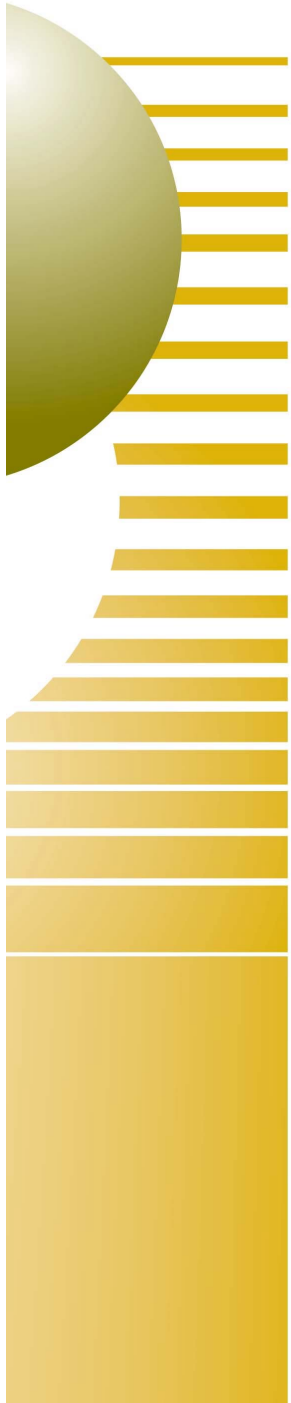
Beth Sparling, M.A.
Research Associate - Environment
November 8th, 2006

Canada's Independent Agri-Food Think Tank

George Morris Centre

- We provide information and analysis on issues affecting Canada's agriculture and agri-food sector including:
 - Economic & policy research
 - Education & training
 - Market analysis





Presentation Outline

- Innovation
- Assessing New Technologies
- Case Study
- Barriers to Adoption
- Summary and Conclusions



Types of Innovation

- Cheaper inputs
- Better inputs
- New product for existing needs
- New markets for an existing product
- A “completely new” product or service

Source: Schumpeter



Stages of Adoption

- Awareness
- Interest
- Information
- Trial
- Use/Purchase



Assessing New Technologies

- Identify impacts
 - costs and benefits
- Quantify impacts
- Financial impacts
- Make a recommendation
- Recognize barriers to adoption
- Communication



Background

New technology	Ball-bite drinkers
Interest	Presentation on water
Awareness	Advertisements
Information	Technology & funding
Trial	Demonstration farm

Case Study

- Demonstration farm in southern Alberta
- August 2004 – August 2005
- 3,000 head grower barn
- Replacement of standard drinkers with ball-bite drinkers
- One drinker for every 15 pigs



Drinkers



Ball-bite



Standard

Benefits of Technology

- 35% decrease in water usage

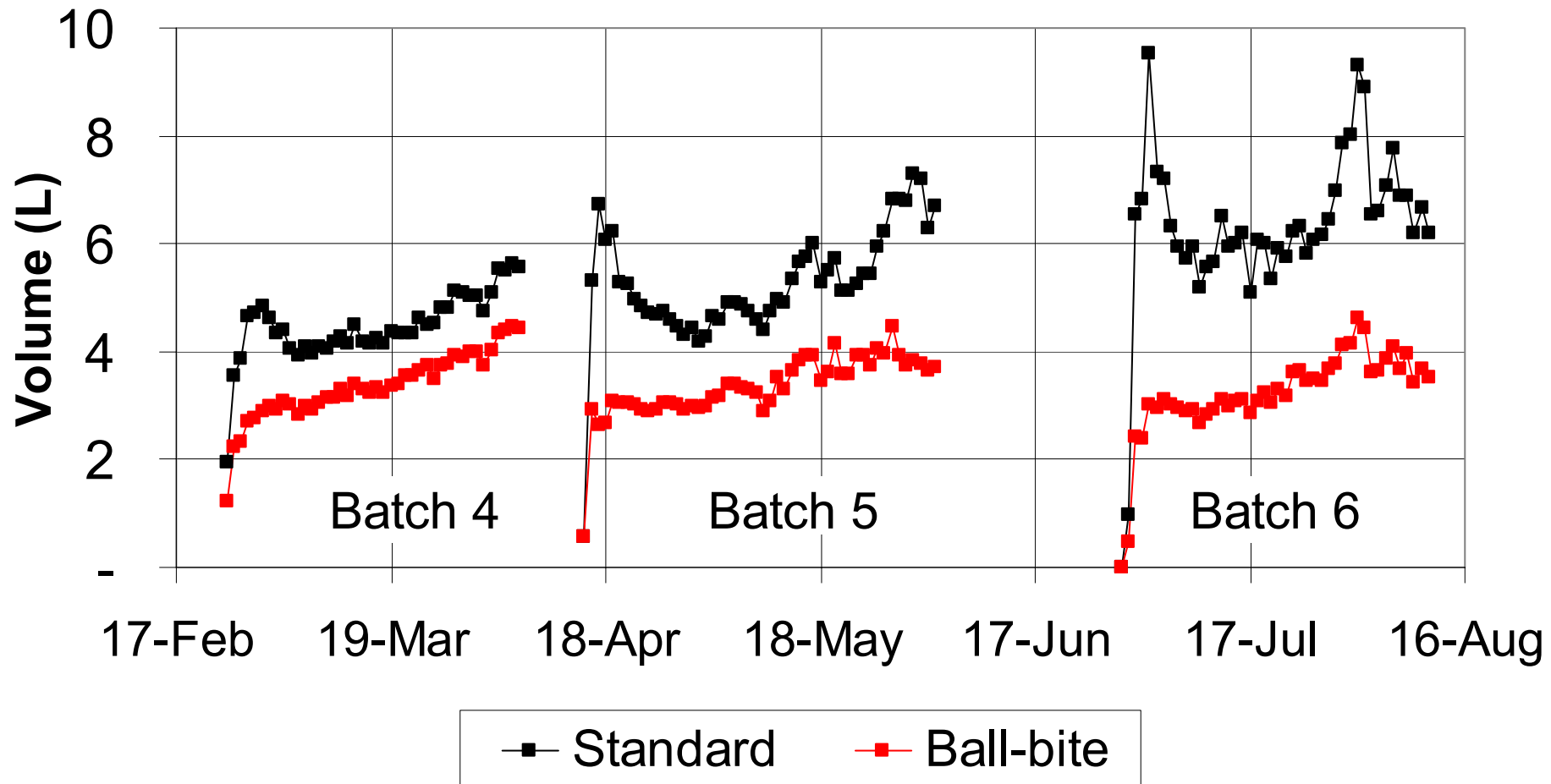


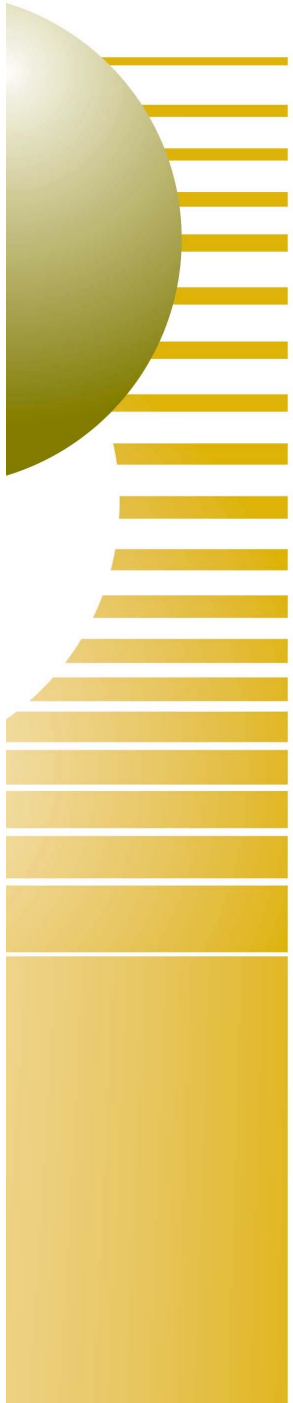
Standard



Ball-bite

24h Usage Per Head





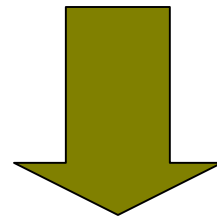
Identify Impacts

Benefits	Costs
↓ water usage	↑ capital cost
↓ manure volumes	
↓ manure handling costs	
↓ greenhouse gas emissions	
↓ electricity for pumping water	
↓ water takings	

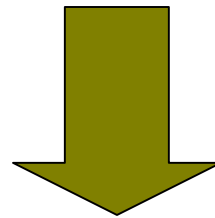


Quantify Impacts

↓ water use (35%)



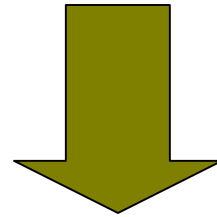
↓ manure volumes (35%)



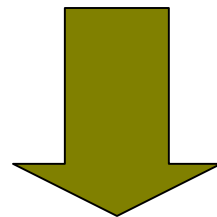
↓ manure handling costs (35%)

Quantify Impacts

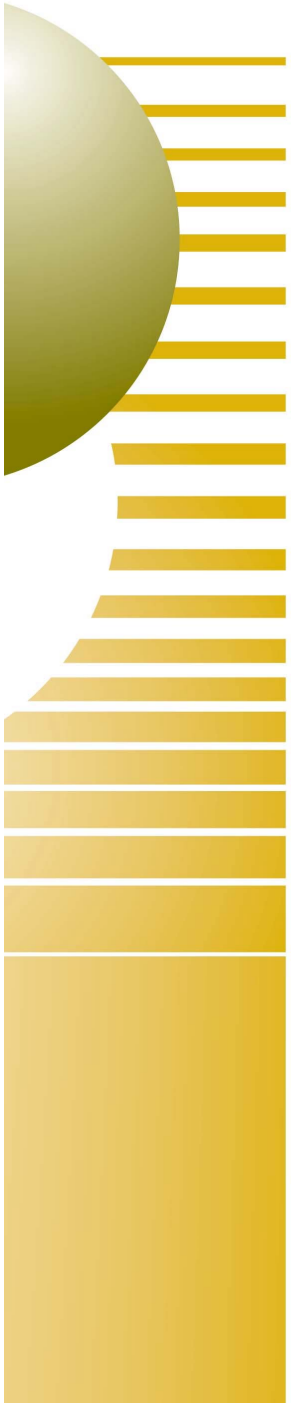
↓ water use (35%)



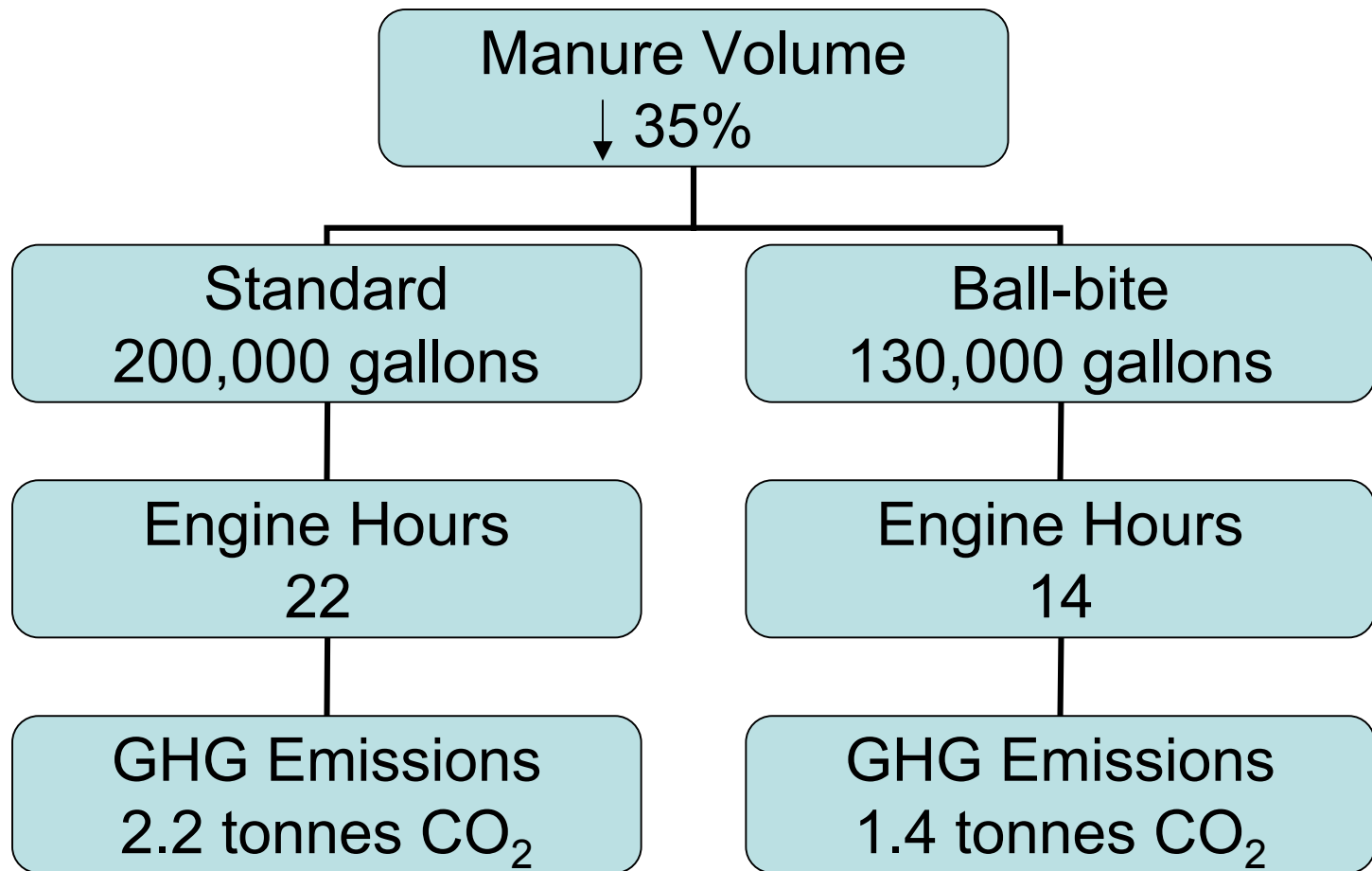
10% of total electricity cost was assumed to be for pumping water



↓ electricity cost (3.5%)



Quantify Impacts



- Impact of more concentrated manure?



Financial Impacts

Technology	Cost 2004	Cost 2006
Standard drinker (European)	\$6.90 each	\$6.90 each
AquaGlobe ball-bite drinker	\$10.57 each	\$12.60 each
Pulse water meter	\$234	\$226
Norsol water monitor	\$577	\$560

Total Cost for 32 Ball-bite Drinkers = \$463



Financial Impacts

	Manure Handling Costs @ 2.5 cents/gallon		Savings
Year	Standard	Ball-bite	
2004	\$5,416	\$3,531	\$1,885
2005	\$3,217	\$2,098	\$1,119
<i>Total</i>	\$8,633	\$5,629	\$3,004

Average Savings Per Year = \$1,502



Financial Impacts

Year	Electricity Costs		Savings
	Standard	Ball-bite	
2004	\$452	\$295	\$157
2005	\$550	\$358	\$192
<i>Total</i>	\$1,002	\$653	\$349

Average Savings Per Year = \$174



Financial Impacts

Non-Market Benefits:

1. Water Takings

6 months of water saved



\$258 savings for family

2. Greenhouse Gas Emissions

0.8 tonnes of CO₂ equivalent



Monetary Value



Recommendation

Benefits of Technology > Cost

	Whole Farm 3,000 head	Per Pig
Investment	\$463	\$0.15
Cost Savings	\$1,676	\$0.56
Net Cash Flow (Yr 1)	\$1,213	\$0.41
Net Income Effect (annually)	\$1,584	\$0.53

Pay-back Period = 3.5 months



Barriers to Adoption

- Lack of familiarity with technology
- Cost
- Unnecessary
- Lack of understanding of the benefits
- Applicability of the technology
- Fear of technical difficulties



Communication

- Written material on technology and its benefits
- Information sessions
- Agricultural extension assistance
- Government and industry support



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***Working to develop a
more competitive and prosperous
Canadian agri-food sector.***

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