

**EFFECTIVELY TURNING KNOWLEDGE TO ACTION AGRICULTURE'S ADOPTION OF ALBERTA'S  
CARBON OFFSET PROTOCOLS**

Onnolee Nordstrom and Brent Swallow  
Department of Resource Economics and Environmental Sociology  
University of Alberta

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# Effectively turning Knowledge to Action Agriculture's Adoption of Alberta's Carbon Offset Protocols

Nordstrom O., Swallow B.

<sup>1</sup> PhD Student, School of Business, University of Alberta, onnolee@ualberta.ca;

<sup>2</sup> Professor, Department of Resource Economics & Environmental Sociology, University of Alberta, brent.swallow@ualberta.ca

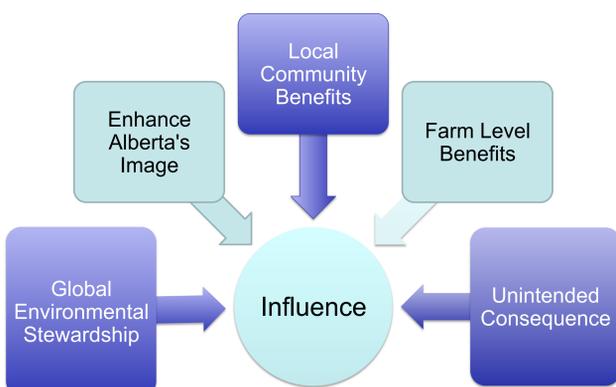
KNOWLEDGE

INCENTIVE

ACTION

## INTRODUCTION

Increase in the information available on climate change has led to numerous theories, speculation, and differing opinions on causes. Climate change policies and implementation need to be grounded in the local realities to maximize effectiveness and adoption. An obstacle to designing knowledge systems for sustainability is to bolster the legitimacy and credibility of the program at the level that resonates with the multiple individuals and organizations involved. Our research attempts to determine whether climate change action in agriculture is influenced at the global, provincial, local, farm perspective or whether it is the unintended consequence of other action. We need to understand what incentives are effective as well as how attitudes, structures, and previous experience filters knowledge and prevents it from becoming action.



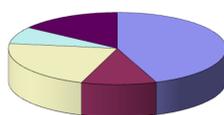
## METHODOLOGY

Data was collected in two ways. The first was an online survey, via survey monkey and the second was through personal interview. Throughout the summer of 2011 we completed 48 personal farm interviews, directly asking the questions that were part of the online survey as well as expanding the discussion to gain more elaborate feedback and a more complete picture of the farmer's opinions towards environmental sustainability and Alberta's carbon offset protocols. The online survey was initiated in 2010 for the Mag thesis of Mohammed Golam Monjur (Monjur, 2010). We interviewed farmers on farms, in working combines, and at tradeshow and congresses. We concluded with 90 completed surveys.

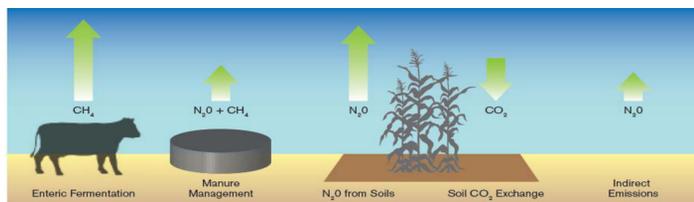


## BACKGROUND

Agricultural GHGs represent 7 % of Alberta's Total Emissions



- Enteric Fermentation - 45%
  - Manure Management - 11%
  - Soils - Direct (e.g. fertilizer, manure on crops) - 22%
  - Soils - Pasture, Range and Paddock Manure - 8%
  - Soils - Indirect (e.g. volatilization, leaching) - 15%
- Notes: Livestock emits 50% of Ag emission in AB, 5% of Alberta's total emissions. About 40% of total agricultural emissions are from soils.*



Alberta was the first Canadian province to implement comprehensive climate change legislation, in the form of the Climate Change and Emission Management Act (CCEMA) of 2003 (revised 2007). Alberta introduced a compliance based carbon emission trading market where large emitters must pay a fee of \$15/tonne CO2 or purchase carbon offsets. Facilities that emit more than 100,000 tonnes of greenhouse gases a year are required to reduce their emissions intensity by 12 per cent annually. In 2009, 38% of carbon offsets were generated through agriculture's minimum tillage protocol.

I don't zero till because I believe I am reducing carbon emissions I do it because it makes economic sense, it conserves moisture, and it increases my yields. Above all it saves me time. We farm over 5000 acres and run a feedlot, whatever is most efficient is what we do.

I believe the weather changes and this stuff has been happening for billions of years. All this stuff about climate change is just bull. (3600 acres submitted under tillage protocol)

If I left it up to my guys it wouldn't get done. It is so easy for them to forget about the program with everything else they are doing. Credits wouldn't get submitted if I didn't push them to do it. (Carbon Aggregator)

I'm not convinced that the weather changes are anything other than a climatic pattern, however that doesn't mean I don't think we shouldn't be doing what we can to offset human beings impact on our environment and make sure we don't make the problems worse

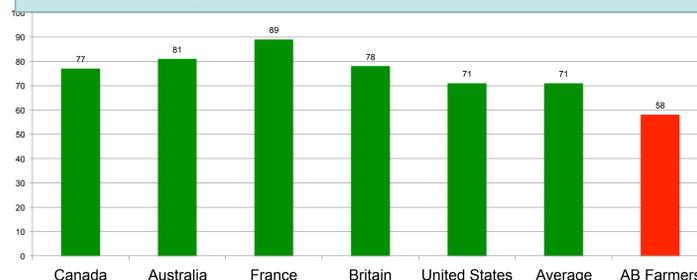
## DATA

Participation Tillage protocol	Aware of, or noticed long term climate change				
	YES		NO	TOTAL	
YES	25	37%	3	30%	28
NO	42	63%	7	70%	49
TOTAL	67	87%	10	13%	77

### Believe climate change is naturally occurring phenomenon

YES (N=25)	NO (N=18)
58.1%	41.9%

### PIPA 2007 Global Survey: Do you believe human activity, including industry, IS a significant cause of climate change? %



## FACTORS AFFECTING PARTICIPATION IN OFFSET CONTRACTS

We estimated a probit model to identify factors affecting participation in the tillage offset protocol. The results are:

### GLOBAL AND ALBERTA INFLUENCE:



### LOCAL INFLUENCE:

Aggregators do not provide sufficient Technological support to farmers:



The fees aggregators charge are too high for their service:

- Statistically significant (95%) negative relationship with participation in carbon offset protocols

### FARM INFLUENCE:

Reduced tillage decreases production costs:



- Statistically significant positive relationship with participation in carbon offset protocols

### UNINTENDED CONSEQUENCE:



## CONCLUSION

We use a knowledge - action framework, with explicit consideration to both intrinsic motivations and extrinsic incentives to understand factors affecting Alberta farmers' participation in carbon markets. The results suggest that only local market and farm-specific factors affect participation. The results imply that Alberta farmers respond to information from a trusted source much more than to statements about global or provincial benefits. Thus the role of the Aggregator becomes very important, bridging the gap between companies interested in purchasing offsets and the farmers in position to change their practices accordingly.

## ACKNOWLEDGMENTS

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