Prevented Planting Policy in a Highly Erodible Area of the Inland Pacific Northwest

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REACCH
Regional Approaches to Climate Change –
PACIFIC NORTHWEST AGRICULTURE

Bowdoin

Central Problem

- Wet Spring in 2011
- Large number of Prevented Planting claims
- High Rates of Erosion– 50 tons/acre
- Policy Confusion
- Increasingly wet springs

Crop Insurance System

- USDA Risk Management Agency (RMA)
- Federal Crop Insurance Corporation (FCIC)
- Protect against drops in yield, reductions in price
- Many forms of crop insurance
-

Policy Changes

- Encourage cover crops after PP claims
- Premium increases for noncompliance
- Education on cost-share programs, general cover crop benefits

Cover Crops

- Kinderiene & Karcauskiene- "Effects of different crop rotations on soil erosion and nutrient losses under natural rainfall conditions in Western Lithuania."
- Less erosion
- Soil benefits
  - Organic Matter
  - Soil structure
  - Microbial life

Erosion and Crop Yields

- Pimentel et al- "Environmental and Economic Costs of Soil Erosion and Conservation Benefits"
- High rates of erosion=lower crop yields
- STEEP
- Reduces nutrient reserves, organic matter
- Topsoil vs. Subsoil- Palouse soils significantly deeper than average
- Reductions offset by synthetic fertilizer

Model Precipitation and PP

- Use Stata for regression analysis
- NOAA climate data
- RMA insurance claim data
- Predict PP acreage

Notes:

```
1 . use U:\pppalouse0807.dta

2 . regress netacrespalouse jandev febdev ma

      Source |       SS       df       MS
-------------+------------------------------
       Model |  6.2478e+10     7  8.9255e+
    Residual |  8.3831e+09    85  98624306
-------------+------------------------------
       Total |  7.0861e+10    92   7702309

------------------------------------------------------------------------------
netacrespa~e |      Coef.   Std. Err.
-------------+----------------------------------------------------------------
      jandev |   3312.815   2158.476
      febdev |   21647.46   1847.393
      mardev |   13982.78   1446.128
      aprdev |   20424.05   2627.389
      maydev |   8405.708   1243.652
     yeardev |  -7848.29    883.4439
  yearprecip |   77.81796   289.6129
       _cons |   5057.075   4577.219

3 . sum netacrespalouse jandev febdev mardev

    Variable |       Obs        Mean
-------------+--------------------------
netacrespa~e |        93    28885.12
      jandev |        93    .1041162
      febdev |        93   -.1313611
```

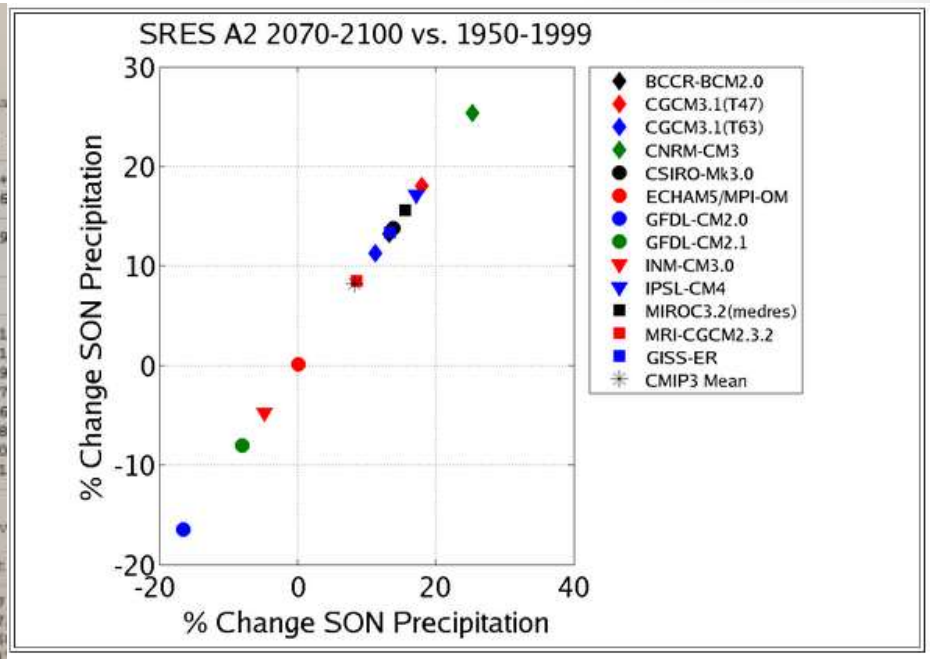


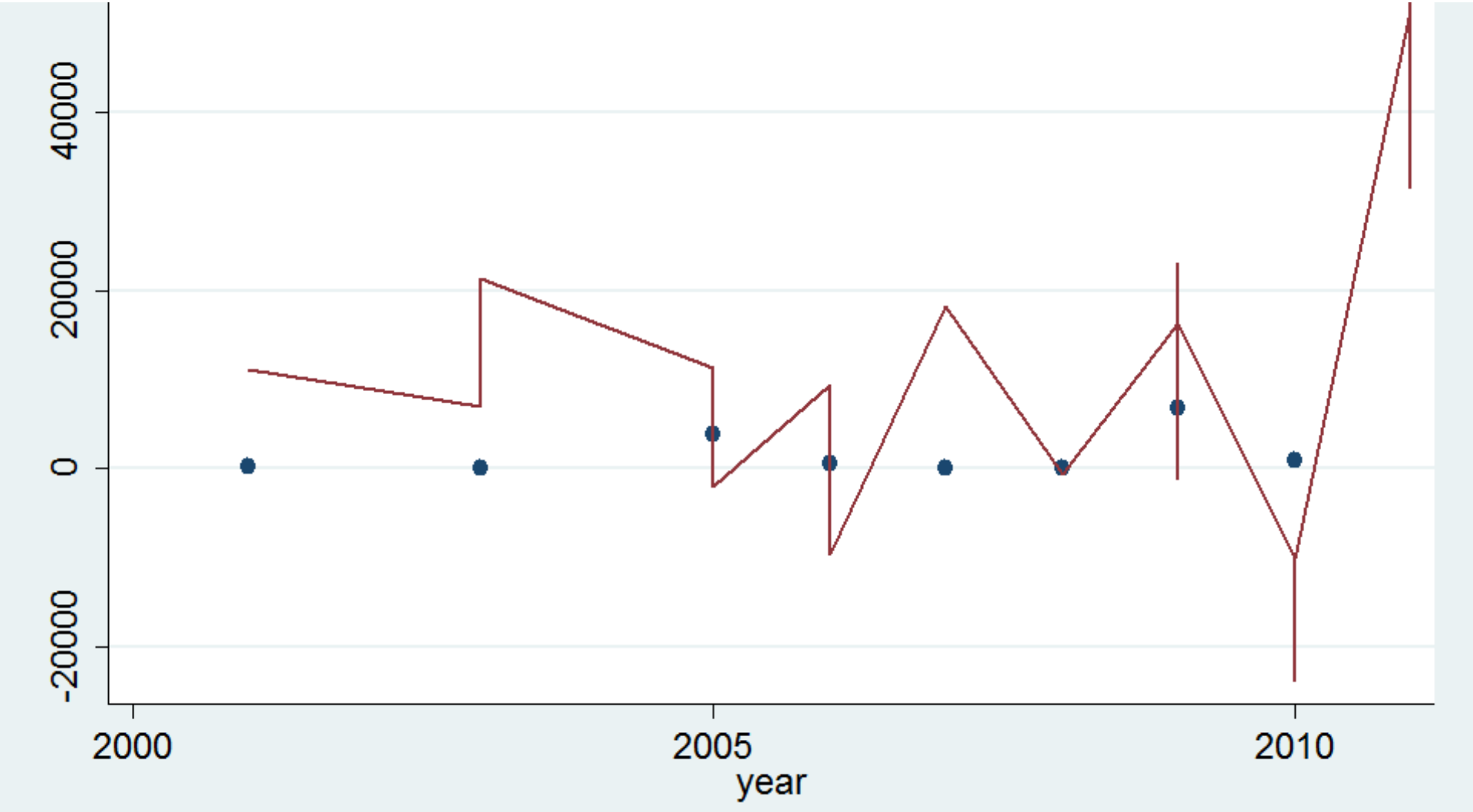
Table 2: Prevented Planting and Precipitation in the Palouse Region

R^2=0.8817

Variable	Coefficient (Std. Error)	*t*-value	Max	Min	Mean (Std. Dev.)
jandev	3312.815	1.53	3.472441	-1.200787	.1041162
	(2158.476)				(.7244545)
febdev	21647.46	11.72**	1.184567	-2.031102	-.1313611
	(1847.393)				(.6874081)
mardev	13982.78	9.67**	2.054528	-2.673819	.6782882
	(1446.128)				(.8776061)
aprdev	20424.05	7.77**	.9450787	-.7675197	.2642358
	(2627.389)				(.4833687)
maydev	8405.708	6.76**	1.960866	-2.155118	.3042194
	(1243.652)				(1.21386)
yeardev	-7848.29	-8.88**	2.197874	-4.558032	-.9729918
	(883.4439)				1.790732
yearprecip	77.81796	0.27	24.83465	7.751968	16.09056
	(289.6129)				(4.680534)
constant	5057.075	1.10			
	(4577.219)				

*=Significant at 0.10

**=Significant at 0.05


40000
20000
0
-20000
2000
2005
2010
year

Analysis of Policy

- Precipitation models vary
- Winter/Spring precipitation increase, Summer/Fall precipitation decrease
- Without precipitation increase, retains ~32,000 tons of soil/year
- Under the RCP 8.5 climate scenario in 2030-2060, retains ~41,000 tons of soil/year
- Costs producers $13.45/acre

Ethical Considerations

- Policy development is advocacy
- Consider implications for all parties
  - Easy to focus on one group, issue
- Interest groups

Prevented Planting, the Economy, and the Environment

- Encourage sustainable management practices
- Conserve valuable soils
- Sustain high yields
- Maintain fiscal responsibility

Acknowledgements

- Kate Painter
- Dave Huggins
- Chris Johnson
- Dave Paul
- Russ Zenner
- Steve Berglund
- Garth Taylor
- Ron Kile
- John McElheran
- Larry Makus
- Marijka Haverhals
- Jodi Johnson-Maynard
- Matthew Vaughan
- Steve Devadoss
- Don Kaufman
- Chris Darby
- Hilary Donlon
- Leigh Bernacchi
- Janet Rachlow
- John Abatzoglou
- Dennis Roe
- And many others