GROUNDWATER QUALITY AND ECONOMIC IMPACTS OF FARM PRACTICES IN WETLAND AREAS

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First Year Work Accomplished

OBJECTIVE 1. To determine key environmental and hydrological effects of organic, no-till, and conventional farm production systems on groundwater/wetland systems.

A. Were there differences in the **groundwater quality** of samples collected? **YES**
1. pesticide "hits" occurred in the organic system
2. pesticide concentrations were highest in the transitional no-till system
3. pesticides were more prevalent in the areas of wetlands classified as semipermanent
4. nitrate concentrations were highest in the areas of wetlands classified as semi-permanent
5. ortho-phosphate concentrations were higher in farmed through than non-farmed through areas of wetlands

B. Were there differences in measured **water quantity**? **YES**
1. the transitional no-till system had higher soil moisture
2. the transitional no-till system had a higher water table

OBJECTIVE 2. To develop economic costs/benefits for implementation of environmentally sound water quality management practices.

C. Were there economic differences by management system? **YES**

Major differences in cost of production and net returns by management system, whole farm, 1992.

	Net Return $/acre	Production Cost $/acre
Conventional	$38	$147
No-Till	$42	$117
Organic	$13	$ 87

- Reported yields, crop mix, and crop rotation are the major reasons for economic differences.

D. Do wetlands impact yields and net returns? **YES**

Reported yields and net returns for all management systems for fields next to monitored wetlands were **substandard** compared to whole-farm yields and net returns.

E. What does combined analysis say about wetland management?

Objective yields, economic and environmental analysis of wetland field tracts show the zone of highest environmental risk is also the zone of lowest economic return.

Possible management solutions:
- Buffer Strips
- Change in land use of some fields