



**MANAGING
FARMLAND
DRAINAGE**
Economics of Tiling

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Learning Objectives

- **Highlight Tiling Costs & Economic Returns**
- **Utilize a Partial Budget**
- **Discuss Crop Marketing Strategies & Tools**
- **Review the ISU Ag Decision Maker
Decision Tool: Economics of Tile Drainage**
- **Income Tax & Financing Considerations**
- **Highlight Tenant Operator Option for Tiling**
- **Incorporating Lease Supplements**
- **Extension Resources on Tiling Economics.**

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Advantages of Tile Drainage

- More timely field operations
 - Tillage
 - Planting for crop establishment
 - Spraying & harvesting
- Lowers machinery & equipment costs
- More efficient use of labor
- Improves aeration of the root zone
- Increases uptake nitrogen efficiency
- Improves yield potential annually!



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Considerations for Tiling your Farmland

- How many acres will be benefited?
- What will be the added net returns per acre?
- Is there enough increased profit per acre compared to the present situation to cover the additional cost? Use after tax income figures.
- Can a portion of the investment be offset by an increase in cash rent and/or land value?
- How might the operator and landlord benefit?
- Is it legal to drain that land?
 - USDA Wetland Conservation Provision (Swampbuster).

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Tiling Costs & Net Return Considerations

- **Owner-Operator**
 - Full cost & benefits from partial budget
- **Landlord**
 - Need to recover cost through additional cash rent or crop share lease (1/2 of yield benefit)
 - May benefit from tax advantages (depreciation)
- **Tenant Operator**
 - Why put money into something you don't own
 - Need long term lease & rate commitment.

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Estimated Cost of Tiling

- Trenching and tile will cost approximately:
- 3" Tile \$.60/Ft.
- 4" Tile \$.80/Ft.
- 5" Tile \$1.00/Ft.
- 6" Tile \$1.65/Ft
- 8" Tile \$2.40/Ft.
- **Above based on Wheel Tiling Machine**



Request an estimate and understand the work to be done before signing a contract.

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Tiling Cost Will Vary By Installation Method and Area to be Drained

- The prices on the previous slide were based on a wheel tiling machine
- Tile can be “Plowed In” at around half the cost of using a wheel machine, especially for the smaller size tile (example 4”).
- Be sure to obtain accurate cost information for your area—Cost varies with location – pattern tiling, hook-ups, etc.

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Other Tiling Cost Considerations

TILE DRAINAGE WORK SHEET

Part 1. DRAINAGE COST PER ACRE

A. Tile Cost (\$/Acre): $43,560 \div \frac{\text{_____}}{\text{(Line Spacing)}} = \frac{\text{_____}}{\text{(Feet/Acre)}} \times \frac{\text{_____}}{\text{($/Foot)}} = \text{_____}$

B. Main Cost (\$/Acre): $\frac{\text{_____}}{\text{(Total Main Cost)}} \div \frac{\text{_____}}{\text{(Acres Drained)}} = \text{_____}$

C. Other Cost (\$/Acre): $\frac{\text{_____}}{\text{(Total Other Cost)}} \div \frac{\text{_____}}{\text{(Acres Drained)}} = \text{_____}$

D. Total Drainage Cost (A+B+C: \$/Acre) = \$ _____

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Using a Partial Budget to Help Your Decision-Making

- **What will change from an income standpoint if you tile?**
 - Calculate area of improved production
 - How many more bushels to sell
 - Choose long term crop price for budget
- **What will change from a cost standpoint if you tile?**
 - Cost of tiling
 - Change in input costs
 - Seed, fertilizer, tile repairs, etc.



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1. Estimate the Average Yield Increase resulting from Tiling

Part 1: Yield Increase potential in bu/Acre

<u>Soil Descriptions</u>	<u>Corn</u>	<u>Soybeans</u>
Very Poor to Poorly Drained	54 bu/A	18 bu/A
Somewhat Poorly Drained	30 bu/A	12 bu/A
Moderately well to somewhat Poorly Drained	12 bu/A	5 bu/A

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2. Estimate the Change in Revenues

Part 2. PARTIAL BUDGET: CHANGE IN REVENUES

ADDED INCOME:

		Corn	Soybeans
E. Crop			
F. Yield Increase	(Bushel/Acre)	<u>20</u>	<u>5</u>
G. Planning Price	(\$/Bushel)	<u>\$3.50</u>	<u>\$8</u>
H. Crop Income	(G×H: \$/Acre)	<u>\$70</u>	<u>\$40</u>
I. Other Income	(\$/Acre)	<u>0</u>	<u>0</u>
J. Total	(H+I: \$/Acre)	<u>\$70</u>	<u>\$40</u>

ADDED EXPENSES:

K. Seed	(\$/Acre)	<u>\$4</u>	<u>0</u>
L. Fertilizer	(\$/Acre)	<u>\$10</u>	<u>\$5</u>
M. Pesticides	(\$/Acre)	<u>0</u>	<u>0</u>
N. Hauling/Drying/Handling	(\$/Acre)	<u>\$4</u>	<u>\$.50</u>
O. Machine Operating	(\$/Acre)	<u>-\$2</u>	<u>-\$2</u>
P. Tire Maintenance/Repair	(\$/Acre)	<u>\$.10</u>	<u>\$.10</u>
Q. Interest, Tax, & Misc.	(\$/Acre)	<u>0</u>	<u>0</u>
R. Total (K+L+M+N+O+P+Q = \$/Acre)		<u>\$16.10</u>	<u>\$3.60</u>

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3. Estimate the Average Revenue (\$/Acre)

NET INCREASE IN FARM INCOME:

S. Change	(J-R: \$/Acre)	<u>\$53.90</u>	<u>\$36.40</u>
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AVERAGE NET INCREASE IN FARM INCOME:

T. Percentage of Farm Acreage:	<u>50%</u>	<u>50%</u>
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U. Average Net Increase (sum S x T/100 = \$/Acre)	<u>\$ 45.15</u>
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Income Tax Considerations for Tiling (Some new changes for 2018)

- ✓ The tile is depreciable by the owner as a land improvement (15 yrs. MACRS).
- ✓ The Landlord can only expense it under Sec. 179 if he actively conducts a farming operation(pays social security tax).
- ✓ Owner/Operator can Sec. 179 up to \$1,000,000
- ✓ Owner/Operator can “Bonus Depreciate” 100%
- ✓ Owner/Operator can use 150% declining balance.

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Bonus Depreciation Schedule

**Owner/Operator can bonus depreciation if
the original use of the property begins
with the taxpayer = New Property or Used.**

Year	Percentage
2018	100%
2019	100%
2020	100%
2021	100%
2022	100%
2023	80%
2024	60%
2025	40%
2026	20%

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Other Income Tax Considerations (Some new changes for 2018)

- ✓ A tenant with a long term lease **could depreciate the tile**. It is Sec. 1245 property and would not be eligible to be expensed under Sec. 179 business.
- ✓ Can depreciate the balance on 150% or possibly 200% Declining Balance
- ✓ Landlord cannot depreciate the buyout amount.
- ✓ **Check with your income tax advisor** for interpretation of tax law – not everyone agrees – laws will probably change!

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Landlord Financing Options

- **Pays for Improvement out of cash on hand**
 - Need a rate of return comparable to other investment options (approximately 3%)
- **Compare it to Purchasing more Land**
 - What is the present return to land?
- **Borrow Money for Improvement**
 - Need a return on the borrowing cost & improvement maintenance (5% to 7%).

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Cash Rent likely Carries the Added Cost of Tiling

✓ Equity Financing (\$600)

Land now renting for \$200/A

Must now rent for \$218/A

✓ Debt Financing (\$600)

Land now renting for \$200/A

Must now rent for \$242/A.

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Tenant Operator Options #1

- **Tenant pays for tile & installation:**
 - Will need a long term lease (7-10 yrs.)
 - Cash rent will be fixed for term of lease or indexed
 - Cash rent should reflect untiled land
 - When lease expires, rate is adjusted to market
 - Tenant could depreciate tile
 - Landlord will own tile at end of lease
 - A 5 year lease or longer in duration must be recorded at county recorders' office.

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Tenant Operator Option #2

- **Tenant pays for tile & installation:**
 - No long term lease (5-year flat pro-rotation determined)
 - Example: \$400 per acre tile cost
 - Cash rent is not fixed (despite tenant investment in tiling)
 - Tenant is in 35% tax bracket = \$260 after tax
 - Increased income of \$60 per acre (prorated)
 - If lease isn't renewed over 5 years (landlord pays back remaining pro-rated amount)
 - Tenant would depreciate tiling costs
 - Landlord will own tile at end of lease.

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Tenant Operator Option #3

- **Tenant pays for tile & installation**
 - Example: \$400 per acre on 9 acres
 - Rented land lies next to tenant's owned land
 - Waterway will also be reseeded
 - Landlord subtracts costs from 2019 cash rent
 - Both parties improved drainage on their farmland.

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Farm Lease Supplement

<https://www.extension.iastate.edu/agdm/wholefarm/pdf/c2-07.pdf>

Lease Supplement for Investing in Improvements on a Rented Farm

Description of Farm: County _____ Township _____ Section (s) _____ Acres _____

1. In consideration of the agreements herein contained, the signers agree that the improvements listed in Section A (below) have been completed on the above-described farm.
2. It is agreed that the signers will share contributions and costs necessary to the completion of these improvements as set forth in Section B.
3. It is agreed that the estimated value or cost of the tenant's contributions will be listed in Section C.
4. It is further agreed that the estimated value or cost of the tenant's contributions will be depreciated at the uniform annual percentage rate listed in Section D. The year of first depreciation is to be listed in Section E.

5. If for any reason the tenant leaves the farm before the tenant's estimated value or cost (Section C) is fully recovered through annual use and depreciation (Section D), then the landowner will pay the tenant for the remaining undepreciated value of the tenant's investment.
6. It is agreed that each item as set forth opposite the signatures of the landowner and tenant will be viewed as a separate contract supplemental to the lease. New items may be agreed upon at any time during the term of the lease and recorded in the spaces below.

Section A Type and location of improvement	Section B Cost of contributions by landowner (L) or by tenant (T)						Section C Total cost of tenant's contribution	Section D Annual rate of depreciation (percent)	Section E Lease year when depreciation begins	Section F Date signed	Section G – Signatures I hereby accept my indicated share of the responsibility for the improvements recorded in Section A, which I have approved.
	Materials		Labor		Machinery						
	L	T	L	T	L	T					

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ISU Extension Web Sites

- **ISU Ag Decision Maker**
 - www.extension.iastate.edu/agdm
 - Understanding the Economics of Tile Drainage – Information File & Decision Tool
 - Lease Supplement for Use in Obtaining Tile and Drainage Improvements Between Owner(s) and Tenant(s)
- **ISU Center for Ag Law & Taxation (CALT)**
 - www.calt.iastate.edu
 - Deducting Farm Expenses: An Overview
 - Iowa Farm Leases – A Legal Review (June 2018)
 - Tax Implications of Farmland Leases (June 2018)
 - CALT Brief – Updated Monthly.

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Source: Johnson, ISU Extension, September 2018