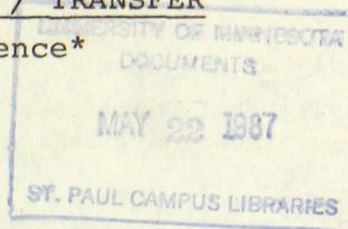


LAND BUYING / FINANCING / TRANSFER

## Outline of Conference\*

I. Introduction

## A. Objective

The objective of this educational program is to increase the participant's ability to deal with the major problems involved in buying and selling a farm.

The major decision areas to be considered are:

1. What is land of different quality selling for in this area?
2. What is the maximum bid price a particular person can justify?
3. How can the repayment schedule be met?
4. What financing alternatives are available?
5. How can parents best transfer a farm to the next generation?

## B. Basic dilemma in the buy land decision is illustrated by the following two true statements:

1. Land is almost always a good investment--if you can pay for it.
2. The net income from a cropping program is almost never enough to cover land payments in the early years of the repayment schedule.

## C. Decision framework

1. Some questions to consider before bidding on a farm.
  - a. Do you need more land to be efficient?
  - b. Are you getting good crop production now?
  - c. Will you be able to get good yields on the added acres?
  - d. Will a land purchase restrict your capital and credit for operating needs?
  - e. Will the land purchase create additional estate transfer and tax problems?
  - f. Are there alternatives to land purchase at this time?
2. Alternatives to farm purchase.
  - a. A farmer should be operating a large enough business to make a living with mostly rented land before buying.
  - b. Land purchase is like an investment in a growth stock--the farmer short of capital usually can't justify a low dividend paying investment. Higher annual returns come from investments in:
    - Operating costs for recommended practices
    - Livestock and livestock facilities
    - Machinery

\* Prepared by Paul R. Hasbargen, Extension Economist in Farm Management, Agricultural Extension Service, University of Minnesota.

3. If decision is in favor of land purchase--two questions must be analyzed.
  - a. What would this farm land be worth to me?
  - b. How can I handle the cash flows?

## II. What Is A Farm Worth?

### A. The market approach

1. Other recent land sales are used to estimate the probable market price of a particular farm.
2. Adjustments are made for differences in land quality, buildings, location, size and time of sale.

### B. The earnings approach

1. Future net earnings from the farm are estimated and discounted to a present value estimate.
  - a. A worksheet to do this is attached (worksheet #1). (Current earnings on crop land are 3 to 4 percent--so a capitalization rate of .03 to .04 in line F will yield expected market value for the crop land portion of a farm. The attached map shows cash rents paid for crop land of different qualities in each county. Dividing this figure by .04 to .05 yields an approximate current crop land market value.)
  - b. A more complex formula that also considers financing and tax factors can be used by completing the first side of the attached BUYLAND input form and giving it to your Extension Director or Agricultural Instructor.
    - Attached is a "LANDBUY EXAMPLE" output showing maximum bid prices for a given set of assumptions and some variations in the important assumptions.
    - Variations in other assumptions affect the maximum bid prices in this example as shown in the table on page 3.

## III. How Can I Handle The Cash Flows

- A. Projected cash flows under farm loan methods are available from the computer program BUYLAND.
  1. These can be used to compare alternative financing methods.
  2. Some example output is attached.
- B. Worksheet #2 provides a worksheet for estimating whether or not the cash flows of a land purchase can be handled.

## IV. Land Financing Alternatives

- A. Contract for deed with owner
- B. Federal Land Bank or other commercial lender
- C. Farmers Home Administration
- D. Minnesota Farm Security Act

## V. Land Transfer Issues

- A. Review of current estate tax laws
- B. Considerations when evaluating alternatives
- C. Some estate planning tools

Land bid variations given land earnings of \$50, annual growth in earnings of 4 percent, inflation rate in land values of 6 percent, and an after-tax desired rate of return of 8 percent.

Base Maximum Bid Price = \$1,216

Input Line #	Price Bid Factor	Base Value	Changed Value	Maximum Bid Price	Changed Value	Maximum Bid Price
4	Down payment as a percent of purchase price	25%	5%	\$1,253	45%	\$1,181
5	Interest rate on borrowed funds	9.5%	8%	\$1,325	11%	\$1,120
6	Amortization period in ____ years	30 yrs.	20 yrs.	\$1,188	40 yrs.	\$1,234
8	Total marginal tax rate (fed. & state)	30%	15%	\$1,223	45%	\$1,208
9	Capital gains tax rate (end of planning span)	20%	20%	\$1,216	40%	\$1,112

**Worksheet 1. How much is land worth to me?**

<u>Income</u>		Total
Crop		
Acres		
Yield		
Production		
Price		
A. Expected return		\$
<u>Direct costs</u>		
Seed		
Fertilizer		
Herb.+insect.		
Fuel+oil		
Custom hire		
Crop insurance		
B. Total direct costs		\$
	<u>Related operating and overhead</u>	
	Machinery+equipment	
	Repair	\$
	Depreciation or replacement	
	Interest	
	Trucking+marketing	
	Real estate—taxes	
	—maintenance	
	Insurance	
	Labor+management	
	Miscellaneous	
C. Total related expenses		\$
D. Total costs (B+C)		\$
E. Residual return to land (A-D)		\$
F. Land value (E ÷ capitalization rate —%)		\$
G. Adjustments for location, bldgs., etc. (±)		\$
H. Estimated value of land (F±G)		\$
I. Land value/acre (H ÷ acres)		\$

**Sensitivity analysis: Effect of change in prices, costs and capitalization rate**

Residual return per acre	3%	4%	5%
		value/acre	
\$			
\$			
\$			





BUYLAND, Part I

Land Bid Analysis Input Form

<u>Input No.</u>		<u>First Run</u>	<u>Second Run</u>	<u>Third Run</u>
1	Anticipated annual net income per acre (\$)	_____	_____	_____
2	Anticipated annual growth rate in net income (%)	_____	_____	_____
3	Anticipated inflation rate in land values (%)	_____	_____	_____
4	Down payment as a percent of purchase price (%)	_____	_____	_____
5	Interest rate on borrowed funds (%)	_____	_____	_____
6	Loan amortization period in years (yrs)	_____	_____	_____
7	Decision planning span in years (years of ownership) (yrs)	_____	_____	_____
8	Total marginal tax rate (federal plus state) (%)	_____	_____	_____
9	Capital gains tax rate (at end of planning span) (%)	_____	_____	_____
10	Minimum after-tax desired rate of return (%)	_____	_____	_____
11	Average land price per acre in the area (\$)	_____	_____	_____

The values for input numbers 1, 2 and 4 - 8 can be retained when transferring between the land bid section and the cash flow section of the program, if the user so desires.

BUYLAND, Part II  
Cash Flow Analysis Input Form

<u>Input No.</u>		<u>First Run</u>	<u>Second Run</u>	<u>Third Run</u>
1	Anticipated annual net income per acre	(\$) _____	_____	_____
2	Anticipated annual growth rate in net income	(%) _____	_____	_____
4	Down payment as a percent of purchase price	(%) _____	_____	_____
5	Interest rate on borrowed funds	(%) _____	_____	_____
6	Loan repayment period in years	(yrs) _____	_____	_____
7	Decision planning span in years	(yrs) _____	_____	_____
8	Total marginal tax rate	(%) _____	_____	_____
12	Actual price per acre of land	(\$) _____	_____	_____

You can skip lines 13 and 14. If you do, line 13 will set the balloon payment after one-half the years of the normal loan from line number 6 are over. Line number 14, if skipped, will pick up the same percentage figure that was entered in line number 2.

13	Repayment period for balloon method in years (yrs)	_____	_____	_____
14	Annual percent increase in loan payment for increasing loan payment method	(%) _____	_____	_____

Lines 15, 16 and 17 are optional. They are needed if you choose to finance the down payment.

15	Down payment loan repayment period in years (yrs)	_____	_____	_____
16	Interest rate on the down payment loan	(%) _____	_____	_____
17	Proportion of the down payment financed	(%) _____	_____	_____

# LANDBUY EXAMPLE

COMPUTER DECISION AIDS  
EXTENSION FARM MANAGEMENT  
AGRI. EXTENSION SERVICE  
UNIVERSITY OF MINNESOTA

AGRICULTURAL ECONOMICS PROGRAM:  
MAXIMUM BID PRICE FOR LAND  
RESULTS FOR: LANDBUYER  
12/05/79 FARMLAND, MN.

CURRENT PROBLEM DATA

*Baseline*

1 ANTICIPATED ANNUAL NET INCOME PER ACRE (\$)	50.00
2 ANTICIPATED ANNUAL GROWTH RATE IN NET INCOME (PCT)	4.00
3 ANTICIPATED INFLATION RATE IN LAND VALUES (PCT)	6.00
4 DOWN PAYMENT AS A PERCENT OF PURCHASE PRICE	25.00
5 INTEREST RATE ON BORROWED FUNDS (PCT)	9.50
6 AMORTIZATION PERIOD IN YEARS	30.00
7 DECISION PLANNING SPAN IN YEARS	30.00
8 TOTAL MARGINAL TAX RATE (FEDERAL + STATE) (PCT)	30.00
9 CAPITAL GAINS TAX RATE (END OF PLANNING SPAN) (PCT)	20.00
10 MINIMUM AFTER TAX OPPORTUNITY RETURN RATE (PCT)	8.00
11 AVERAGE LAND PRICE / ACRE OF LAND IN THE AREA (\$)	1000.00
---	
THE MAXIMUM BID PRICE PER ACRE IS	\$ 1216.28 ---
-----	
THE MAXIMUM BID PRICE PER ACRE IF AVERAGE EARNINGS ARE 10 % LESS THAN EXPECTED IS	\$ 1146.39 ---
THE MAXIMUM BID PRICE PER ACRE IF AVERAGE EARNINGS ARE 10 % MORE THAN EXPECTED IS	\$ 1286.16 ---



MAXIMUM BID PRICE INCLUDING INFLATION PROJECTIONS AND  
PRESENT (AFTER TAX) VALUE OF THE LAND 30 YEARS FROM NOW

INCOME GROWTH RATE	ASSUMED LAND VALUE INFLATION RATES				
	0 %	3 %	6 %	9 %	12 %
0 %	536.60	665.18	963.95	1641.82	3145.65
2 %	642.98	771.56	1070.33	1748.19	3252.03
4 %	788.93	917.51	1216.28	1894.14	3397.98
6 %	992.37	1120.95	1419.72	2097.59	3601.42
8 %	1279.96	1408.54	1707.31	2385.17	3839.01

MAXIMUM BID PRICE INCLUDING INFLATION PROJECTIONS AND  
PRESENT (AFTER TAX) VALUE OF THE LAND 30 YEARS FROM NOW

AFTER TAX RETURN RATE	ASSUMED LAND VALUE INFLATION RATES				
	0 %	3 %	6 %	9 %	12 %
4 %	1069.54	1359.92	2034.62	3565.43	6961.52
6 %	912.50	1107.25	1559.73	2586.36	4863.93
8 %	788.93	917.51	1216.28	1894.14	3397.98
10 %	691.83	775.71	970.59	1412.74	2393.66
12 %	615.22	669.44	795.42	1081.25	1715.36

MAXIMUM BID PRICE BASED ON LAND PRODUCTIVITY  
( EXCLUDES LAND APPRECIATION CONSIDERATIONS )

INCOME GROWTH RATE	EXPECTED ANNUAL NET INCOME FROM LAND				
	\$ 40.0	\$ 45.0	\$ 50.0	\$ 55.0	\$ 60.0
0 %	447.30	491.95	536.60	581.25	625.90
2 %	532.40	587.69	642.98	698.27	753.55
4 %	649.16	719.04	788.93	858.81	928.69
6 %	811.91	902.14	992.37	1082.60	1172.82
8 %	1041.98	1160.97	1279.96	1398.94	1517.93

MAXIMUM BID PRICE BASED ON LAND PRODUCTIVITY  
( EXCLUDES LAND APPRECIATION CONSIDERATIONS )

AFTER TAX RETURN RATE	EXPECTED ANNUAL NET INCOME FROM LAND				
	\$ 40.0	\$ 45.0	\$ 50.0	\$ 55.0	\$ 60.0
4 %	896.32	982.93	1069.54	1156.15	1242.76
6 %	757.29	834.90	912.50	990.11	1067.72
8 %	649.16	719.04	788.93	858.81	928.69
10 %	565.22	628.53	691.83	755.14	818.45
12 %	499.78	557.50	615.22	672.95	730.67

**Worksheet 2. Determining whether land debt can be serviced**

A. Estimate net cash flow available

(Cash available for land debt repayment without jeopardizing rest of business)

	<u>Expected</u>	<u>Optimistic</u>	<u>Pessimistic</u>
1. Net cash returns from land	_____	_____	_____
2. Building rental, etc.	_____	_____	_____
3. Other cash earnings available	_____	_____	_____
4. Total expected annual cash available	_____	_____	_____
5. Cash available per acre (4 ÷ acres)	_____	_____	_____

B. Calculate debt per acre that can be amortized

1. Cash available per acre (A, 5)	_____	_____	_____
2. Times debt repayment factor (see table)	_____	_____	_____
3. Equals debt per acre can be carried	_____	_____	_____

C. Compare asking price with debt that can be carried

1. Debt per acre can be carried (B, 3)	_____	_____	_____
2. Plus per acre downpayment available	_____	_____	_____
3. Price per acre could be paid	_____	_____	_____
4. Present asking price per acre	_____	_____	_____
5. Difference	_____	_____	_____

**Debt repayment factors**  
**Amount of debt \$1 per year will cover—even payment**

Repayment period in years	Annual interest rate					
	6%	6.5%	7%	8%	9%	10%
10	\$ 7.36	\$ 7.19	\$ 7.02	\$ 6.71	\$ 6.42	\$ 6.14
20	11.47	11.02	10.59	9.82	9.13	8.51
30	13.76	13.06	12.41	11.26	10.27	9.43
40	15.05	14.15	13.33	11.92	10.76	9.78
forever (interest only)	16.67	15.38	14.29	12.50	11.11	10.00

CASH FLOWS UNDER FOUR LOAN METHODS - 100 PERCENT COMMERCIAL FINANCING

12 ACTUAL PRICE / ACRE OF LAND (A)	1000.00
13 REPAYMENT FOR BALLOON METHOD IN YEARS	15.00
14 INCREASE IN LOAN PAYMENT FOR INCREASE METHOD (PCT)	3.00
DOWN PAYMENT LOAN - AMORTIZATION METHOD	
15 DOWN PAYMENT LOAN REPAYMENT PERIOD IN YEARS	10.00
16 INTEREST RATE ON THE DOWN PAYMENT LOAN (PCT)	12.00
17 PROPORTION OF THE DOWN PAYMENT FINANCED (PCT)	100.00

30 YEAR NET CASH FLOW - \$ 1000.00 / ACRE BASIS - FOUR LOAN METHODS  
 ( NET CASH FLOW EQUALS NET CASH INCOME MINUS  
 INTEREST, TAX EFFECTS, & PRINCIPLE PAYMENTS )

END OF YEAR	TYPE OF LOAN			
	1 AMORTIZED	2 EQUAL PRINCIPLE PAYMENT	3 AMORTIZED 40 YRS. 15 YEAR BALLOON	4 3.0 % / YEAR INCREASE PAYMT.
0	.00	.00	.00	.00
1	-55.13	-75.12	-52.06	-36.87
2	-54.39	-72.57	-51.23	-37.35
3	-53.66	-70.03	-50.41	-37.89
4	-52.96	-67.49	-49.60	-38.52
5	-52.30	-64.98	-48.82	-39.24
6	-51.67	-62.48	-48.07	-40.06
7	-51.10	-60.02	-47.36	-41.00
8	-50.58	-57.60	-46.69	-42.07
9	-50.14	-55.23	-46.09	-43.29
10	+49.79	-52.92	-45.56	-44.68
11	-5.30	-6.44	-.87	-2.01
12	-3.58	-2.71	1.07	-2.21
13	-1.81	1.11	3.07	-2.45
14	.00	5.02	5.15	-2.75
15	1.87	9.01	-683.44	-3.10
16	3.79	13.10	63.03	-3.53
17	5.75	17.28	65.55	-4.03
18	7.76	21.56	68.18	-4.63
19	9.82	25.95	70.90	-5.32
20	11.93	30.45	73.74	-6.12
21	14.08	35.06	76.69	-7.04
22	16.27	39.79	79.76	-8.10
23	18.50	44.65	82.95	-9.32
24	20.76	49.63	86.27	-10.71
25	23.06	54.74	89.72	-12.30
26	25.39	59.99	93.30	-14.10
27	27.74	65.39	97.04	-16.14
28	30.11	70.93	100.92	-18.44
29	32.49	76.63	104.95	-21.04
30	34.88	82.49	109.15	-23.97

SALE OF THE ACRE OF LAND

CASH FLOWS WITH 15% DOWN PAYMENT AND 7.5% INTEREST ON A CONTRACT FOR DEED

4 DOWN PAYMENT AS A PERCENT OF PURCHASE PRICE	10.00
5 INTEREST RATE ON BORROWED FUNDS (PCT)	8.00
6 LOAN REPAYMENT PERIOD IN YEARS	20.00
7 DECISION PLANNING SPAN IN YEARS	30.00
8 TOTAL MARGINAL TAX RATE (FEDERAL + STATE) (PCT)	30.00
12 ACTUAL PRICE / ACRE OF LAND (\$)	1000.00
13 REPAYMENT FOR BALLOON METHOD IN YEARS	10.00
14 INCREASE IN LOAN PAYMENT FOR INCREASE METHOD (PCT)	3.00

30 YEAR NET CASH FLOW - \$ 1000.00 / ACRE BASIS - FOUR LOAN METHODS  
 ( NET CASH FLOW EQUALS NET CASH INCOME MINUS  
 INTEREST, TAX EFFECTS, & PRINCIPLE PAYMENTS )

END OF YEAR	TYPE OF LOAN			
	1 AMORTIZED	2 EQUAL PRICIPLE PAYMENT	3 AMORTIZED 10 YEAR BALLOON	4 3.0 % / YEAR INCREASE PAYMT.
0	-100.00	-100.00	-100.00	-100.00
1	-35.07	-60.40	-35.07	-16.87
2	-34.14	-56.48	-34.14	-17.71
3	-33.19	-52.50	-33.19	-18.61
4	-32.23	-48.47	-32.23	-19.59
5	-31.25	-44.37	-31.25	-20.65
6	-30.25	-40.22	-30.25	-21.78
7	-29.24	-35.99	-29.24	-23.02
8	-28.22	-31.70	-28.22	-24.35
9	-27.19	-27.34	-27.19	-25.79
10	-26.15	-22.90	-641.24	-27.35
11	-25.10	-18.39	51.81	-29.04
12	-24.04	-13.80	53.88	-30.86
13	-22.99	-9.12	56.04	-32.84
14	-21.94	-4.36	58.28	-34.99
15	-20.89	.49	60.61	-37.32
16	-19.85	5.43	63.03	-39.84
17	-18.83	10.47	65.55	-42.57
18	-17.82	15.62	68.18	-45.53
19	-16.84	20.86	70.90	-48.74
20	-15.89	26.22	73.74	-52.23
21	76.69	76.69	76.69	76.69
22	79.76	79.76	79.76	79.76
23	82.95	82.95	82.95	82.95
24	86.27	86.27	86.27	86.27
25	89.72	89.72	89.72	89.72
26	93.30	93.30	93.30	93.30
27	97.04	97.04	97.04	97.04
28	100.92	100.92	100.92	100.92
29	104.95	104.95	104.95	104.95
30	109.15	109.15	109.15	109.15

SALE OF THE ACRE OF LAND