

Economics of Crop Production



The Three Components of Profit



- Crop Yield
- Production Cost
- Selling Price Received



Production Costs

- Fixed Costs:
 - Land, Labor, Machinery & Management – Little or no change
- Variable Costs:
 - Seed, Chemicals & Fuel –
 - Change little with yield
 - Fertilizer, Harvesting & Drying –
 - Change the most



Corn Budget – 135 bu/acre yield

- Gross income @ \$5.00/bu = \$675.00
- Total variable cost = \$395.36
- Return above variable cost = \$279.64
- Total fixed cost = \$114.43
- Total cost = \$509.79
- Return to land, management risk = \$165.21



Corn Budget – 90 bu/acre yield

- Gross income @ \$5.00/bu = \$450.00
- Total variable cost = \$370.00
- Return above variable cost = \$80.00
- Total fixed cost = \$101.48
- Total cost = \$471.48
- Returns to land, management Risk = **-\$21.48**



When to fertilize???

- Fertilize if You'll Get a RETURN on Your Investment

Response to Fertilizer

Depends on:

- Cultural Practices Used
- Soil Productivity
- Soil Test Level
- Method of Fertilizer Application



Corn response to nitrogen, Cecil sandy loam, 5 year average yields

N Application	Corn Yield
lb/acre	bu/acre
0	35
40	44
80	50
120	54
160	55
200	56
240	56

Corn response to nitrogen, Davidson clay loam, 5 year average yields

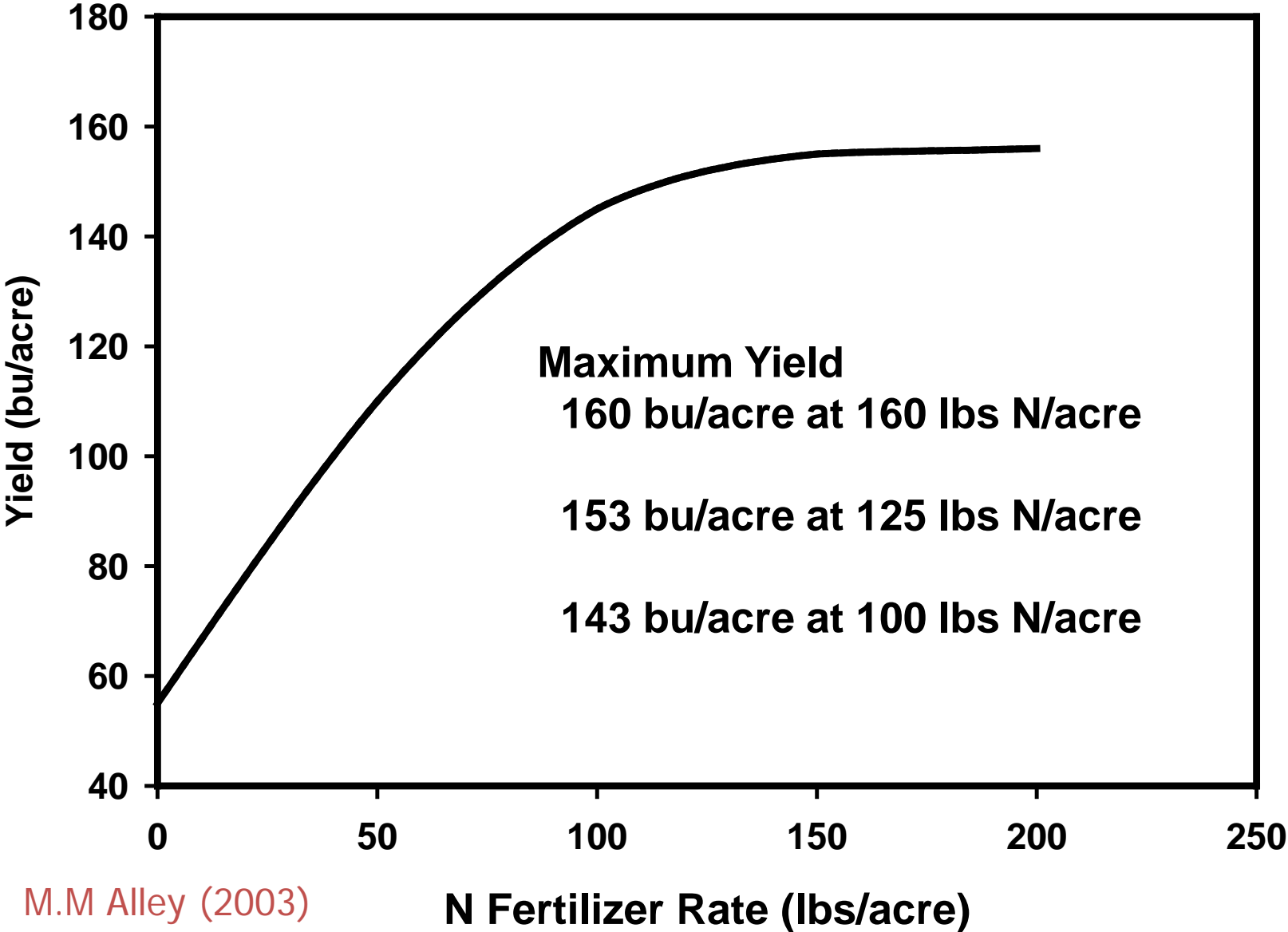
N Application	Corn Yield
lb/acre	bu/acre
0	65
40	110
80	130
120	140
160	146
200	149
240	149



Corn response to nitrogen, Congaree silt loam, 5 year average yields

N Application	Corn Yield
lb/acre	bu/acre
0	101
40	133
80	157
120	176
160	190
200	198
240	198

Corn Grain Yield Response to N Fertilizer



M.M Alley (2003)

Fertilize the Most Productive Soils the Heaviest

Nitrogen Increment	Yield Increase, bu/acre		
	Cecil	Davidson	Congaree
1 st 40 lb	9	45	32
2 nd 40 lb	6	20	24
3 rd 40 lb	4	10	19
4 th 40 lb	1	6	14
5 th 40 lb	1	3	8

Economic return from 40 lb increments of fertilizer N applied to continuous corn (3-yr average)⁺

N rate lb/acre	Yield bu/acre	Value of Yield Inc.	Cost of N Inc.	Return
		----- \$ -----		
0	93	---	---	---
40	115	132.00	12	120.00
80	131	96.00	12	84.00
120	138	42.00	12	30.00
160	144	36.00	12	24.00
200	145	6.00	12	-6.00

⁺ Assumes \$0.60/lb N and \$6.00/bu corn. Source, Bundy (1987)

Economic return from 40 lb increments of fertilizer N applied to continuous corn (3-yr average)⁺

N rate lb/acre	Yield bu/acre	Value of Yield Inc.	Cost of N Inc.	Return
		----- \$ -----		
0	93	---	---	---
40	115	77.00	20	57.00
80	131	56.00	20	36.00
120	138	24.50	20	4.50
160	144	21.00	20	1.00
200	145	3.50	20	-16.50

⁺ Assumes \$0.50/lb N and \$3.50/bu corn

