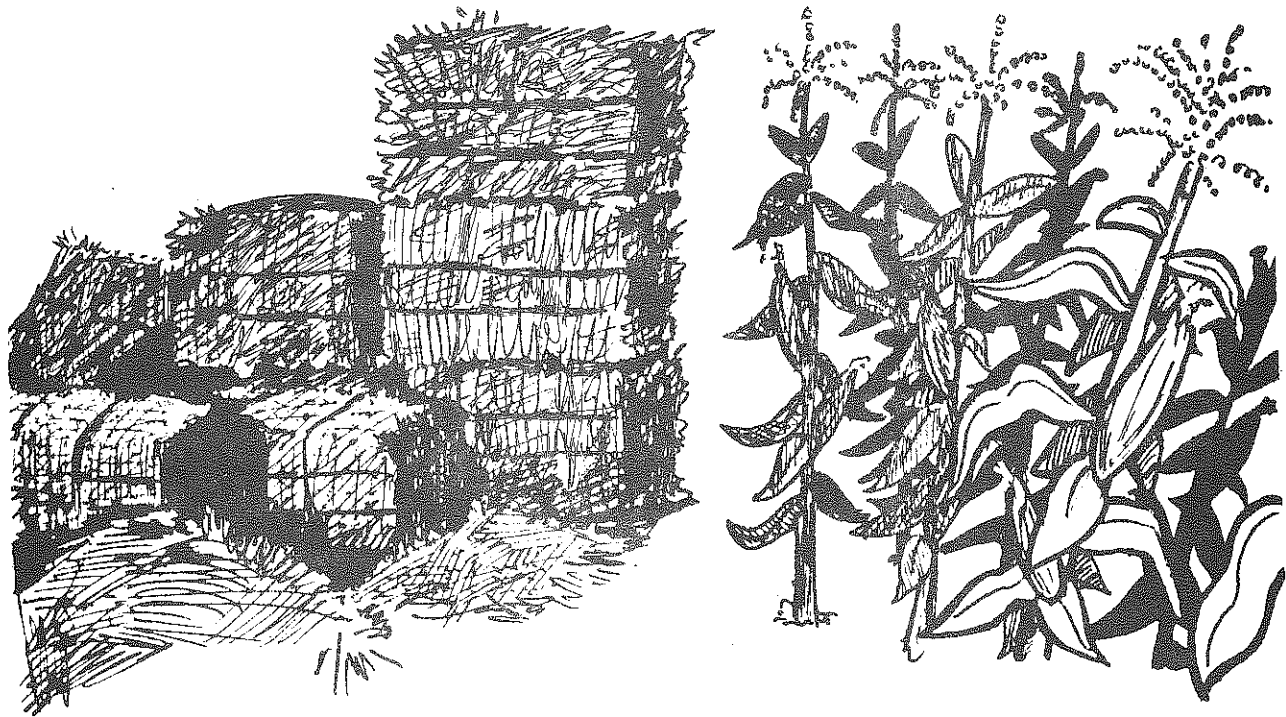


ECONOMIC PROFILES FOR CORN, HAY AND PASTURE; 1981 AND FIVE YEAR AVERAGE 1977-81



by

Wayne A. Knoblauch

Robert A. Milligan

Department of Agricultural Economics
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14853

It is the policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
CONSTRUCTION OF ECONOMIC PROFILES	4
Yield	4
Price	4
Value of Production	6
Growing Expenses	6
Harvesting Expenses	8
Other Variable Costs	8
Fixed Expenses	9
Return to Land	10
SUPPORTING INFORMATION, TABLES 1-14	13
REFERENCES	27
ECONOMIC PROFILES, SOIL GROUPS 1-8	29

INTRODUCTION

Enacted by the New York State legislature in April 1980, Chapter 79 of the Laws of 1980 altered the procedures for valuing qualified farmland in real estate tax calculations. The valuation procedure was changed by this legislation from a market base to an income capitalization approach. Stipulated in the legislation was a land classification system to be developed and administered by the New York Department of Agriculture and Markets. The State Board of Equalization and Assessment was directed to calculate land values for each soil group in the land classification system. The State Board of Equalization and Assessment was to use the income capitalization approach based on economic profiles developed by the New York State College of Agriculture and Life Sciences at Cornell University.

The income capitalization approach was first implemented in 1981. Agricultural use values were based where possible on economic profiles. Economic profiles for 1975 through 1979 and 1976 through 1980 were constructed for corn, hay and pasture and conveyed to the State Division of Equalization and Assessment.¹ Economic profiles for fruit, Long Island potatoes and vegetables grown on muckland were also constructed and conveyed to the State Division of Equalization and Assessment.²

¹Knoblauch, Wayne A. and Robert A. Milligan, Economic Profiles for Corn, Hay and Pasture, A.E. Ext. 81-1, Cornell University, January 1981 and Knoblauch, Wayne A. and Robert A. Milligan, Economic Profiles for Corn, Hay and Pasture, A.E. Ext. 81-23, Cornell University, October 1981.

²State Board of Equalization and Assessment, Report on the Proposed 1981 Farmland Use Values for Agricultural Assessment in New York, January 9, 1981 and State Board of Equalization and Assessment, Report on the Proposed 1982 Farmland Use Values for Agricultural Assessment in New York, January 9, 1982.

The purpose of this bulletin is to explain how economic profiles for corn, hay and pasture were constructed for 1981 and the five-year average, 1977 through 1981. In this document, the term "economic profile" refers to the information required to determine the return to land for one high- or low-lime soil group. A description of the construction of economic profiles using a series of tables that contain the most important parameters utilized dominates the discussion.

In total, 14 economic profiles were constructed for eight soil groups. Economic profiles for high-lime and low-lime for Soil Groups 1 through 6 and an economic profile for low-lime for Soil Groups 7 and 8 are required. High-lime soil mapping units are almost nonexistent in Soil Groups 7 and 8. For all except Soil Group 8 the economic profile consists of an enterprise budget for corn and an enterprise budget for hay with the net income for each soil group's economic profile being weighted by the specified rotation. Soil Group 8's economic profile is based on permanent pasture.

The enterprise budgets utilized to compute economic profiles were constructed using the economic engineering approach. Enterprise budgets are designed to represent the internal and external characteristics of an average farm in the State. The principal internal characteristic is the soil group; other internal characteristics of importance include total crop acres, acreages of each crop, the machinery complement, and a specification of an average level of management. External characteristics are incorporated through the use of average State input and output prices. The budgets, consequently, are not an average of actual farm observations. All of the data used in constructing the enterprise budgets is based wholly or partially upon published or unpublished surveys, observation or other methods of collecting information.

For each crop, two sets of enterprise budgets are prepared. The first is constructed for the year 1981. Second, in order to compute a five-year average for 1977 through 1981, input prices were indexed using indexes published in Agricultural Prices or by calculating actual five-year averages where data were available. Output prices are also for a five-year average and are based on data in New York Agricultural Statistics. Input levels and yields are held constant for 1981 and 1977 through 1981 enterprise budgets.

The years 1977 through 1981 are used as the basis for determining net returns to land for two reasons. First, use of data for only one year could lead to wide fluctuations in net returns because of changes in prices and costs. The five-year average period is consistent with the period used for computing the five-year average effective interest rate on new Federal Land Bank loans made in the Springfield District which is used as the capitalization rate as defined in the 1980 Agricultural Districts legislation. Second, the 1977 through 1981 time period was the most recent possible because some of the data for the 1982 crop year were not available to meet deadlines for computing 1983 agricultural values.

Agricultural values are calculated by the State Division of Equalization and Assessment drawing upon data from corn, hay and pasture and from fruit and vegetable economic profiles. Information on the procedure for determining agricultural values will be contained in a Report on the Proposed 1983 Farmland Use Values for Agricultural Value Assessment in New York by the State Board of Equalization and Assessment, to be published early in 1983.

CONSTRUCTION OF ECONOMIC PROFILES

The methodology is illustrated by describing the procedure used to construct the economic profile for Soil Group 1, low-lime (page 32). Although focusing primarily on this economic profile, the discussion indicates how the procedure was used and is directly transferrable to the other profiles. Tables containing supporting information follow this section and are referenced throughout the discussion. The 14 economic profiles are contained in the final section of this report on pages 31-44.

Yield

For each soil group, the yield specified is for corn silage and hay obtainable under average management. The basis for these yields is prudent management for each soil mapping unit. Prudent management yields are derived from published Soil Surveys, Soil Conservation Service Form 5 Reports and from Cornell research. Prudent management yields for each soil group are multiplied by a conversion factor to obtain average management yields (Table 14). The difference between these conversion factors and 1.0 represents yield reduction due to harvesting loss, field size loss (the necessity of headlands and end rows), and a reduction from prudent to average management. Yields used in the construction of economic profiles for Soil Group 1 are 18.4 tons of corn silage and 3.8 tons of dry hay per acre (Table 10). Yield per acre decreases and rotations contain fewer years in corn as the soil group number increases. For each soil group, yields are identical for high-lime and low-lime soils.

Price

The calculation of total revenue requires a price that could be obtained for the product at harvest time as it is ready to leave the farm. A large proportion of the hay and corn crops produced in New York State,

however, are fed to livestock on the farm, making difficult the determination of such a price. Several adjustments must be made to published prices to obtain a harvest time farmgate price.

Corn prices are based on prices published in New York Agricultural Statistics. The unadjusted weighted price is calculated from the weighted average of corn silage and corn grain prices, based on acreage of each in the State each year, then converted to a corn silage price (Table 4). Adjustments are required to represent a farmgate price. The adjustment to the corn silage price includes the annualized investment cost of a silo for storage because the published price represents the price of the corn silage in a silo. Corn grain price is adjusted for the cost of transportation from the farmgate to market and a drying cost for half the crop that did not already have a drying cost deduction included in the published net price. The adjustment was calculated for 1981, 1980 and 1979 and indexed for years 1978 and 1977 then averaged to represent 1977 through 1981. The farmgate price adjustment was then subtracted from the average unadjusted price for 1977 through 1981 and applied to corn grown on all soil groups. The average corn price converted to a silage price for 1977 through 1981 is \$15.90 per ton.

Hay prices are based on prices for "alfalfa hay baled" published in New York Agricultural Statistics (Table 5). The quality of the hay crop is higher for better quality soils, as better quality soils can support higher percentages of legumes. Adjustments are made in the price to reflect a quality differential among soil groups. The published "alfalfa hay baled" price is used as a basis with adjustments made for the protein and energy content of the hay. Corn grain and soybean meal prices are used as a basis for the value of protein and energy to scale the hay crop price for changes in quality. Consequently, the price per ton is different for each of the soil groups except Soil Groups 2 and 3 which both have 75 percent legume.

The average hay price for 1977 through 1981 for Soil Group 1 is \$64.95 per ton.

Value of Production

The value of production or the total revenue from an acre of corn or hay crop is the yield per acre multiplied by the price per unit of corn or hay. The five-year average value of production for Soil Group 1 is \$292.55 for corn and \$246.80 for hay. This was obtained by multiplying 18.4 tons per acre by \$15.90 per ton for corn value of production and 3.8 tons per acre by \$64.95 per ton for hay value of production.

Growing Expenses

Input levels and consequent variable expenses depend on two factors. The first is the yield just discussed; the second is crop rotation. In Soil Group 1, a rotation of seven years of corn followed by three years of hay, represented by C₇H₃, is followed (Table 7). Inputs are based on recommendations made by Cornell agronomists.

Seed expense per acre was calculated using the specified seeding rates per acre and corresponding seed prices per unit (Tables 6 and 9). For corn, the seeding rate for all soil groups is 25,000 kernels planted per acre at a seed price of \$55.00 per 80,000 kernels for 1981. Seeding costs for hay are establishment year cost divided by the years of life of the stand. On the first four soil groups, an alfalfa-timothy mixture is seeded while on Soil Groups 5 through 8 a birdsfoot trefoil-timothy mixture is used. Cost per acre is determined by multiplying the seeding rates by the prices (Table 9) and dividing by the number of years of life of the stand.

Fertilizer prices (Table 9) are multiplied by the quantities applied (Table 7) to determine fertilizer cost per acre. For corn, the calculation

was straightforward, the number of pounds of nitrogen, potassium, and phosphorus multiplied by the respective nutrient price. For hay, total cost of fertilizer for the years in the rotation must be determined and then divided by number of years of life of the stand to obtain average cost per acre. As an example, for Soil Group 1 in the first year, 60 pounds each of phosphorus and potassium are applied while in the second and third years 40 pounds of phosphorus and 160 pounds of potassium are applied. Cost per acre for phosphorus would be $60 + 40 + 40 = 140$ divided by 3 years equals 46.67 multiplied by the per pound price of phosphorus. Lime is included as one-half ton per year multiplied by the price of lime (Table 9). Lime is not required on high-lime soils.

Chemical cost was obtained utilizing the chemical application program (Table 8) multiplied by the associated prices (Table 9). The average chemical cost per year was determined by first calculating the total cost for the years of life of the stand of hay or for the years corn is grown in the rotation. Total cost was then divided by number of years of hay or corn in the rotation. For hay on a Group 1 soil, the chemical program is Premerge in the establishment year and Methoxychlor each year. The cost of these four chemical applications was summed and divided by three. For corn, the cost of the chemical program (Table 8) for years one, two, and three through seven was summed and divided by years of corn in the rotation (7) to attain the average annual cost per acre.

Power and equipment costs and "other" costs were calculated using the economic engineering approach. Information in An Economic Analysis of New York Field Crop Enterprises was used. Fuel, oil, and grease expense was taken from that publication for Soil Group 1; repair and maintenance costs were increased to account for the nine-year life of the machinery complement

used for the economic profiles. "Other" costs were updated from that publication.

Fuel, oil, and grease and repairs and maintenance were increased by five percent in Soil Groups 5 and 6 and by ten percent in Soil Groups 7 and 8 to reflect the increased costs of machinery operation on steeper slopes and on more poorly drained soils. The power and equipment costs for growing hay are constant across soil groups except for the increase because of slope and/or drainage for the establishment year. This total cost was calculated and then divided by the years of life of the stand.

Harvesting Expenses

Harvesting expenses were calculated in a similar manner to power and equipment expenses for growing. Fuel, oil, and grease and repairs and maintenance were again calculated using the economic engineering approach. For harvesting, however, cost was dependent upon harvesting system and on the quantities harvested. For corn; fuel, oil, and grease and repairs and maintenance costs were based on the costs in An Economic Analysis of New York Field Crop Enterprises, with repairs and maintenance increased to reflect change in years of life and adjustments for yield in each soil group. Again, all these costs were increased as indicated above to reflect slope or drainage considerations. Fuel, oil, and grease plus baler twine for hay were determined by the number of cuttings. Three cuttings were specified for Soil Groups 1-3, two cuttings for Soil Groups 4 and 5, and one cutting for Soil Groups 6 and 7 (Table 10).

Other Variable Costs

The remaining variable costs are interest on operating capital, management charge, and labor. The interest on operating capital is a charge for

the capital required to purchase inputs for growing the crop. The figure derived is for an average of six months from planting until harvest and was charged at the short-term interest rate of Production Credit Associations in the Springfield District (Table 12).

The charge for operator labor and management, family labor, and any hired labor is included in two parts. The first is a management charge to compensate the operator or operators of the farm for their management input. This charge is five percent of the total value of production. The second part is for the hours of labor required in the production and harvesting of the crop (Table 10) charged at \$4.95 per hour.

Fixed Expenses

An important expense for any crop production enterprise is the machinery complement required to plant and harvest the crop. Machinery depreciation, interest and insurance are fixed costs since they don't vary significantly with utilization. The procedure used to determine the fixed costs for corn and hay is outlined below.

Upon examination of the rotations on the eight soil groups, an average farm was calculated to have 150 acres of hay, 120 acres of corn, and 30 acres of pasture for a total of 300 crop acres. Machinery complement specification and allocation of the different items of machinery to the corn silage, hay, and pasture enterprises is the first step in the calculation procedure (Table 1). Proportional investments were used to calculate the total and the per acre costs (1981 new cost) for each of the three enterprises.

Fixed cost per year was calculated (Table 2) using 1981 new investment cost (Table 1) for each crop. Cost indexes (Table 11) were used to calculate the average investment cost of the machinery complement on the farm for

the 1981 crop year and the average of the 1977 through 1981 crop years. This index is based on a machinery complement purchased evenly over the preceding nine years. The 1981 index was multiplied by the 1981 new investment cost to obtain the average investment cost for the 1981 crop year. The 1977 through 1981 index was used for converting the 1981 new machinery complement investment back to a 1977 through 1981 average.

Annual fixed cost includes depreciation, interest, and insurance.

Depreciation is the annual charge for the use of the machinery, calculated using straight-line depreciation over the nine-year life with a ten percent salvage value. Interest on investment represents the cost of borrowed funds or the fact that if the farmer had not invested equity capital in machinery, a return from alternative investments could have been obtained. Interest on investment was calculated using the interest rate of 15.45 percent for the 1981 crop year and 11.46 percent for the average of 1977 through 1981 crop years, multiplied by the average investment. Insurance was charged at 1.5 percent of investment.

Machinery and corn silage storage and electric fencing investments were required to complete the economic profiles (Table 3). The first item was the cost of machinery storage to house the equipment complement (Table 1) and was charged on a per acre basis to each of the three enterprises. Depreciation, interest, insurance and repairs was charged on building costs averaged over a 15-year period. The fixed cost of the electric fencing was used only in the pasture enterprise (Soil Group 8) and the cost reflected accordingly. The fixed cost information on the corn silage storage was used as previously described for calculating the adjusted price of corn silage.

Return to Land

Total Expenses are calculated by adding Total Growing, Total Harvesting, Interest on Operating Capital, Management Charge, Labor, and Total

Fixed Expenses (less property tax). This total is subtracted from the Value of Production to obtain the Return to Land (less property tax).

The Return to Land before property tax for corn and hay for the 1977 through 1981 crop years was weighted by the rotation (Table 7) to obtain a rotation weighted average return to land. Based upon the weighted average return to land and the capitalization rate, a property tax charge (Table 13) was deducted to produce Return to Land. Return to Land is the amount to be capitalized into land value.

SUPPORTING INFORMATION

TABLES 1 - 14

TABLE 1.

INVESTMENT IN POWER AND EQUIPMENT COMPLEMENT FOR CORN SILAGE,
HAY, AND PASTURE PRODUCTION ON 300 ACRES, ALLOCATED TO ENTERPRISES,
1981 NEW COST

Item	1981		Corn Silage		Hay		Pasture	
	New Cost	Proportion	Cost	Proportion	Cost	Proportion	Cost	
	\$		\$		\$		\$	
Tractor, 2-wheel drive, 90 hp.	26,400	.49	12,936	.49	12,936	.02	528	
Tractor, 2-wheel drive, 50 hp.	14,700	.53	7,791	.43	6,321	.04	588	
Tractor, 2-wheel drive, 35 hp.	10,600	.29	3,074	.71	7,526	--	--	
Plow, semi-mounted, 4-16" bottoms	5,300	.78	4,134	.20	1,060	.02	106	
Disc harrow, 12'	4,400	.78	3,432	.20	880	.02	88	
Springtooth harrow, 16'	2,100	.78	1,638	.20	420	.02	42	
Cultipacker, 12'	1,400	.78	1,092	.20	280	.02	28	
Corn planter, 4-row	6,950	1.0	6,950	--	--	--	--	
Cultivator, 4-row	2,300	1.0	2,300	--	--	--	--	
Sprayer, trailer w/tank	2,400	.62	1,488	.38	912	--	--	
Cultipacker seeder 10'	3,000	--	--	.91	2,730	.09	270	
Fertilizer spreader, 12'	1,700	--	--	.83	1,411	.17	289	
Mower-conditioner, windrower, 9'	7,300	--	--	1.0	7,300	--	--	
Side delivery rake	2,100	--	--	1.0	2,100	--	--	
Baler with bale thrower	8,600	--	--	1.0	8,600	--	--	
Bale wagons, 3@ \$1,800	5,800	--	--	1.0	5,800	--	--	
Forage harvester with 2-row crop head	13,300	1.0	13,300	--	--	--	--	
Forage wagons, 2@ \$5,500	12,000	1.0	12,000	--	--	--	--	
Forage blower	2,700	1.0	2,700	--	--	--	--	
Pickup truck, 1/2 ton	7,400	.40	2,960	.50	3,700	.10	740	
Total	\$140,450		\$75,795		\$61,976		\$2,679	
Per Acre ¹			\$ 632		\$ 413		\$ 89	

¹Based on 120 acres of corn, 150 acres of hay, and 30 acres of pasture on a 300 acre farm.

TABLE 2.
ANNUAL FIXED COSTS OF THE POWER AND EQUIPMENT COMPLEMENT
ALLOCATED TO ENTERPRISES
CROP YEARS 1981 AND 1977-1981 AVERAGE

	Corn		Hay		Pasture	
	1981	1977-1981	1981	1977-1981	1981	1977-1981
INVESTMENT ¹	\$51,541	\$41,687	\$41,524	\$34,087	\$1,795	\$1,473
ANNUAL FIXED COSTS						
DEPRECIATION ²	5,154	4,169	4,152	3,409	180	147
INTEREST ³	4,380	2,628	3,529	2,149	153	93
INSURANCE ⁴	773	625	623	511	27	22
TOTAL	\$10,307	\$7,422	\$8,304	\$6,069	\$360	\$262
PER ACRE	\$85.90	\$61.85	\$55.35	\$40.45	\$12.00	\$8.75

¹Index factor of 0.68 for 1981 and 0.55 for 1977-1981 average to convert 1981 new cost to crop year(s) average.

²Nine-year life with a 10 percent salvage value, straight line depreciation.

³Interest rate of 15.45 percent for 1981 and 11.46 percent for 1977-1981 on average investment.

⁴Insurance rate of 1.5 percent of investment.

TABLE 3.

INVESTMENT AND ANNUAL FIXED COSTS OF MACHINERY STORAGE,
CORN SILAGE STORAGE, AND ELECTRIC FENCING

	1981 New Cost	1981 Crop Year ¹	1977-1981 Crop Years Average ¹
MACHINERY STORAGE			
Pole barn; three exterior walls, metal roofing, dirt floor	\$17,400	\$10,440	\$9,048
Depreciation ²	--	696	603
Interest ³	--	806	518
Insurance ⁴	--	157	136
Repairs ⁵	--	261	226
Total		\$1,920	\$1,483
Per Acre		\$6.40	\$4.95
CORN SILAGE STORAGE			
Concrete stave silo; including site preparation and roof, 24' x 70'	\$24,000	\$14,400	\$12,480
Depreciation ²	--	960	832
Interest ³	--	1,112	715
Insurance ⁴	--	216	187
Total		\$2,288	\$1,734
Per ton		\$2.85	\$2.15
ELECTRIC FENCING			
Electric fencer, wire, posts, post insulators and handles	\$ 650	\$ 390	\$ 338
Depreciation ²	--	26	23
Interest ³	--	30	19
Total		\$ 56	\$ 42
Per Acre		\$ 1.85	\$ 1.40

¹Index factor of 0.60 for 1981 and 0.52 for 1977-1981 average to convert 1981 new cost to crop year(s) average.

²Fifteen-year life, straight line depreciation.

³Interest is 15.45 percent for 1981 and 11.46 for 1977-1981 on average investment.

⁴Insurance rate of 1.5 percent of average investment.

⁵Repair rate of 2.5 percent of investment.

TABLE 4.

FARMGATE CORN SILAGE PRICES

Year	Unadjusted Weighted Price ¹	Adjustment ²	Weighted Farmgate Price
	\$ per ton	\$ per ton	\$ per ton
1977	15.45	---	---
1978	16.05	---	---
1979	18.05	---	---
1980	20.20 ³	---	---
1981	18.00	2.10	15.90
1977-1981	17.55	1.65 ⁴	15.90

¹Weighted average of corn silage and corn grain prices based on acreage of each in the State each year converted to a silage price.

²Adjustments include: storage costs for corn silage, marketing and transportation costs for corn grain, and drying costs for one-half of the corn grain. These adjustments are weighted based on acreage of silage and grain in the State and converted to a silage price.

³Revised.

⁴Computed using previous year's adjustments and cost index factors.

TABLE 5.

HAY PRICES ADJUSTED FOR QUALITY DIFFERENTIALS
BY SOIL GROUP

Soil Group	Percent Legume	Crude Protein	Net Energy	Price ¹	
				1981	1977-1981
	Percent of Dry Matter		Mcal/lb. of Dry Matter	--Dollars Per Ton--	
1	80	16.50	.574	72.35	64.95
2 & 3	75	16.10	.568	70.95	63.70
4	70	15.75	.562	69.70	62.45
5	60	15.00	.550	67.00	60.15
6	40	13.50	.526	61.65	55.30
7	30	12.75	.514	58.95	52.90
8	20	12.00	.502	56.30	50.50

¹Harvest time price of \$67.00 per ton for alfalfa hay for crop year 1981 and \$60.15 per ton for 1977-1981 crop years. Prices were adjusted for crop quality based on percentage legume. Alfalfa hay price was specified to be 60 percent legume. Adjustments for quality were accomplished using corn grain and soybean meal prices as indicators of energy and protein values per unit.

TABLE 6.

SEEDING RATES FOR CORN AND HAY

Crop	Soil Group	Rate
Corn	1 - 7	25,000 Kernels Planted Per Acre
Hay		
Alfalfa-Timothy	1 - 4	12# Alfalfa and 5# Timothy
Birdsfoot Trefoil-Timothy	5 - 8	8# Birdsfoot Trefoil and 4# Timothy

TABLE 7.
 FERTILIZATION RATES FOR CORN AND HAY
 BY SOIL GROUP

Soil Group	Rotation	Corn	Hay ¹
		$\overline{\text{N-P}_2\text{O}_5\text{-K}_2\text{O}}$	$\overline{\text{N-P}_2\text{O}_5\text{-K}_2\text{O}}$
1	C ₇ H ₃	90-60-60	0-40-160
2	C ₆ H ₄	85-60-60	0-40-160
3	C ₅ H ₅	75-60-60	0-40-120
4	C ₅ H ₅	75-60-60	0-40-120
5	C ₄ H ₆	60-60-60	0-30-60
6	C ₃ H ₇	50-60-60	0-30-60 ²
7	C ₂ H ₈	30-60-60	0-30-60 ²
8	C ₀ H ₁₀	-- -- --	30-30-30

¹Establishment year fertilization is 0-60-60.

²Years 7 and 8 fertilization is 30-30-30.

TABLE 8.
CHEMICAL APPLICATIONS FOR CORN AND HAY

Crop	Soil Group(s)	Year(s)	Chemical(s)	Rate Per Acre	
Hay	1-8	1	Premerge	1-1/3 qt. at seeding	
	1-4	All	Methoxychlor	1 qt. per year	
Corn ¹	1	1	Atrazine	2# preplant and 2# with 1 qt. oil post emergence	
		2	Atrazine	2# with 1 qt. oil post emergence	
		3-7	Sutan +6.7E	4-3/4 pt. with 1# Atrazine preplant & double incorporate	
			Furadan	10 pounds	
	2-5		Same as Group 1, less years in 3-7		
	6	1&2		Same as Group 1	
			3	Atrazine & Sutan +6.7E	1# Atrazine & 4-3/4 pt. Sutan +6.7E pre-plant incorporated
				Furadan	10 pounds
	7		1	Same as Group 1	
			2	Sutan +6.7E	6 pt. preplant & double incorporate

¹Planter box treatment 2 ounces of Captan/Diazanone per seed unit all years, all soil groups.

TABLE 9.

SEED, FERTILIZER AND LIME, AND CHEMICAL COSTS, 1981

Item	Cost
<u>Seed</u>	
Corn	\$55.00/80,000 Kernels
Alfalfa	\$2.70/lb.
Birdsfoot Trefoil	\$4.65/lb.
Timothy	\$0.80/lb.
<u>Fertilizer & Lime</u>	
Nitrogen	\$0.32/lb.
Phosphorus	\$0.28/lb.
Potassium	\$0.16/lb.
Lime	\$22.50/ton spread
<u>Chemicals</u>	
Premerge	\$10.80/gal.
Methoxychlor	\$ 9.50/gal.
Atrazine	\$13.65/gal.
Crop Oil	\$ 8.90/gal.
Sutan + 6.7E	\$26.60/gal.
Furadan	\$1.05/lb.
Captan/Diazanon	\$4.00/lb.

TABLE 10.

LABOR REQUIREMENTS FOR CORN AND HAY
BY SOIL GROUP AND YIELD

Soil Group	Corn		Hay	
	Yield tons/acre	Labor hours/acre	Yield tons/acre	Labor ¹ hours/acre
1	18.4	6.2	3.8	7.7
2	17.4	6.1	3.6	7.5
3	16.1	6.0	3.3	7.2
4	14.4	5.9	2.9	5.5
5	13.3	5.8	2.7	5.3
6	11.3	5.7	2.2	4.1
7	9.7	5.6	1.6	3.5
8	---	---	1.0	1.0 ²

¹Soil Groups 1-3, three cuttings per year; 4 and 5, two cuttings per year; and 6 and 7, one cutting per year.

²Pasture.

TABLE 11.

INDEX FACTORS TO CONVERT 1981 INVESTMENT COSTS
TO CROP YEARS 1981 AND 1977-1981 AVERAGE
AND 1981 PRODUCTION COSTS TO 1977-1981 CROP YEAR AVERAGE

Item	Index Factor	
	1981	1977-1981
Investments		
Power and Equipment	0.68	0.55
Building and Fencing Materials	0.60	0.52
Production Costs		
Seed	--	0.83
Fertilizer and Lime		
Nitrogen	--	0.74
Phosphorus	--	0.83
Potassium	--	0.79
Lime	--	0.88
Chemicals	--	0.91
Fuels	--	0.70
Wages	--	0.86
Items Used for Production	--	0.84
Power and Equipment Repairs	--	0.82
Twine	--	0.77
Building and Fencing Materials	--	0.88

TABLE 12.

SHORT-TERM INTEREST RATES OF PRODUCTION CREDIT ASSOCIATIONS
IN SPRINGFIELD DISTRICT, AVERAGE EFFECTIVE RATE
OF FIVE AND TEN PERCENT STOCK REQUIREMENTS

Year	Interest Rate
	---Percent---
1981	15.45
1980	13.03
1979	11.28
1978	9.12
1977	8.44
1977-1981 Average	11.46

TABLE 13.

MISCELLANEOUS ITEMS

Item	Cost
Labor, 1981	\$4.95/hour
Custom Fertilizer	
Application Side Dress	
Nitrogen on Corn, 1981	\$5.25/acre
1977-1981	\$4.10/acre
Management Charge, All Crop Years	5% of value of production
Property Tax Rate, 1981	\$2.00/\$100 of market value
Twine, 1981	\$23.60/bale
<p>Fuel, oil, and grease repairs and maintenance are increased for Soil Groups 5 and 6 by five percent and 7 and 8 by 10 percent to account for increased cost of machinery operation on steeper slopes and wetter soils.</p>	

TABLE 14.

FACTORS FOR CONVERTING PRUDENT MANAGEMENT YIELD
TO AVERAGE HARVESTED YIELD PER CROP ACRE BY SOIL GROUP¹

Soil Group	Corn	Hay and Pasture
1	0.75	0.67
2	0.75	0.67
3	0.75	0.67
4	0.75	0.67
5	0.74	0.66
6	0.73	0.65
7	0.72	0.64
8	--	0.48

¹Factors were multiplied by prudent management yields to obtain average harvested yield per crop acre. The factors are comprised of three components: harvesting loss, field size loss, and conversion from prudent to average management.

REFERENCES

- Casler, George L., Personal conversations, Department of Agricultural Economics, Cornell University, Ithaca, NY.
- Hahn, Russell R., Personal conversations and unpublished data, Department of Agronomy, Cornell University, Ithaca, NY.
- Knoblauch, Wayne A., Unpublished data, Department of Agricultural Economics, Cornell University, Ithaca, NY.
- Knoblauch, Wayne A., Robert A. Milligan, Richard J. Haslem, and Marylou M. vanlieshout, An Economic Analysis of New York Field Crop Enterprises, A.E. Res. 80-6, Department of Agricultural Economics, Cornell University, Ithaca, NY, April 1980.
- New York Crop Reporting Service, New York Agricultural Statistics, selected years, Department of Agriculture and Markets.
- New York State College of Agriculture and Life Sciences, 1982 Cornell Recommends for Field Crops, Cornell University, Ithaca, NY, Sept. 1978.
- New York State College of Agriculture and Life Sciences, Cornell Field Crops Handbook, Cornell University, Ithaca, NY, October 1978.
- Reid, W. Shaw, Personal conversations and unpublished data, Department of Agronomy, Cornell University, Ithaca, NY, 1981.
- State of New York, Senate Bill 8923--A and Assembly Bill 11551--A, April 9, 1980.
- State of New York Temporary State Commission on the Real Property Tax, An Economic Approach to Agricultural Land Valuation in New York State, North East Appraisals and Management Company, Inc., Ithaca, NY, December 1979.
- U.S.D.A., Crop Reporting Board, Agricultural Prices Annual Summary 1981, and selected years, Washington, D.C., June 1982.
- U.S.D.A., Economics, Statistics, and Cooperatives Service, Estimating Agricultural Costs of Production--Workshop Proceedings, ESCS-56, Washington, D.C., June 1979.
- Wackernagel III, Frederick W., Robert A. Milligan, and Wayne A. Knoblauch, An Economic Analysis of Northern New York Dairy Farm Enterprises: Freestall Housing Systems, A.E. Res. 79-25, Department of Agricultural Economics, Cornell University, Ithaca, NY, November 1979.

ECONOMIC PROFILES

SOIL GROUP 1
7 CORN - 3 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	18.4	18.4	3.8	3.8
Price (\$/ton)	15.90	15.90	72.35	64.95
Value of Production	<u>\$292.55</u>	<u>\$292.55</u>	<u>\$274.95</u>	<u>\$246.80</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	12.15	10.05
Fertilizer				
Nitrogen	28.80	21.30	0.00	0.00
Phosphorus	16.80	13.95	13.05	10.85
Potassium	9.60	7.60	20.25	16.00
Custom Application	5.25	4.10	0.00	0.00
Lime	--	--	--	--
Chemicals	24.95	22.70	3.55	3.25
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	2.40	1.70
Repair & Maintenance	5.45	4.45	1.20	1.00
Other	<u>2.65</u>	<u>2.20</u>	<u>3.60</u>	<u>3.00</u>
Total Growing	\$119.45	\$96.65	\$56.20	\$45.85
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	11.15	7.80	13.50	9.45
Repair & Maintenance	5.60	4.60	12.20	10.00
Twine	--	--	6.70	5.15
Other	<u>1.95</u>	<u>1.60</u>	<u>2.75</u>	<u>2.30</u>
Total Harvesting	\$18.70	\$14.00	\$35.15	\$26.90
<u>Interest on Operating Capital</u>	10.65	6.35	7.05	4.15
<u>Management Charge</u>	14.65	14.65	13.75	12.35
<u>Labor</u>	<u>30.70</u>	<u>26.40</u>	<u>38.10</u>	<u>32.80</u>
TOTAL VARIABLE EXPENSES	\$194.15	\$158.05	\$150.25	\$122.05
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES (less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$286.45	\$224.85	\$212.00	\$167.45
RETURN TO LAND				
(less property tax)	\$6.10	\$67.70	\$62.95	\$79.35
<hr/>				
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$71.20		
Property Tax		<u>-12.35</u>		
RETURN TO LAND		\$58.85		

SOIL GROUP 1
7 CORN - 3 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	18.4	18.4	3.8	3.8
Price (\$/ton)	15.90	15.90	72.35	64.95
Value of Production	\$292.55	\$292.55	\$274.95	\$246.80
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	12.15	10.05
Fertilizer				
Nitrogen	28.80	21.30	0.00	0.00
Phosphorus	16.80	13.95	13.05	10.85
Potassium	9.60	7.60	20.25	16.00
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	24.95	22.70	3.55	3.25
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	2.40	1.70
Repair & Maintenance	5.45	4.45	1.20	1.00
Other	2.65	2.20	3.60	3.00
Total Growing	\$130.70	\$106.55	\$67.45	\$55.75
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	11.15	7.80	13.50	9.45
Repair & Maintenance	5.60	4.60	12.20	10.00
Twine	--	--	6.70	5.15
Other	1.95	1.60	2.75	2.30
Total Harvesting	\$18.70	\$14.00	\$35.15	\$26.90
<u>Interest on Operating Capital</u>	11.55	6.90	7.95	4.75
<u>Management Charge</u>	14.65	14.65	13.75	12.35
<u>Labor</u>	30.70	26.40	38.10	32.80
TOTAL VARIABLE EXPENSES	\$206.30	\$168.50	\$162.40	\$132.55
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$298.60	\$235.30	\$224.15	\$177.95
RETURN TO LAND				
(less property tax)	(-)\$6.05	\$57.25	\$50.80	\$68.85
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$60.75		
Property Tax		-10.55		
RETURN TO LAND		\$50.20		

SOIL GROUP 2
6 CORN - 4 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	17.4	17.4	3.6	3.6
Price (\$/ton)	15.90	15.90	70.95	63.70
Value of Production	<u>\$276.65</u>	<u>\$276.65</u>	<u>\$255.40</u>	<u>\$229.30</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	9.10	7.55
Fertilizer				
Nitrogen	27.20	20.15	0.00	0.00
Phosphorus	16.80	13.95	12.60	10.45
Potassium	9.60	7.60	21.60	17.05
Custom Application	5.25	4.10	0.00	0.00
Lime	---	---	---	---
Chemicals	24.10	21.95	3.25	2.95
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	2.40	1.70
Repair & Maintenance	5.45	4.45	1.20	1.00
Other	2.65	2.20	3.60	3.00
Total Growing	<u>\$117.00</u>	<u>\$94.75</u>	<u>\$53.75</u>	<u>\$43.70</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	10.90	7.65	13.50	9.45
Repair & Maintenance	5.55	4.55	12.20	10.00
Twine	---	---	6.20	4.75
Other	1.95	1.60	2.75	2.30
Total Harvesting	<u>\$18.40</u>	<u>\$13.80</u>	<u>\$34.65</u>	<u>\$26.50</u>
<u>Interest on Operating Capital</u>	10.45	6.20	6.85	4.00
<u>Management Charge</u>	13.85	13.85	12.75	11.45
<u>Labor</u>	<u>30.20</u>	<u>25.95</u>	<u>37.10</u>	<u>31.95</u>
TOTAL VARIABLE EXPENSES	\$189.90	\$154.55	\$145.10	\$117.60
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$282.20	\$221.35	\$206.85	\$163.00
RETURN TO LAND				
(less property tax)	(-)\$5.55	\$55.30	\$48.55	\$66.30
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$59.70		
Property Tax		<u>-10.35</u>		
RETURN TO LAND		\$49.35		

SOIL GROUP 2
6 CORN - 4 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	17.4	17.4	3.6	3.6
Price (\$/ton)	15.90	15.90	70.95	63.70
Value of Production	<u>\$276.65</u>	<u>\$276.65</u>	<u>\$255.40</u>	<u>\$229.30</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	9.10	7.55
Fertilizer				
Nitrogen	27.20	20.15	0.00	0.00
Phosphorus	16.80	13.95	12.60	10.45
Potassium	9.60	7.60	21.60	17.05
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	24.10	21.95	3.25	2.95
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	2.40	1.70
Repair & Maintenance	5.45	4.45	1.20	1.00
Other	2.65	2.20	3.60	3.00
Total Growing	<u>\$128.25</u>	<u>\$104.65</u>	<u>\$65.00</u>	<u>\$53.60</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	10.90	7.65	13.50	9.45
Repair & Maintenance	5.55	4.55	12.20	10.00
Twine	--	--	6.20	4.75
Other	1.95	1.60	2.75	2.30
Total Harvesting	<u>\$18.40</u>	<u>\$13.80</u>	<u>\$34.65</u>	<u>\$26.50</u>
<u>Interest on Operating Capital</u>	11.35	6.80	7.70	4.60
<u>Management Charge</u>	13.85	13.85	12.75	11.45
<u>Labor</u>	<u>30.20</u>	<u>25.95</u>	<u>37.10</u>	<u>31.95</u>
TOTAL VARIABLE EXPENSES	\$202.05	\$165.05	\$157.20	\$128.10
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$294.35	\$231.85	\$218.95	\$173.50
RETURN TO LAND				
(less property tax)	(-)\$17.70	\$44.80	\$36.45	\$55.80
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$49.20		
Property Tax		<u>-8.55</u>		
RETURN TO LAND		\$40.65		

SOIL GROUP 3
5 CORN - 5 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	16.1	16.1	3.3	3.3
Price (\$/ton)	15.90	15.90	70.95	63.70
Value of Production	\$256.00	\$256.00	\$234.15	\$210.20
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	7.30	6.05
Fertilizer				
Nitrogen	24.00	17.75	0.00	0.00
Phosphorus	16.80	13.95	12.30	10.25
Potassium	9.60	7.60	17.30	13.65
Custom Application	5.25	4.10	0.00	0.00
Lime	--	--	--	--
Chemicals	22.95	20.90	3.10	2.80
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	1.50	1.05
Repair & Maintenance	5.40	4.40	0.80	0.65
Other	2.65	2.20	2.20	1.85
Total Growing	\$112.60	\$91.25	\$44.50	\$36.30
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	10.50	7.35	13.50	9.45
Repair & Maintenance	5.40	4.40	12.20	10.00
Twine	--	--	5.45	4.20
Other	1.95	1.60	2.75	2.30
Total Harvesting	\$17.85	\$13.35	\$33.90	\$25.95
<u>Interest on Operating Capital</u>	10.10	6.00	6.05	3.55
<u>Management Charge</u>	12.80	12.80	11.70	10.50
<u>Labor</u>	29.70	25.55	35.65	30.65
TOTAL VARIABLE EXPENSES	\$183.05	\$148.95	\$131.80	\$106.95
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES (less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$275.35	\$215.75	\$193.55	\$152.35
RETURN TO LAND (less property tax)	(-)\$19.35	\$40.25	\$40.60	\$57.85
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$49.05		
Property Tax		-8.50		
RETURN TO LAND		\$40.55		

SOIL GROUP 3
5 CORN - 5 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	16.1	16.1	3.3	3.3
Price (\$/ton)	15.90	15.90	70.95	63.70
Value of Production	\$256.00	\$256.00	\$234.15	\$210.20
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	7.30	6.05
Fertilizer				
Nitrogen	24.00	17.75	0.00	0.00
Phosphorus	16.80	13.95	12.30	10.25
Potassium	9.60	7.60	17.30	13.65
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	22.95	20.90	3.10	2.80
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	1.50	1.05
Repair & Maintenance	5.40	4.40	0.80	0.65
Other	2.65	2.20	2.20	1.85
Total Growing	\$123.85	\$101.15	\$55.75	\$46.20
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	10.50	7.35	13.50	9.45
Repair & Maintenance	5.40	4.40	12.20	10.00
Twine	--	--	5.45	4.20
Other	1.95	1.60	2.75	2.30
Total Harvesting	\$17.85	\$13.35	\$33.90	\$25.95
<u>Interest on Operating Capital</u>	10.95	6.55	6.95	4.15
<u>Management Charge</u>	12.80	12.80	11.70	10.50
<u>Labor</u>	29.70	25.55	35.65	30.65
TOTAL VARIABLE EXPENSES	\$195.15	\$159.40	\$143.95	\$117.45
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$287.45	\$226.20	\$205.70	\$162.85
RETURN TO LAND				
(less property tax)	(-) \$31.45	\$29.80	\$28.45	\$47.35
<hr style="border-top: 1px dashed black;"/>				
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$38.55		
Property Tax		-6.70		
RETURN TO LAND		\$31.85		

SOIL GROUP 4
5 CORN - 5 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	14.4	14.4	2.9	2.9
Price (\$/ton)	15.90	15.90	69.70	62.45
Value of Production	<u>\$228.95</u>	<u>\$228.95</u>	<u>\$202.15</u>	<u>\$181.10</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	7.30	6.05
Fertilizer				
Nitrogen	24.00	17.75	0.00	0.00
Phosphorus	16.80	13.95	12.30	10.25
Potassium	9.60	7.60	17.30	13.65
Custom Application	5.25	4.10	0.00	0.00
Lime	--	--	--	--
Chemicals	22.95	20.90	3.10	2.80
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	1.50	1.05
Repair & Maintenance	5.40	4.40	0.80	0.65
Other	<u>2.65</u>	<u>2.20</u>	<u>2.20</u>	<u>1.85</u>
Total Growing	\$112.60	\$91.25	\$44.50	\$36.30
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	9.75	6.80	11.15	7.80
Repair & Maintenance	5.35	4.35	8.45	6.90
Twine	--	--	4.55	3.50
Other	<u>1.95</u>	<u>1.60</u>	<u>2.75</u>	<u>2.30</u>
Total Harvesting	\$17.05	\$12.75	\$26.90	\$20.50
<u>Interest on Operating Capital</u>	10.00	5.95	5.50	3.25
<u>Management Charge</u>	11.45	11.45	10.10	9.05
<u>Labor</u>	<u>29.20</u>	<u>25.10</u>	<u>27.25</u>	<u>23.40</u>
TOTAL VARIABLE EXPENSES	\$180.30	\$146.50	\$114.25	\$92.50
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES (less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$272.60	\$213.30	\$176.00	\$137.90
RETURN TO LAND (less property tax)	(-)\$43.65	\$15.65	\$26.15	\$43.20
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$29.40		
Property Tax		<u>-5.10</u>		
RETURN TO LAND		\$24.30		

SOIL GROUP 4
5 CORN - 5 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	14.4	14.4	2.9	2.9
Price (\$/ton)	15.90	15.90	69.70	62.45
Value of Production	\$228.95	\$228.95	\$202.15	\$181.10
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	7.30	6.05
Fertilizer				
Nitrogen	24.00	17.75	0.00	0.00
Phosphorus	16.80	13.95	12.30	10.25
Potassium	9.60	7.60	17.30	13.65
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	22.95	20.90	3.10	2.80
Power & Equipment				
Fuel, Oil & Grease	8.75	6.10	1.50	1.05
Repair & Maintenance	5.40	4.40	0.80	0.65
Other	2.65	2.20	2.20	1.85
Total Growing	\$123.85	\$101.15	\$55.75	\$46.20
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	9.75	6.80	11.15	7.80
Repair & Maintenance	5.35	4.35	8.45	6.90
Twine	--	--	4.55	3.50
Other	1.95	1.60	2.75	2.30
Total Harvesting	\$17.05	\$12.75	\$26.90	\$20.50
<u>Interest on Operating Capital</u>	10.90	6.55	6.40	3.80
<u>Management Charge</u>	11.45	11.45	10.10	9.05
<u>Labor</u>	29.20	25.10	27.25	23.40
TOTAL VARIABLE EXPENSES	\$192.45	\$157.00	\$126.40	\$102.95
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$284.75	\$223.80	\$188.15	\$148.35
RETURN TO LAND				
(less property tax)	(-)\$55.80	\$5.15	\$14.00	\$32.75
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$18.95		
Property Tax		-3.30		
RETURN TO LAND		\$15.65		

SOIL GROUP 5
4 CORN - 6 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	13.3	13.3	2.7	2.7
Price (\$/ton)	15.90	15.90	67.00	60.15
Value of Production	\$211.45	\$211.45	\$180.90	\$162.40
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	6.75	5.60
<u>Fertilizer</u>				
Nitrogen	19.20	14.20	0.00	0.00
Phosphorus	16.80	13.95	9.80	8.15
Potassium	9.60	7.60	9.60	7.60
Custom Application	5.25	4.10	0.00	0.00
Lime	--	--	--	--
Chemicals	21.25	19.35	0.60	0.55
<u>Power & Equipment</u>				
Fuel, Oil & Grease	9.05	6.35	1.25	0.85
Repair & Maintenance	5.65	4.65	0.65	0.55
Other	2.65	2.20	1.85	1.55
Total Growing	\$106.65	\$86.65	\$30.50	\$24.85
<u>Harvesting</u>				
<u>Power & Equipment</u>				
Fuel, Oil & Grease	9.75	6.80	11.65	8.15
Repair & Maintenance	5.40	4.40	8.80	7.25
Twine	--	--	4.10	3.15
Other	1.95	1.60	2.75	2.30
Total Harvesting	\$17.10	\$12.80	\$27.30	\$20.85
<u>Interest on Operating Capital</u>	9.55	5.70	4.45	2.60
<u>Management Charge</u>	10.55	10.55	9.05	8.10
<u>Labor</u>	28.70	24.70	26.25	22.55
TOTAL VARIABLE EXPENSES	\$172.55	\$140.40	\$97.55	\$78.95
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES (less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$264.85	\$207.20	\$159.30	\$124.35
RETURN TO LAND				
(less property tax)	(-) \$53.40	\$4.25	\$21.60	\$38.05
<hr style="border-top: 1px dashed black;"/>				
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$24.55		
Property Tax		-4.25		
RETURN TO LAND		\$20.30		

SOIL GROUP 5
4 CORN - 6 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	13.3	13.3	2.7	2.7
Price (\$/ton)	15.90	15.90	67.00	60.15
Value of Production	<u>\$211.45</u>	<u>\$211.45</u>	<u>\$180.90</u>	<u>\$162.40</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	6.75	5.60
Fertilizer				
Nitrogen	19.20	14.20	0.00	0.00
Phosphorus	16.80	13.95	9.80	8.15
Potassium	9.60	7.60	9.60	7.60
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	21.25	19.35	0.60	0.55
Power & Equipment				
Fuel, Oil & Grease	9.05	6.35	1.25	0.85
Repair & Maintenance	5.65	4.65	0.65	0.55
Other	2.65	2.20	1.85	1.55
Total Growing	<u>\$117.90</u>	<u>\$96.55</u>	<u>\$41.75</u>	<u>\$34.75</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	9.75	6.80	11.65	8.15
Repair & Maintenance	5.40	4.40	8.80	7.25
Twine	--	--	4.10	3.15
Other	1.95	1.60	2.75	2.30
Total Harvesting	<u>\$17.10</u>	<u>\$12.80</u>	<u>\$27.30</u>	<u>\$20.85</u>
<u>Interest on Operating Capital</u>	10.45	6.25	5.35	3.20
<u>Management Charge</u>	10.55	10.55	9.05	8.10
<u>Labor</u>	28.70	24.70	26.25	22.55
TOTAL VARIABLE EXPENSES	\$184.70	\$150.85	\$109.70	\$89.45
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	6.40	4.95	6.40	4.95
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$277.00	\$217.65	\$171.45	\$134.85
RETURN TO LAND				
(less property tax)	(-)\$65.55	(-)\$6.20	\$9.45	\$27.55
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$14.05		
Property Tax		<u>-2.45</u>		
RETURN TO LAND		\$11.60		

SOIL GROUP 6
3 CORN - 7 HAY
High Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	11.3	11.3	2.2	2.2
Price (\$/ton)	15.90	15.90	61.65	55.30
Value of Production	<u>\$179.65</u>	<u>\$179.65</u>	<u>\$135.65</u>	<u>\$121.65</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	5.75	4.80
Fertilizer				
Nitrogen	16.00	11.85	1.35	1.00
Phosphorus	16.80	13.95	9.60	7.95
Potassium	9.60	7.60	8.90	7.05
Custom Application	5.25	4.10	0.00	0.00
Lime	--	--	--	--
Chemicals	18.35	16.70	0.50	0.45
Power & Equipment				
Fuel, Oil & Grease	9.05	6.35	1.25	0.85
Repair & Maintenance	5.65	4.65	0.65	0.55
Other	2.65	2.20	1.85	1.55
Total Growing	<u>\$100.55</u>	<u>\$81.65</u>	<u>\$29.85</u>	<u>\$24.20</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	9.10	6.40	6.95	4.85
Repair & Maintenance	5.05	4.15	5.25	4.30
Twine	--	--	3.40	2.60
Other	1.95	1.60	2.75	2.30
Total Harvesting	<u>\$16.10</u>	<u>\$12.15</u>	<u>\$18.35</u>	<u>\$14.05</u>
Interest on Operating Capital	9.00	5.35	3.70	2.20
Management Charge	9.00	9.00	6.80	6.10
Labor	<u>28.20</u>	<u>24.25</u>	<u>20.30</u>	<u>17.45</u>
TOTAL VARIABLE EXPENSES	\$162.85	\$132.40	\$79.00	\$64.00
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$255.15	\$199.20	\$140.75	\$109.40
RETURN TO LAND				
(less property tax)	(-)\$75.50	(-)\$19.55	(-)\$5.10	\$12.25
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		\$2.70		
Property Tax		<u>- .45</u>		
RETURN TO LAND		\$2.25		

SOIL GROUP 6
3 CORN - 7 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	11.3	11.3	2.2	2.2
Price (\$/ton)	15.90	15.90	61.65	55.30
Value of Production	<u>\$179.65</u>	<u>\$179.65</u>	<u>\$135.65</u>	<u>\$121.65</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	5.75	4.80
Fertilizer				
Nitrogen	16.00	11.85	1.35	1.00
Phosphorus	16.80	13.95	9.60	7.95
Potassium	9.60	7.60	8.90	7.05
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	18.35	16.70	0.50	0.45
Power & Equipment				
Fuel, Oil & Grease	9.05	6.35	1.25	0.85
Repair & Maintenance	5.65	4.65	0.65	0.55
Other	2.65	2.20	1.85	1.55
Total Growing	<u>\$111.80</u>	<u>\$91.55</u>	<u>\$41.10</u>	<u>\$34.10</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	9.10	6.40	6.95	4.85
Repair & Maintenance	5.05	4.15	5.25	4.30
Twine	--	--	3.40	2.60
Other	1.95	1.60	2.75	2.30
Total Harvesting	<u>\$16.10</u>	<u>\$12.15</u>	<u>\$18.35</u>	<u>\$14.05</u>
<u>Interest on Operating Capital</u>	9.90	5.95	4.60	2.75
<u>Management Charge</u>	9.00	9.00	6.80	6.10
<u>Labor</u>	<u>28.20</u>	<u>24.25</u>	<u>20.30</u>	<u>17.45</u>
TOTAL VARIABLE EXPENSES	\$175.00	\$142.90	\$91.15	\$74.45
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$267.30	\$209.70	\$152.90	\$119.85
RETURN TO LAND				
(less property tax)	(-)\$87.65	(-)\$30.05	(-)\$17.25	\$1.80
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		(-)\$7.75		
Property Tax		<u>-0.00</u>		
RETURN TO LAND		\$0.00		

SOIL GROUP 7
2 CORN - 8 HAY
Low Lime

	Corn		Hay	
	1981	1977-1981	1981	1977-1981
INCOME				
Yield (tons/acre)	9.7	9.7	1.6	1.6
Price (\$/ton)	15.90	15.90	58.95	52.90
Value of Production	<u>\$154.25</u>	<u>\$154.25</u>	<u>\$94.30</u>	<u>\$84.65</u>
VARIABLE EXPENSES				
<u>Growing</u>				
Seed	17.20	14.25	5.05	4.20
Fertilizer				
Nitrogen	9.60	7.10	2.40	1.80
Phosphorus	16.80	13.95	9.45	7.85
Potassium	9.60	7.60	8.40	6.65
Custom Application	5.25	4.10	0.00	0.00
Lime	11.25	9.90	11.25	9.90
Chemicals	18.05	16.45	0.45	0.40
Power & Equipment				
Fuel, Oil & Grease	9.35	6.55	1.00	0.70
Repair & Maintenance	5.85	4.80	0.50	0.40
Other	<u>2.65</u>	<u>2.20</u>	<u>1.35</u>	<u>1.15</u>
Total Growing	<u>\$105.60</u>	<u>\$86.90</u>	<u>\$39.85</u>	<u>\$33.05</u>
<u>Harvesting</u>				
Power & Equipment				
Fuel, Oil & Grease	8.80	6.15	7.20	5.05
Repair & Maintenance	4.95	4.05	4.95	4.05
Twine	--	--	2.65	2.05
Other	<u>1.95</u>	<u>1.60</u>	<u>2.75</u>	<u>2.30</u>
Total Harvesting	<u>\$15.70</u>	<u>\$11.80</u>	<u>\$17.55</u>	<u>\$13.45</u>
<u>Interest on Operating Capital</u>	9.35	5.65	4.45	2.65
<u>Management Charge</u>	7.70	7.70	4.70	4.25
<u>Labor</u>	<u>27.70</u>	<u>23.85</u>	<u>17.35</u>	<u>14.90</u>
TOTAL VARIABLE EXPENSES	\$166.05	\$135.90	\$83.90	\$68.30
FIXED EXPENSES				
Power & Equipment	85.90	61.85	55.35	40.45
Machinery Storage	<u>6.40</u>	<u>4.95</u>	<u>6.40</u>	<u>4.95</u>
TOTAL FIXED EXPENSES				
(less property tax)	\$92.30	\$66.80	\$61.75	\$45.40
TOTAL EXPENSES	\$258.35	\$202.70	\$145.65	\$113.70
RETURN TO LAND				
(less property tax)	(-)\$104.10	(-)\$48.45	(-)\$51.35	(-)\$29.05
ROTATION WEIGHTED AVERAGE RETURN				
TO LAND, 1977-1981 Average		(-)\$32.95		
Property Tax		<u>- 0.00</u>		
RETURN TO LAND		\$ 0.00		

SOIL GROUP 8
PASTURE
Low Lime

	Pasture	
	1981	1977-1981
INCOME		
Yield (tons/acre)	1.0	1.0
Price (\$/ton)	56.30	50.50
Value of Production	<u>\$56.30</u>	<u>\$50.50</u>
VARIABLE EXPENSES		
<u>Growing</u>		
Seed	4.05	3.35
Fertilizer		
Nitrogen	8.65	6.40
Phosphorus	9.25	7.65
Potassium	5.30	4.15
Custom Application	--	--
Lime	11.25	9.90
Chemicals	0.35	0.30
Power & Equipment		
Fuel, Oil & Grease	0.80	0.55
Repair & Maintenance	0.40	0.30
Other	<u>1.10</u>	<u>0.90</u>
Total Growing	\$41.15	\$33.50
<u>Harvesting</u>		
Power & Equipment		
Fuel, Oil & Grease	--	--
Repair & Maintenance	--	--
Twine	--	--
Other	<u>--</u>	<u>--</u>
Total Harvesting	\$0.00	\$0.00
<u>Interest on Operating Capital</u>	3.20	1.90
<u>Management Charge</u>	2.80	2.50
<u>Labor</u>	<u>4.95</u>	<u>4.25</u>
TOTAL VARIABLE EXPENSES	\$52.10	\$42.15
FIXED EXPENSES		
Power & Equipment	12.00	8.75
Machinery Storage	6.40	4.95
Fence	<u>1.85</u>	<u>1.40</u>
TOTAL FIXED EXPENSES		
(less property tax)	\$20.25	\$15.10
TOTAL EXPENSES	\$72.35	\$57.25
RETURN TO LAND		
(less property tax)	(-)\$16.05	(-)\$6.75
<hr/>		
ROTATION WEIGHTED AVERAGE RETURN		
TO LAND, 1977-1981 Average		(-)\$6.75
Property Tax		<u>-0.00</u>
RETURN TO LAND		\$0.00