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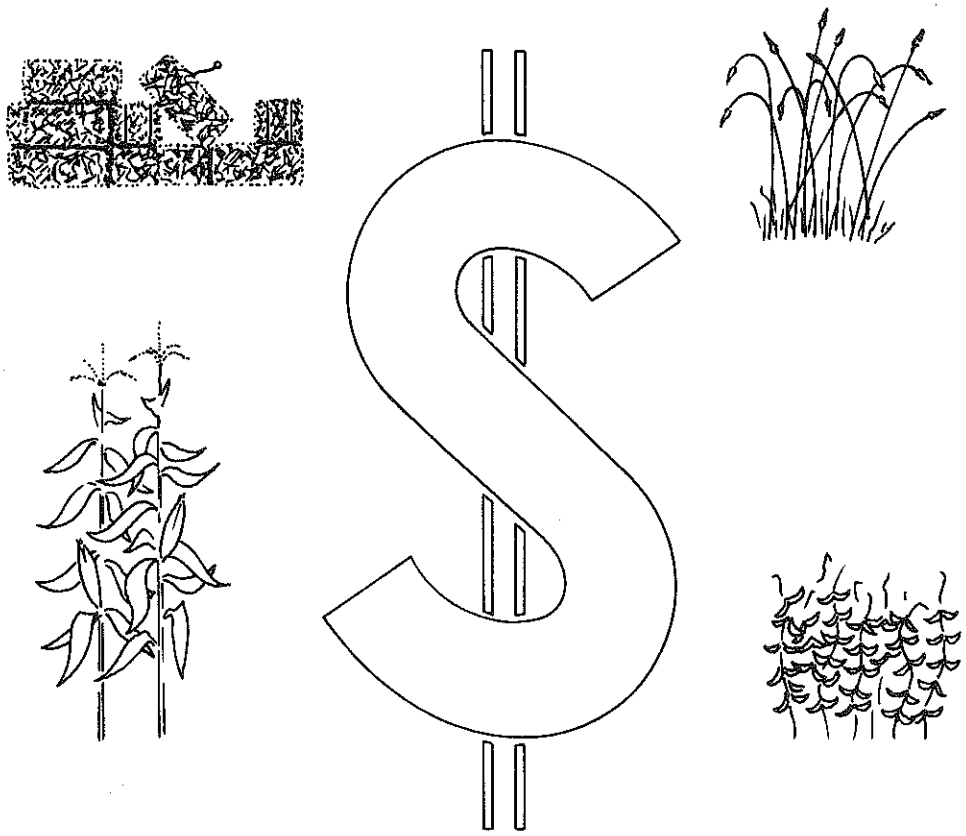
AN ECONOMIC ANALYSIS OF NEW YORK FIELD CROP ENTERPRISES



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FOREWORD

This publication is an update of the field crops portion of A. E. Research 78-1, "An Economic Analysis of New York Dairy Farm Enterprises". Contained herein are detailed budgets for selected field crop enterprises grown in New York State, including forage crops and grain crops for livestock feed and crops for cash sale. A companion publication, "An Economic Analysis of New York Dairy and Beef Enterprises", replaces the remaining portion of A. E. Research 78-1. Contained in the dairy and beef enterprise publication are enterprise budgets for dairy cows and heifers and dairy and traditional beef breed steers. Separate publications for field crop and dairy and beef enterprises have been written to facilitate users interested only in field crop production or dairy and beef production and to reduce the size of the publication.

ACKNOWLEDGEMENTS

The authors wish to again acknowledge those who provided valuable data and critiques of earlier versions of this publication.

Within the Department of Agronomy at Cornell University, Wayne Knapp is acknowledged for his matching of fertilizer and herbicide recommendations with expected yields for grain crops, sunflowers, dry beans and corn silage; Robert Seaney for a similar effort in respect to hay crops and Stuart Klausner for assistance in determining lime requirements.

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The authors also wish to acknowledge the contributions of Linda Putnam. Linda efficiently completed many of the clerical functions as well as typing the publication.

As always, any remaining errors or omissions are the responsibility of the authors.

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INTRODUCTION

The profitability of a farm business is determined by many production and management factors. Perhaps the most elusive of these factors is business management. In order to better manage and improve the profitability of a business, a manager must use many tools to assist in the planning, organizing and controlling a business. One tool, and a very powerful tool, that can assist in determining business strengths and weaknesses and in planning the organization and operation of the business is enterprise analysis. Enterprise analysis involves examining the parts which comprise the business and analyzes the interactions between them. With a farm business, the parts of the business are the various crop and livestock enterprises. Enterprise analysis initially involves viewing each crop and livestock activity as a separate unit with their respective receipts, expenses and labor requirements. Thus, rather than scrutinizing only the total farm business, the emphasis is placed on managing forage and grain production enterprises, livestock enterprises, cash crop enterprises and the interactions between enterprises. By examining receipts, expenses and labor requirements for each enterprise in the farm business, the strengths and weaknesses of a particular farm can be brought into sharper focus.

Because no two farms have identical resources available, the resulting most profitable combination of enterprises will be unique to each farm. The impact on the business of changes such as adding or deleting an enterprise, increasing rates of production, or altering the level of an enterprise is determined specifically for that farm.

The objective of this publication is to provide a data base to assist New York farmers in analyzing field crop enterprises. Enterprise budgets for selected New York field crops are presented and discussed on pages 11 through 46. These budgets are useful for cash crop and livestock farms in New York as well as other states, particularly in the Northeast. Because resources and cost structures in many areas of the Northeast are similar to New York, a budget constructed for other areas of the Northeast would be very similar to the budgets in this publication.

Purpose

The purpose of this publication is to assist farmers in comparing alternatives. There are two specific means for using the budgets when comparing alternatives.

The first is through a NEWPLAN computer assisted decision aid. The data contained in these budgets are stored in data files for use in NEWPLAN Programs 65 and 36. Program 65, Profitable Organization of Dairy Farm Enterprises, is a linear programming model used to more profitably select enterprises and enterprise levels on dairy farms. Program 36, Financial Long-Rnage Whole Farm Budgeting, analyzes the long-run economic cash flow consequences of proposed changes in the operation of a dairy farm.

This budget data can also be used when determining crop inputs for NEWPLAN Program 18, Profitable Combination of Cash Crop Enterprises, and when budgeting a change in cropping program in NEWPLAN Program 50, Major Capital Investment.

The second purpose is to be of assistance in conventional budgeting. Specific items from an enterprise budget or an entire enterprise budget can be used in the budgeting process. Variable costs and some or all of the fixed costs can be used depending on the budgeting objective.

Construction Procedure

The crop enterprise budgets in this publication are constructed using the economic engineering approach. Prices and costs which existed during 1979 are related to a specified land base and corresponding building and machinery complement. The land base consists of 500 tillable acres, with 100 acres each of hay crop, corn silage, corn grain for feed, a row cash crop and a non-row cash crop. For each crop a machinery complement is specified that is also consistent with the total land base and machinery complement for the farm.

Budgets are presented for one or more yield levels for each crop enterprise. The number of yield levels budgeted per crop depends on farm to farm yield variability and upon the importance of the enterprise in New York State. The yield levels for each crop were chosen independent of the yield levels of other crops so that a "high" production level for one crop is not necessarily equivalent to a "high" production level for another crop. Fixed costs are calculated for the machinery complement necessary for each crop and for a land value appropriate for the yield level specified. Variable costs are determined for the machinery complement and for production inputs required of each specified yield level.

For those crops to be fed, the enterprise budgets include all costs associated with moving the crop into storage. The costs associated with feed storage are charged to livestock enterprises and are included in the dairy enterprise budgets in "An Economic Analysis of New York Dairy and Beef Enterprises". For cash crops, the crop enterprise budgets include selling costs. Cash crop prices and costs are for sale at harvest.

The use of 500 acres does not imply that the budget should be discarded for farms with other than 500 acres. In many situations, the variable costs will not vary significantly as acreages change. The farmer using these crop enterprise budgets should check his machinery complement, seeding, liming and fertilizer rates against those used to construct the budgets. In situations with different circumstances, adjustments may have to be made in variable expenses and/or labor hours spent per crop acre. In terms of fixed costs, the base farm is not as specialized as it may appear because five enterprises are included. Again, in situations with very different circumstances, appropriate machinery complements can be specified and the associated fixed costs determined. The enterprise budgets in this publication then, are best used as a "starting point" for constructing one's own enterprise budgets.

Sources of Data

Many sources of data have been used in the construction of the budgets. Crop seeding, fertilization and herbicide application rates are taken from Cornell Recommends for Field Crops[1/] with assistance from Wayne R. Knapp, Stuart D. Klausner and Robert R. Seaney of the Cornell Department of Agronomy. Joseph K. Campbell, Department of Agricultural Engineering, Cornell University, provided estimates of field crop machinery costs. Many commercial agricultural suppliers provided 1979 prices on crop inputs such as seed, fertilizer, herbicide and lime.

Suggestions for Use

The crop enterprise budgets can be used for farm analysis and planning in many ways. Three general suggestions are offered. The first is as a reference for use in day to day decisions, partial budgeting or simply for informational purposes.

The second use is for the yearly planning of crop acreage combinations. Variable cost sections of these enterprise budgets can be used as a guideline or a starting point. Adjustments on various variable expenses can then be made to better represent conditions on a particular farm. The adjusted budgets can then be analyzed with NEWPLAN Program 65. NEWPLAN Program 18, Profitable Combination of Cash Crop Enterprises, also utilizes variable cost information from crop enterprise budgets. Both computer programs can be invaluable assets in determining a more profitable combination of farm enterprises.

The third suggested use is for budgeting expansion alternatives. The enterprise budgets, including all or part of the fixed costs, can again be used as a starting point. The budgets can then be adjusted to better represent the resources available and the alternative being budgeted. The final budgets can be used to help determine whether expansion should be undertaken and/or which alternative expansion plan should be implemented. NEWPLAN Program 36, Financial Long-Range Whole Farm Budgeting, and NEWPLAN Program 50, Major Capital Investment Program, can be used to complement the budgets when considering and planning expansion.

Limitations of Use

If assumptions used in constructing a budget do not reflect a particular situation, the budget probably will not be accurate for that situation. As indicated above, it is unlikely the budget will completely reflect a given farm situtation without at least minor adjustments. As the fixed costs of machinery and storage are based on 1979 prices, they should be viewed as estimates of costs for new purchases. They should not be interpreted as average cost of any technology or of all technologies. If a different technology is used from that assumed in this publication, large variations in fixed costs could occur. Even with a given technology, investment costs can be much different.

[1/] Cornell Recommends for Field Crops, 1980, New York State College of Agriculture and Life Sciences, Cornell University, Ithaca, New York.

Care must be exercised in using the enterprise budgets, for they are only one estimate of costs and returns. They are not designed to represent average New York State conditions; instead they represent a specific set of conditions specified in the footnotes and accompanying tables. It is difficult for a user to compare his situation with an "average" so that he can make necessary adjustments. With a specified set of conditions, the user has a basis for comparison. The user should compare his conditions with those assumed in the budgets. Whenever the farm situation differs significantly from the assumed conditions, the budgeted values must be critically analyzed and often changed.

Product Prices and Input Costs

The same input and output prices are used throughout this publication (Table 1). In general, the prices are an estimate of the average price paid or received by New York farmers in 1979; however, some qualifications and adjustments are necessary. For those items that exhibited large or unexpected price changes late in the year, the price used will be under the 1979 average.

Format of Field Crop Enterprise Budgets

The purpose of this section is to describe in more detail the format used in the crop enterprise budgets. The top headings describe the enterprise, indicate the yield level and provide the enterprise number for use in NEWPLAN programs. The enterprise budget information is provided in the following five categories:

INCOME
VARIABLE EXPENSES
FIXED EXPENSES
TOTAL VARIABLE AND FIXED EXPENSES
FEED EQUIVALENT PRODUCED

Four items are presented in the INCOME section: (1) yield per acre, (2) price, (3) value of production and (4) gross income (off-farm sales). Yield per acre, in the indicated unit of measure, is the quantity harvested. The price is the amount that could be received for the product if it were to be sold at harvest. The value of production is yield multiplied by price and results in the gross value of the production. When produce from the crop enterprise is used to feed livestock on the same farm, its contribution to farm income is indirect through the livestock enterprises and the gross income from off-farm sales is zero. For cash crops, the value of production and gross income are identical.

The VARIABLE EXPENSES are separated into growing, harvesting, selling, interest on operating expenses and family and hired labor. Growing expenses include the input costs and variable costs associated with tillage. Harvesting costs include the variable costs associated with harvest and the variable costs associated with moving feed crops to storage. Selling costs

Table 1. Product Prices and Input Costs.

PRICES

Grain and Cash Crops	Dollars	Forage Crops	Dollars
Corn Grain (bu.)	$ 2.70	Dry Hay (T.)	$55.00
Wheat (bu.)	4.00	Hay Crop Silage (T.)	23.30
Oats (bu.)	1.35	Corn Silage (T.)	18.30
Barley (bu.)	1.70	Corn Silage + NPN (T.)	19.50
Rye (bu.)	1.50		
Soybeans (bu.)	6.30		
Red Kidney Beans (cwt.)	20.00		
Black Turtle Soup Beans (cwt.)	17.00		
Sunflowers (lb.)	0.12		

COSTS

Fertilizer	Dollars	Herbicides/Chemicals	Dollars
Nitrogen (lb.)	$ 0.23	Atrazine 80W (gal.)	$11.50
Phosphorus (lb.)	0.22	Eptam 7E (gal.)	24.65
Potassium (lb.)	0.13	Furadan (10% granular) (lb.)	0.92
Seed		Lasso (gal.)	17.00
		Methoxychlor (gal.)	10.15
Alfalfa (lb.)	2.45	Premerge (gal.)	11.45
Bromegrass (lb.)	1.10	Treflan (gal.)	32.95
Corn (80,000 ker.)	55.00	2,4-D (gal.)	9.75
Wheat (bu.)	7.70	Paraquat (gal.)	39.20
Oats (bu.)	4.00		
Soybeans (bu.)	12.75	Miscellaneous Costs	
Rye (bu.)	6.20	Twine (9000 ft. bale)	12.00
Barley (bu.)	6.40		
Red Kidney Beans (lb.)	0.40	Fencing	Each / 20 Acres[a/]
Black Turtle Soup Beans (lb.)	0.40		
Sunflowers (lb.)	1.05	Electric Fencer (non-battery)	45.00 / 45.00
Labor		Wire (heavy gauge 12; 825 ft.)	10.95 / 33.00
All labor, per hr.	4.25	Post Insulators	0.10 / 25.00
Capital		Posts (54 inch; steel adjustable)	1.55 / 195.00
Short Term	11%	Handles	1.50 / 6.00
Long Term	9%		

[a/] A 20 acre perimeter is approximately 1890 feet. Accounting for obstacles, add 33% of this distance for a total of 2510 feet. Posts are approximately 20 feet apart with two insulators per post.

include any variable costs associated with preparing the production for sale and the variable costs of transporting the crop from the farm to market. There are no selling costs associated with crops grown for feed. Interest on operating expenses is the charge for the use of the capital required for growing, harvesting and selling the crop. Operating capital is tied up for six months and the interest rate is eleven percent. The total of the above four costs represents variable expenses as required in NEWPLAN programs and referred to as total selected variable expenses. The final variable cost is family and hired labor. Labor costs are always difficult to allocate since they are both fixed and variable costs; however, for enterprise budgeting they are best included as a variable cost. The hours required per acre are indicated in parentheses to the left of the cost figure. Labor is charged at $4.25 per hour.

The FIXED EXPENSES section includes the usual fixed costs associated with owning land, buildings and equipment. A nine percent opportunity cost of capital invested in land and buildings is included. Twenty-five percent of the capital cost of the large tractor is allocated to the livestock enterprise. If land is rented or operations custom hired, appropriate changes should be made in fixed and/or variable expenses.

TOTAL VARIABLE AND FIXED EXPENSES is simply the sum of total variable expenses and total fixed expenses. This figure represents the total cost of producing one acre of the crop at the indicated yield under the specified conditions. It is not an average cost of production figure. The only expense item that is not charged is management. Value of production minus total variable and fixed expenses would be return to management.

The final section indicates the FEED EQUIVALENT PRODUCED from the enterprise. The forage crops are measured in tons of hay equivalent; the grains grown primarily for feed are measured in bushels of corn equivalent. This value is not relevant for crops grown to be sold as cash crops.

Organization of Field Crop Budgets

The crop enterprise budgets are divided into the three sections below:

Forage Crops

- Dry Hay Fed (90 percent dry matter)
- Hay Crop Silage Fed (40 percent dry matter)
- Pasture (hay equivalent)
- Oatlage (30 percent dry matter)
- Corn Silage Fed (30 percent dry matter)
- Corn Silage Fed + NPN (30 percent dry matter)

Grains Grown Primarily for Feed

- Corn Grain Fed
- Oats Fed
- Barley Fed
- Rye Fed

Crops Grown to be Sold as Cash Crops

Corn Grain Sold
Wheat Sold
Oats Sold
Soybeans Sold
Red Kidney Dry Beans Sold
Black Turtle Soup Beans Sold
Sunflowers Sold

In each section the enterprise budgets are presented first, followed by footnotes and accompanying tables, and then a discussion of some important aspects. The enterprise budgets for forages are on green colored paper; the budgets for grains fed are on maize colored paper and the cash crop budgets are on blue colored paper.

ENTERPRISE BUDGETS

FOR FORAGE CROPS

Enterprise	Dry Hay Fed		Dry Hay Fed		Dry Hay Fed		Dry Hay Fed	
Production Level	High		Above Average		Average		Low	
Enterprise Code Number	1		2		3		4	
INCOME:								
Yield Per Acre, T.		5.5		4.0		2.5		1.5
Price, $/T.		55.00		55.00		55.00		55.00
Value of Production		$302.50		$220.00		$137.50		$ 82.50
1 [a] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing [b]								
Seed:								
Alfalfa, lb.	(12)	7.35	(11)	6.75	(10)	6.10	(8)	4.90
Brome, lb.	(8)	2.20	(7)	1.95	(6)	1.65	(5)	1.40
Fertilizer:								
Nitrogen, lb.		0.00		0.00		0.00		0.00
Phosphorus, lb.	(75)	16.50	(50)	11.00	(25)	5.50	(25)	5.50
Potassium, lb.	(100)	13.00	(75)	9.75	(50)	6.50	(30)	3.90
Lime [c]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals [d]		8.55		8.55		0.95		0.00
Power and Equipment:								
Fuel, Oil, Grease		1.05		1.05		0.95		0.80
Repairs & Maintenance		0.65		0.65		0.50		0.40
Other		2.30		2.30		2.10		1.90
Total Growing Cost		$ 58.90		$ 49.30		$ 31.55		$ 26.10
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		8.15		7.75		6.40		4.80
Repairs & Maintenance		8.85		8.55		5.90		5.70
Twine [f]		6.60		4.80		3.00		1.80
Other		2.30		2.30		1.90		1.40
Total Harvesting Cost		$ 25.90		$ 23.40		$ 17.20		$ 13.70
Selling [g]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses [h]		4.65		4.00		2.70		2.20
2 Total Selected Variable Expenses		$ 89.45		$ 76.70		$ 51.45		$ 42.00
4 Family & Hired Labor, Hours [i]	(12.0)	51.00	(11.7)	49.75	(10.6)	45.05	(8)	34.00
Total Variable Expenses		$140.45		$126.45		$ 96.50		$ 76.00
FIXED EXPENSES:								
Power and Equipment [j]		38.40		38.40		38.40		38.40
Truck [k]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck) [l]		15.75		15.75		15.75		15.75
Building Use [m]		4.70		4.70		4.70		4.70
Land Charge, Value/Acre [n]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax [o]		16.65		12.95		9.25		5.55
Insurance [p]		4.10		4.10		4.10		4.10
Total Fixed Expenses		$162.10		$140.40		$118.70		$ 97.00
TOTAL VARIABLE AND FIXED EXPENSES [q]		$302.55		$266.85		$215.20		$173.00
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		0		0		0		0
6 Hay Equivalent, T.		5.5		4.0		2.5		1.5

The footnotes are on page 16 following the budgets for forages. The power and equipment complement is indicated in Table 2, page 17.

Enterprise	Hay Crop Silage Fed		Hay Crop Silage Fed		Hay Crop Silage Fed		Hay Crop Silage Fed	
Production Level	High		Above Average		Average		Low	
Enterprise Code Number	6		7		8		9	
INCOME:								
Yield Per Acre, T.		15.6		11.3		7.1		4.3
Price, $/T.		23.30		23.30		23.30		23.30
Value of Production		$363.50		$263.30		$165.40		$100.20
1 [a] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing [b]								
Seed:								
Alfalfa, lb.	(12)	7.35	(11)	6.75	(10)	6.10	(8)	4.90
Brome, lb.	(8)	2.20	(7)	1.95	(6)	1.65	(5)	1.40
Fertilizer:								
Nitrogen, lb.		0.00		0.00		0.00		0.00
Phosphorus, lb.	(75)	16.50	(50)	11.00	(25)	5.50	(25)	5.50
Potassium, lb.	(100)	13.00	(75)	9.75	(50)	6.50	(30)	3.90
Lime [c]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals [d]		8.55		8.55		0.95		0.00
Power and Equipment:								
Fuel, Oil, Grease		1.05		1.05		0.95		0.80
Repairs & Maintenance		0.65		0.65		0.50		0.40
Other		2.30		2.30		2.10		1.85
Total Growing Cost		$ 58.90		$ 49.30		$ 31.55		$ 26.05
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		19.05		17.30		13.45		11.70
Repairs & Maintenance		15.40		14.00		12.40		10.95
Other		2.30		2.30		1.85		1.45
Total Harvesting Cost		$ 36.75		$ 33.60		$ 27.70		$ 24.10
Selling [g]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses [h]		$ 5.25		$ 4.55		$ 3.25		$ 2.75
2 Total Selected Variable Expenses		$100.90		$ 87.45		$ 62.50		$ 52.90
4 Family & Hired Labor, Hours [i]	(9.0)	38.25	(8.9)	37.85	(8.1)	34.45	(7.2)	30.60
Total Variable Expenses		$139.15		$125.30		$ 96.95		$ 83.50
FIXED EXPENSES:								
Power and Equipment [j]		36.40		36.40		36.40		36.40
Truck [k]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck) [l]		14.95		14.95		14.95		14.95
Building Use [m]		4.70		4.70		4.70		4.70
Land Charge, Value/Acre [n]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax [o]		16.65		12.95		9.25		5.55
Insurance [p]		3.90		3.90		3.90		3.90
Total Fixed Expenses		$159.10		$137.40		$115.70		$ 94.00
TOTAL VARIABLE AND FIXED EXPENSES [q]		$298.25		$262.70		$212.65		$177.50
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		0		0		0		0
6 Hay Equivalent, T.		6.9		5.0		3.2		1.9

The footnotes are on page 16 following the budgets for forages. The power and equipment complement is indicated in Table 2, page 17.

Enterprise	Pasture		Pasture		Pasture		Oatlage	
Production Level	High		Average		Low		Average	
Enterprise Code Number	11		12		13		15	
INCOME:								
Yield Per Acre, T.		2.5		1.5		1.0		10
Price, $/T. (hay equivalent)		55.00		55.00		55.00		55.00
Value of Production		$137.50		$ 82.50		$ 55.00		$181.50
1 Gross Income (Off-Farm Sales) [a]		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing [b]								
Seed:								
Oats, bu.							(2.5)	10.00
Alfalfa, lb.	(8)	3.90	(8)	3.90	(8)	3.90		
Brome, lb.	(10)	2.20	(10)	2.20	(10)	2.20		
Fertilizer:								
Nitrogen, lb.	(60)	13.80	(30)	6.90	(0)	0.00	(50)	11.50
Phosphorus, lb.	(50)	11.00	(25)	5.50	(25)	5.50	(50)	11.00
Potassium, lb.	(60)	7.80	(40)	5.20	(25)	3.25	(50)	6.50
Lime [c]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals		0.00		0.00		0.00		0.00
Power and Equipment:								
Fuel, Oil, Grease		0.95		0.95		0.50		4.40
Repairs & Maintenance		0.45		0.45		0.25		2.70
Other		0.00		0.00		0.00		2.20
Total Growing Cost		$ 47.40		$ 32.40		$ 22.90		$ 55.60
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		0.00		0.00		0.00		7.30
Repairs & Maintenance		0.00		0.00		0.00		4.25
Other		0.00		0.00		0.00		2.20
Total Harvesting Cost		$ 0.00		$ 0.00		$ 0.00		$ 13.75
Selling [g]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses [h]		$ 2.60		$ 1.80		$ 1.25		$ 3.80
2 Total Selected Variable Expenses		$ 50.00		$ 34.20		$ 24.15		$ 73.15
4 Family & Hired Labor, Hours [i]	(1.5)	6.40	(1.5)	6.40	(1)	4.25	(8.9)	37.85
Total Variable Expenses		$ 56.40		$ 40.60		$ 28.40		$111.00
FIXED EXPENSES:								
Power and Equipment [j]		0.00		0.00		0.00		36.40
Truck [k]		0.00		0.00		0.00		1.50
Interest (Power, Equip., Truck) [l]		0.00		0.00		0.00		14.95
Building Use [m]		0.00		0.00		0.00		4.70
Land Charge, Value/Acre [n]	(400)	36.00	(300)	27.00	(200)	18.00	(500)	45.00
Property Tax [o]		7.40		5.55		3.70		9.25
Insurance [p]		0.00		0.00		0.00		4.00
Total Fixed Expenses		$ 43.40		$ 32.55		$ 21.70		$115.80
TOTAL VARIABLE AND FIXED EXPENSES [q]		$ 99.80		$ 73.15		$ 50.10		$226.80
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		0		0		0		0
6 Hay Equivalent, T.		2.5		1.5		1.0		3.3

The footnotes are on page 16 following the budgets for forages.

Enterprise	Corn Silage Fed		Corn Silage Fed		Corn Silage Fed		Corn Silage Fed	
Production Level	High		Above Average		Average		Low	
Enterprise Code Number	17		18		19		20	
INCOME:								
Yield Per Acre, T.		20		16		13		10
Price, $/T.		18.30		18.30		18.30		18.30
Value of Production		$366.00		$292.80		$237.90		$183.00
1[a/] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing								
Seed, 80,000 ker. unit	(.38)	20.90	(.33)	18.15	(.31)	17.05	(.29)	15.95
Fertilizer:								
Nitrogen, lb.	(120)	27.60	(80)	18.40	(60)	13.80	(40)	9.20
Phosphorus, lb.	(60)	13.20	(50)	11.00	(30)	6.60	(20)	4.40
Potassium, lb.	(70)	9.10	(60)	7.80	(50)	6.50	(30)	3.90
Lime[c/]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals[e/]		19.20		19.20		10.00		5.75
Power and Equipment:								
Fuel, Oil, Grease		5.00		5.00		4.50		4.50
Repairs & Maintenance		3.80		3.80		3.20		3.20
Other		2.20		2.20		1.65		1.65
Total Growing Cost		$108.30		$ 92.85		$ 70.60		$ 55.85
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		6.55		6.15		5.60		4.95
Repairs & Maintenance		4.05		3.80		3.75		3.35
Other		1.65		1.65		1.10		1.10
Total Harvesting Cost		$ 12.25		$ 11.60		$ 10.45		$ 9.40
Selling[g/]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses[h/]		$ 6.65		$ 5.75		$ 4.45		$ 3.60
2 Total Selected Variable Expenses		$127.20		$110.20		$ 85.50		$ 68.85
4 Family & Hired Labor, Hours[i/]	(8.5)	36.15	(8.3)	35.30	(8.0)	34.00	(7.8)	33.15
Total Variable Expenses		$163.35		$145.50		$119.50		$102.00
FIXED EXPENSES:								
Power and Equipment[j/]		35.25		35.25		35.25		35.25
Truck[k/]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck)[l/]		14.50		14.50		14.50		14.50
Building Use[m/]		4.70		4.70		4.70		4.70
Land Charge, Value/Acre[n/]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax[o/]		16.65		12.95		9.25		5.55
Insurance[p/]		3.80		3.80		3.80		3.80
Total Fixed Expenses		$157.40		$135.70		$114.00		$ 92.30
TOTAL VARIABLE AND FIXED EXPENSES[q/]		$320.75		$281.20		$233.50		$194.30
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		0		0		0		0
6 Hay Equivalent, T.		6.7		5.3		4.3		3.3

The footnotes are on page 16 following the budgets for forages. The power and equipment complement is indicated in Table 3, page 18.

Enterprise	Corn Silage Fed +NPN		Corn Silage Fed +NPN		Corn Silage Fed +NPN		Corn Silage Fed +NPN	
Production Level	High		Above Average		Average		Low	
Enterprise Code Number	22		23		24		25	
INCOME:								
Yield Per Acre, T.		20		16		13		10
Price, $/T.		19.50		19.50		19.50		19.50
Value of Production		$390.00		$312.00		$253.50		$195.00
1[a] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing								
Seed, 80,000 ker. unit	(.38)	20.90	(.33)	18.15	(.31)	17.05	(.29)	15.95
Fertilizer:								
Nitrogen, lb.	(120)	27.60	(80)	18.40	(60)	13.80	(40)	9.20
Phosphorus, lb.	(60)	13.20	(50)	11.00	(30)	6.60	(20)	4.40
Potassium, lb.	(70)	9.10	(60)	7.80	(50)	6.50	(30)	3.90
Lime[c]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals[e]		19.20		19.20		10.00		5.75
Power and Equipment:								
Fuel, Oil, Grease		5.00		5.00		4.50		4.50
Repairs & Maintenance		3.80		3.80		3.20		3.20
Other		2.20		2.20		1.65		1.65
Total Growing Cost		$108.30		$ 92.85		$ 70.60		$ 55.85
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		6.55		6.15		5.60		4.95
Repairs & Maintenance		4.05		3.80		3.75		3.35
NPN (Urea, 10 lbs./T.)		20.00		16.00		13.00		10.00
Other		1.65		1.65		1.10		1.10
Total Harvesting Cost		$ 32.25		$ 27.60		$ 23.45		$ 19.40
Selling[g]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses[h]		$ 7.75		$ 6.60		$ 5.15		$ 4.15
2 Total Selected Variable Expenses		$148.30		$127.05		$ 99.20		$ 79.40
4 Family & Hired Labor, Hours[i]	(9.0)	38.25	(8.8)	37.40	(8.5)	36.15	(8.2)	34.85
Total Variable Expenses		$186.55		$164.45		$135.35		$114.25
FIXED EXPENSES:								
Power and Equipment[j]		36.10		36.10		36.10		36.10
Truck[k]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck)[l]		14.85		14.85		14.85		14.85
Building Use[m]		4.70		4.70		4.70		4.70
Land Charge, Value/Acre[n]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax[o]		16.65		12.95		9.25		5.55
Insurance[p]		3.85		3.85		3.85		3.85
Total Fixed Expenses		$158.65		$136.95		$115.25		$ 93.55
TOTAL VARIABLE AND FIXED EXPENSES[q]		$345.20		$301.40		$250.60		$207.80
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		0		0		0		0
6 Hay Equivalent, T.		6.7		5.3		4.3		3.3

The footnotes are on page 16 following the budgets for forages. The power and equipment complement is indicated in Table 3, page 18.

FOOTNOTES TO FORAGE CROP BUDGETS

a/ The numbers in the left-hand margin are reference values stored for use with NEWPLAN Programs 36 and 65.

b/ For dry hay and hay crop silage, cash expenses for seed, seedbed preparation, etc. are prorated over an assumed four-year life of the stand. For improved pasture, these expenses are prorated over an assumed five-year life of stand.

c/ A 500-lb. application of 100% calcium carbonate (the equivalent of 770 lbs. of magnite ENV65) for non-calcareous soils. Calcareous soils generally do not require lime replacement.

d/ Premerge (1/3 qt.) and Methoxychlor (3/4 gal.) are used for high and above average production levels of hay and hay crop silage. Premerge only (1/3 qt.) is used for average yields.

e/ Furadan (10 lbs.), Lasso (1 qt.) and Atrazine (1/2 gal.) are used for high and above average production levels of corn silage. Lasso (1 qt.) and Atrazine (1/2 gal.) are used for average yields. Atrazine only (1/2 gal.) is used for low yield.

f/ A 9000 ft. bale of twine will tie 500 bales of hay. Assumes approximately 50 bales of hay per ton of hay.

g/ Storage expenses (repairs, depreciation and interest) for crops fed are charged to the dairy or other livestock enterprise.

h/ Operating capital is tied up for six months at 11 percent interest.

i/ The labor requirement estimates are based on total man-hours of labor disappearance, not on machinery use time.

j/ Depreciation is 14 percent of new cost.
For Dry Hay see Table 2, page 17.
For Hay Crop Silage see Table 2, page 17.
For Corn Silage see Table 3, page 18.

k/ A $6100 pick-up truck with depreciation at 12.5 percent of new cost.

l/ An 11 percent interest rate on one-half the new values.

m/ Depreciation and interest is 10 percent of new cost of machinery storage.

n/ Interest rate is nine percent.

o/ Property taxes are $1.85 per $100 of market value.

p/ Insurance is 1.5 percent of new cost.

q/ The total variable and fixed expense estimate is for a specific farm size and technology, with all investments at 1979 price levels. This figure does not represent the cost of producing the crop in New York State.

Table 2. Power and Equipment Complements and 1979 Investment Costs for Dry Hay and Hay Crop Silage.[a/]

	New Cost	Dry Hay		Hay Crop Silage	
		Proportion Charged to Baled Hay	Proportional Cost	Proportion Charged to Haylage	Proportional Cost
Tractor (125 hp. with cab)	$30,000	0.15	$ 4,500	0.15	$ 4,500
Tractor (60 hp.)	13,000	0.20	2,600	0.20	2,600
Plow 5-16" bottoms	6,500	0.06	390	0.06	390
Disc Harrow (14')	4,000	0.06	240	0.06	240
Spring Tooth Harrow (18')	1,900	0.06	114	0.06	114
Baler with Bale Thrower	7,200	1.00	7,200	--	--
Forage Harvester	8,700	--	--	0.50	4,350
Pick up Head	1,600	--	--	1.00	1,600
Mower-Conditioner Windrower (7')	5,400	1.00	5,400	1.00	5,400
Side Delivery Rake	1,800	1.00	1,800	1.00	1,800
Wagons 2 @ $1,250	2,500	1.00	2,500	--	--
Forage Wagons 2 @ $5,000	10,000	--	--	0.50	5,000
		Total	$24,744		$25,994
		Per Acre	$247.44		$259.94

[a/] 500 tillable acres with 100 acres each of hay crop, corn silage, corn grain for feed, a row cash crop and a non-row cash crop.

Table 3. Power and Equipment Complements and 1979 Investment Costs for Corn Silage and for Corn Grain, Soybeans and Sunflowers.[a/]

		Corn Silage[b/]		Corn Grain, Soybeans and Sunflowers	
	New Cost	Proportion Charged to Corn Silage	Proportional Cost	Proportion Charged to Corn, Soybeans & Sunflowers	Proportional Cost
Tractor (125 hp. with cab)	$30,000	0.15	$ 4,500	0.15	$ 4,500
Tractor (60 hp.)	13,000	0.20	2,600	0.20	2,600
Plow 5-16" bottoms	6,500	0.235	1,528	0.235	1,528
Planter	5,000	0.33	1,650	0.33	1,650
Disc Harrow (14')	4,000	0.235	940	0.235	940
Spring Tooth Harrow (18')	1,900	0.235	447	0.235	447
Cultivator, 4 row	2,000	0.33	660	0.33	660
Forage Harvester	8,700	0.50[c/]	4,350	--	--
2-Row Corn Head	3,500	1.00	3,500	--	--
Forage Wagons 2 @ 5,000	10,000	0.50[c/]	5,000	--	--
Combine (gasoline, cab, 4-row corn head or 13' grain head)	40,000	--	--	0.33	13,200
Grain Wagons 2 @ 1,800	3,600	--	--	0.33	1,188
		Total	$25,175		$26,713
		Per Acre	$251.75		$267.13

[a/] 500 tillable acres with 100 acres each of hay crop, corn silage, corn grain for feed, a row cash crop and a non-row cash crop.

[b/] For corn silage plus NPN add $750 to the total equipment for metering equipment.

[c/] Hay is harvested as hay crop silage; otherwise, proportion charged to corn silage would be 1.0.

FORAGE CROPS

Forage crop budgets are specifically constructed as an input into on-farm livestock production. However, if forage enterprises are being considered as cash crops, or if excess production is to be sold, these enterprise budgets can still be used. Modifications would need to be made for any additional expenses or labor required in marketing the crop. For conventional budgeting purposes, the value of production and gross income from off-farm sales figures are identical when the production is to be sold. When using NEWPLAN Program 65, Profitable Organization of Dairy Farm Enterprises, the enterprise budgets would need no change because excess forages are sold through the selling activities in the program. The six forage crops included are discussed in the following four sections: dry hay and hay crop silage, pasture, oatlage and corn silage with and without NPN.

Dry Hay and Hay Crop Silage

These budgets represent a hay crop which is a mixture of alfalfa and brome. Enough alfalfa is maintained in the stand (about 2/3 - 1/3) to harvest hay or hay crop silage with 12.6 percent protein in the dry matter (11.3 percent protein in 90% dry matter hay). A seeding is established in the spring and a hay crop is harvested that year and for three additional years. The yield per acre is the average for the four year life of the seeding. If the seeding established is alfalfa only or grass only, the cost figures and the value of production need to be altered.

The budgets for dry hay and hay crop silage are constructed for each yield level with the same quantity of hay in the field prior to cutting the crop for either hay or hay crop silage. Harvest losses of 25 percent for dry hay and 5 percent for hay crop silage were used to calculate the harvested yield per acre. Table 4 compares the yield prior to harvest loss in dry hay equivalent, harvested dry hay yield and the harvested hay crop silage yield, in "wet" tonnage and tonnage of hay equivalent.

Table 4. Yield Prior to and After Harvest for Dry Hay and Hay Crop Silage for Four Production Levels.

Production Level	Yield Prior to Harvest Loss (tons H. E.)	Dry Hay Yield Harvested (tons)	Hay Crop Silage Yield Harvested (tons)	Hay Crop Silage Yield Harvested (tons H. E.)
High	7.3	5.5	15.6	6.9
Above Average	5.3	4.0	11.3	5.0
Average	3.3	2.5	7.1	3.2
Low	2.0	1.5	4.3	1.9

The dry hay is harvested as conventional rectangular bales using the machinery complement indicated in Table 2 and stored in a conventional barn; the hay crop silage is harvested using the machinery complement also indicated in Table 2 and stored in concrete stave silos.

1. INCOME

The specified yield is the harvested yield per acre. The price per ton for dry hay is $55. This price is adjusted for the differences in moisture content and storage and feeding losses to obtain a hay crop silage price of $23.30 per ton.[1/] By multiplying the yield per acre and the price per ton, the value of farm production is obtained. Since the dry hay and hay crop silage are grown for feed, there are no off-farm sales or selling expenses.

2. VARIABLE EXPENSES

Seed and fertilizer rates correspond with Cornell Recommends for Field Crops, 1980 with fertilizer rates higher for larger yields. The remaining variable growing costs are slightly higher for larger yields.

Variable harvesting costs are primarily for operating the harvesting equipment--fuel, repairs, etc. These costs are somewhat higher for higher yields. Harvesting costs are higher for hay crop silage because of the extra equipment required.

Interest on operating expenses is charged at eleven percent interest for six months. Hours of labor required are considerably greater for dry hay and for larger yields. The variable costs will change very little as acres of hay crops change.

[1/] The dry hay is 90 percent dry matter with storage and feeding losses of 12 percent of yield before harvest. The 12 percent of yield before harvest is equivalent to 16 percent of out-of-field yield (12 percent divided by 1.0 minus harvesting loss or 12 ÷ (1 - .25) = 16). Similarly for hay crop silage the dry matter is 40 percent and storage and feeding losses for hay crop silage stored in a concrete stave silo are 19 percent of yield before harvest. Using the same procedure as for dry hay, storage and feeding losses are 20 percent of out-of-field yield.

The above figures are used to calculate the pounds of dry matter available to the cow from a harvested ton of dry hay and a harvested ton of hay crop silage. For dry hay, there are 1,800 pounds of dry matter in a ton (2,000 x 0.9) of which 84 percent (100 - 16) is left after storage and feeding losses. This leaves 1,512 pounds (1,800 x 0.84) of dry matter that the cow eats. For hay crop silage there are 800 pounds of dry matter in a ton (2,000 x 0.4) of which 80 percent (100 - 20) is left after storage and feeding losses. This leaves 640 pounds (800 x 0.8) of dry matter that the cow eats.

A price of $55 per ton for dry hay is used. To get the equivalent price for hay crop silage, the pounds of edible dry matter from a ton of hay crop silage (640) is divided by the pounds of edible dry matter from a ton of dry hay (1,512). The ratio (640/1,513 = 0.4233) is multiplied by the dry hay price to get the hay crop silage price of $23.30 ($55 x 0.4233 = 23.30).

3. FIXED COSTS

The fixed costs for dry hay are based on land values for land typically producing the given yield and on the machinery components specified in Table 2, page 17. The fixed costs for hay crop silage are based on the same land values and on the machinery components also outlined in Table 2. The calculation of the fixed costs are detailed in the footnotes to the forage budgets. The fixed costs of owning the power and equipment complement are the same for all yield levels. These fixed costs will not change dramatically for alternative machinery systems and for different acreages unless the machinery complement is too large or too small for the acreage in question.[1/]

4. FIXED AND VARIABLE COSTS

This figure represents the total cost of producing the given yield of dry hay or hay crop silage under specified conditions previously outlined in this publication. The total costs diminish somewhat for the smaller yields; however, as Table 5 illustrates, the total cost per ton increases dramatically as yield declines. These figures emphasize the costliness of reduced yields due to failure to employ good management techniques.

5. FEED EQUIVALENT PRODUCED

Hay equivalent and yield of dry hay are identical since hay equivalent is defined as 90 percent dry matter hay. The hay equivalent for hay crop silage is obtained by dividing by 2.25. Since this is the dry matter in dry hay (90 percent) to dry matter in hay crop silage (40 percent) ratio and since all other nutrients are the same on a dry matter basis, there is no problem associated with comparing dry hay and hay crop silage on a hay equivalent basis.

Table 5. Variable and Fixed Costs Per Ton of Hay Equivalent for Dry Hay and Hay Crop Silage for Four Production Levels Under the Assumptions of the Crop Budgets.

Cost Item	Production Level			
	High	Above Average	Average	Low
	--------Dollars Per Ton of Hay Equivalent--------			
Variable				
Dry Hay	25.54	31.61	38.60	50.67
Hay Crop Silage	20.17	25.06	30.30	43.95
Fixed				
Dry Hay	29.47	35.10	47.48	64.67
Hay Crop Silage	23.06	27.48	36.16	49.47
Variable & Fixed				
Dry Hay	55.01	66.71	86.08	115.34
Hay Crop Silage	43.23	52.54	66.46	93.42

[1/] For a more detailed comparison of costs of dry hay and hay crop silage systems see Knoblauch, Wayne A., An Economic Analysis of Hay Crop Production Storage and Feeding Systems, A.E.Ext. 77-2, Dept. of Ag. Econ., Cornell University, January 1977.

Pasture

Accurate budgets for pasture are even more difficult to construct than budgets for other enterprises. In this publication the yields are in tons of hay equivalent per acre per year with 2.5 tons from a high quality improved pasture, 1.5 tons from a lower quality improved pasture and 1.0 tons from an unimproved pasture. In using pasture budgets it should be kept in mind that in many instances the stand will contain much more grass than the alfalfa-brome mixture in the dry hay/hay crop silage budgets and feeding losses can be large.

Oatlage

The variable inputs used for oatlage are similar to the inputs for 80 bushels of oats, an enterprise budget which is discussed in a later section. However, the land value of $500 per acre is for land that would normally produce yields below average. This procedure was used because oatlage is normally grown on lower value land with other crops grown on the better land. Other fixed costs are the same as for hay crop silage fed.

This yield of oatlage cut in the dough state produces approximately 3.3 tons of hay equivalent. Oatlage at this stage yields approximately the same energy and protein on a dry matter basis as does the hay in the previous budgets.

Corn Silage--With and Without NPN

Because of the importance of corn silage in dairy rations, the corn silage budgets merit considerable discussion. There are two sets of corn silage budgets--one for non-NPN treated corn silage and one for corn silage with NPN added. The two sets of budgets are similar with the additional costs for NPN added at the appropriate points.

1. INCOME

The four yield levels of 20, 16, 13 and 10 tons per acre of 30 percent dry matter corn silage should cover the range of yields found on New York farms. The price of $18.30 per ton for corn silage without NPN is approximately one-third the dry hay price. The three to one ratio of hay price to corn silage price (a rule of thumb) is further justified as hay contains three times as much dry matter per pound. Since the urea costs about $1.20 per ton, the price for corn silage + NPN is set at $19.50 per ton. The value of farm production is then the yield multiplied by the appropriate price. Since corn silage is grown predominantly for feed, the gross income from off-farm sales is $0.00.

2. VARIABLE EXPENSES

In constructing the budgets in this publication, similar management practices are employed in growing corn for silage and corn for grain. Although corn for silage is often grown with fewer inputs and less rigorous management, such practices can result in inferior yields and poor quality roughage.

One look at the variable expenses for growing confirms that corn silage is an expensive crop to grow. These costs are for a continuous corn rotation. If this is not the case for all or part of the corn silage acreage, the cost for nitrogen can be reduced and herbicides and other chemicals cost can be adjusted. It is interesting to note that the variable growing costs per ton decline only slightly for increased yields.

Harvesting costs include the variable costs of field operations, the costs of getting the silage into storage and for corn silage + NPN the cost of the urea.1/ The actual harvesting costs vary little according to yield. Again there are no selling costs since the crop is sold to the dairy cattle enterprises.

Labor expense is also a significant cost. The hours of labor required are similar to the hours required for hay crop silage. Although less time is required for harvesting corn silage, much more time is invested in growing the corn.

3. FIXED EXPENSES

The fixed costs in the budgets again are based on new equipment used on 500 acres of crop with 100 acres of corn silage. The power and equipment complement is itemized in Table 3, page 18.

4. VARIABLE AND FIXED EPXENSE

The variable and fixed expense totals illustrate that a large expense is required to grow corn silage. As Table 6 indicates, the cost per ton is lowest for the highest yield and greatest for the smallest yield. This table again emphasizes the importance of using good management in the cropping program.

5. FEED EQUIVALENT PRODUCED

The hay equivalent from corn silage is obtained by dividing the yield by three. Hay equivalent is a measure to compare corn with dry hay and hay crop silage in terms of dry matter but not in terms of nutrient provided.

As Table 7 illustrates, corn silage provides much more energy but less protein than hay crops unless NPN is added. These differences should be kept in mind when using the forage budgets for planning purposes.

1/ An additional charge per acre per year is required for applying the NPN.

Table 6. Variable and Fixed Costs per Ton for Corn Silage for Four Yield Levels Under the Assumptions of the Crop Budgets.

Item	Yield (ton) 20	16	13	10
	----------Dollars Per Ton----------			
Variable				
Corn Silage	8.17	9.09	9.19	10.20
Corn Silage + NPN	9.33	10.28	10.41	11.43
Fixed				
Corn Silage	7.87	8.48	8.77	9.23
Corn Silage + NPN	7.93	8.56	8.87	9.36
Variable & Fixed				
Corn Silage	16.04	17.57	17.96	19.43
Corn Silage + NPN	17.26	18.84	19.28	20.79

Table 7. Energy and Protein per Pound of Dry Matter in Hay Crops, Corn Silage, and Corn Silage + NPN.[a/]

	Net Energy (Mcal/lb.)	Protein (Percent)
Hay		
Alfalfa-Brome	0.48	12.6
Alfalfa	0.52	17.0
Corn Silage	0.68	8.0
Corn Silage + NPN	0.68	12.4

[a/] Feed codes 135 or 137, 180 and 182 respectively in Least Cost Balanced Dairy Rations, NEWPLAN Program 31 Form 2: A Computer Program Users' Manual, by M. M. vanLieshout and L. E. Chase, W. A. Knoblauch, R. A. Milligan, C. J. Sniffen.

ENTERPRISE BUDGETS FOR GRAINS GROWN PRIMARILY FOR FEED

Enterprise	Corn Grain Fed		Corn Grain Fed		Corn Grain Fed		Corn Grain Fed	
Production Level	High		Above Average		Average		Low	
Enterprice Code Number	27		28		29		30	
INCOME:								
Yield Per Acre, bu.		120		100		80		60
Price, $/bu.		2.70		2.70		2.70		2.70
Value of Production		$324.00		$270.00		$216.00		$162.00
1[a/] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:								
Growing								
Seed, 80,000 ker. unit	(.35)	19.25	(.30)	16.50	(.28)	15.40	(.26)	14.30
Fertilizer:								
Nitrogen, lb.	(130)	29.90	(100)	23.00	(80)	18.40	(60)	13.80
Phosphorus, lb.	(60)	13.20	(50)	11.00	(30)	6.60	(20)	4.40
Potassium, lb.	(60)	7.80	(50)	6.50	(30)	3.90	(20)	2.60
Lime[b/]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals[c/]		19.20		19.20		10.00		5.75
Power and Equipment:								
Fuel, Oil, Grease		5.00		5.00		4.50		4.50
Repairs & Maintenance		3.80		3.80		3.20		3.20
Other		3.30		3.30		2.20		2.20
Total Growing Cost		$108.75		$ 95.60		$ 71.50		$ 58.05
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		2.70		2.55		2.10		1.90
Repairs & Maintenance		3.00		2.75		2.30		2.15
Other		3.85		3.30		2.75		2.75
Total Harvesting Cost		$ 9.55		$ 8.60		$ 7.15		$ 6.80
Selling[e/]								
Truck, Tractor & Equipment		0.00		0.00		0.00		0.00
Drying		0.00		0.00		0.00		0.00
Other		0.00		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses[f/]		$ 6.50		$ 5.75		$ 4.35		$ 3.55
2 Total Selected Variable Expenses		$124.80		$109.95		$ 83.00		$ 68.40
4 Family & Hired Labor, Hours[g/]	(6.0)	25.50	(5.9)	25.10	(5.6)	23.80	(5.4)	22.95
Total Variable Expenses		$150.30		$135.05		$106.80		$ 91.35
FIXED EXPENSES:								
Power and Equipment[h/]		37.40		37.40		37.40		37.40
Truck[i/]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck)[j/]		15.35		15.35		15.35		15.35
Building Use[k/]		4.70		4.70		4.70		4.70
Land Charge, Value/Acre[l/]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax[m/]		16.65		12.95		9.25		5.55
Insurance[n/]		4.00		4.00		4.00		4.00
Total Fixed Expenses		$160.60		$138.90		$117.20		$ 95.50
TOTAL VARIABLE AND FIXED EXPENSES[o/]		$310.90		$273.95		$224.00		$186.85
FEED EQUIVALENT PRODUCED:								
5 Corn Equivalent, bu.		120		100		80		60
6 Hay Equivalent, T.		0		0		0		0

The footnotes are on page 30 following the budgets for grains grown primarily for feeds. The power and equipment complement is indicated in Table 3, page 18.

Enterprise		Oats Fed		Oats Fed		Oats Fed
Production Level		High		Average		Low
Enterprise Code Number		32		33		34
INCOME:						
Yield Per Acre, bu.		80		60		40
Price, $/bu.		1.35		1.35		1.35
Value of Production		$108.00 *		$ 81.00*		$ 54.00 *
1 Gross Income (Off-Farm Sales) [a]		$ 0.00		$ 0.00		$ 0.00
VARIABLE EXPENSES:						
Growing						
Seed, bu.	(2.5)	10.00	(2.5)	10.00	(2.5)	10.00
Fertilizer:						
Nitrogen, lb.	(50)	11.50	(35)	8.05	(20)	4.60
Phosphorus, lb.	(40)	8.80	(40)	8.80	(20)	4.40
Potassium, lb.	(40)	5.20	(40)	5.20	(20)	2.60
Lime [b]		7.30		7.30		7.30
Herbicide, Other Chemicals [d]		0.60		0.60		0.00
Power and Equipment:						
Fuel, Oil, Grease		4.40		4.40		4.00
Repairs & Maintenance		2.70		2.70		2.30
Other		2.20		2.20		1.65
Total Growing Cost		$ 52.70		$ 49.25		$ 36.85
Harvesting						
Power and Equipment:						
Fuel, Oil, Grease		2.70		2.55		1.90
Repairs & Maintenance		3.00		2.75		2.60
Other		2.20		1.65		1.10
Total Harvesting Cost		$ 7.90		$ 6.95		$ 5.60
Selling [e]						
Truck, Tractor & Equipment		0.00		0.00		0.00
Drying		0.00		0.00		0.00
Other		0.00		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00		$ 0.00
Interest on Operating Expenses [f]		$ 3.35		$ 3.10		$ 2.35
2 Total Selected Variable Expenses		$ 63.95		$ 59.30		$ 44.80
4 Family & Hired Labor, Hours [g]	(3.3)	14.05	(3.1)	13.20	(3)	12.75
Total Variable Expenses		$ 78.00		$ 72.50		$ 57.55
FIXED EXPENSES:						
Power and Equipment [h]		40.05		40.05		40.05
Truck [i]		1.50		1.50		1.50
Interest (Power, Equip., Truck) [j]		16.40		16.40		16.40
Building Use [k]		4.70		4.70		4.70
Land Charge, Value/Acre [l]	(900)	81.00	(700)	63.00	(500)	45.00
Property Tax [m]		16.65		12.95		9.25
Insurance [n]		4.30		4.30		4.30
Total Fixed Expenses		$164.60		$142.90		$121.20
TOTAL VARIABLE AND FIXED EXPENSES [o]		$242.60		$215.40		$178.75
FEED EQUIVALENT PRODUCED:						
5 Corn Equivalent, bu.		40.8		30.6		20.4
6 Hay Equivalent, T.		0		0		0

*If straw is harvested for bedding purposes, appropriate increases in both the value of production and expenses are necessary.

The footnotes are on page 30 following the budgets for grains grown primarily for feeds. The power and equipment complement is indicated in Table 8, page 31.

Enterprise	Barley Fed		Rye Fed	
Production Level	Average		Average	
Enterprise Code Number	36		38	
INCOME:				
Yield Per Acre, bu.		50		30
Price, $/bu.		1.70		1.50
Value of Production		$ 85.00		$ 45.00
1[a] Gross Income (Off-Farm Sales)		$ 0.00		$ 0.00
VARIABLE EXPENSES:				
Growing				
Seed, bu.	(2.0)	12.80	(2.0)	12.40
Fertilizer:				
Nitrogen, lb.	(50)	11.50	(40)	9.20
Phosphorus, lb.	(40)	8.80	(40)	8.80
Potassium, lb.	(40)	5.20	(40)	5.20
Lime[b]		7.30		7.30
Herbicide, Other Chemicals[d]		0.60		0.60
Power and Equipment:				
Fuel, Oil, Grease		4.00		4.00
Repairs & Maintenance		2.30		2.30
Other		1.65		1.65
Total Growing Cost		$ 54.15		$ 51.45
Harvesting				
Power and Equipment:				
Fuel, Oil, Grease		2.70		2.70
Repairs & Maintenance		3.00		3.00
Other		2.20		2.20
Total Harvesting Cost		$ 7.90		$ 7.90
Selling[e]				
Truck, Tractor & Equipment		0.00		0.00
Drying		0.00		0.00
Other		0.00		0.00
Total Selling Cost		$ 0.00		$ 0.00
Interest on Operating Expenses[f]		3.40		3.25
2 Total Selected Variable Expenses		$ 65.45		$ 62.60
4 Family & Hired Labor, Hours[g]	(4.2)	17.85	(3.3)	14.05
Total Variable Expenses		$ 83.30		$ 76.65
FIXED EXPENSES:				
Power and Equipment[h]		40.05		40.05
Truck[i]		1.50		1.50
Interest (Power, Equip., Truck)[j]		16.40		16.40
Building Use[k]		4.70		4.70
Land Charge, Value/Acre[l]	(500)	45.00	(500)	45.00
Property Tax[m]		9.25		9.25
Insurance[n]		4.30		4.30
Total Fixed Expenses		$121.20		$121.20
TOTAL VARIABLE AND FIXED EXPENSES[o]		$204.50		$197.85
FEED EQUIVALENT PRODUCED:				
5 Corn Equivalent, bu.		42.5		26.3
6 Hay Equivalent, T.		0		0

The footnotes are on page 30 following the budgets for grains grown primarily for feeds. The power and equipment complement is indicated in Table 8, page 31.

FOOTNOTES TO GRAINS FOR FEED BUDGETS

a/ The numbers in the left-hand margin are reference values stored for use with NEWPLAN Programs 36 and 65.

b/ A 500-lb. application of 100% calcium carbonate (the equivalent of 770 lbs. of magnite ENV 65) for non-calcareous soils. Calcareous soils generally do not require lime replacement.

c/ Furadan (10 lb.), Lasso (1 qt.) and Atrazine (1/2 gal.) are used for high and above average production levels of corn grain. Lasso (1 qt.) and Atrazine (1/2 gal.) only are used for average yield. Only Atrazine (1/2 gal.) is used for low yields.

d/ 2,4-D (1/2 pt.) is used for high and average production levels of oats, rye and barley.

e/ Storage expenses (repairs, depreciation and interest) for crops fed are charged to the dairy or other livestock enterprise.

f/ Operating capital is tied up for six months at an 11 percent interest rate.

g/ The labor requirement estimates are based on total man-hours of labor disappearance, not on machinery use time.

h/ Depreciation is 14 percent of new cost. For corn grain see Table 3, page 18. For oats, rye and barley see Table 8, page 31.

i/ A $6,100 pick-up truck with depreciation at 12.5 percent of new cost.

j/ An 11 percent interest rate on one-half the new values.

k/ Depreciation and interest are 10 percent of new cost of machinery storage.

l/ Interest rate is 9 percent.

m/ Property taxes are $1.85 per $100 of market value.

n/ Insurance is 1.5 percent of new cost.

o/ The total variable and fixed expense estimate is for a specific farm size and technology, with all investments at 1979 price levels. This figure does not represent the cost of producing the crop in New York State.

Table 8. Power and Equipment Complement and 1979 Investment Costs for Oats, Barley, Rye, and Wheat.[a/]

Item	New Cost	Proportion Charged to Oats, Barley, Rye, Wheat	Proportional Cost
Tractor (125 hp. with cab)	$30,000	0.15	$ 4,500
Plow 5-16" bottoms	6,500	0.235	1,528
Disc Harrow	4,000	0.235	940
Spring Tooth Harrow (18')	1,900	0.235	447
Tractor (60 hp.)	13,000	0.20	2,600
Grain Drill	3,600	1.00	3,600
Combine (gasoline, cab, 13' grain head)	40,000	0.33	13,200
Grain Wagons 2 @ 1,800	3,600	0.50	1,800
		Total	$28,615
		Per Acre	$286.15

[a/] 500 tillable acres with 100 acres each of hay crop, corn silage, corn grain for feed, a row cash crop and a non-row cash crop.

GRAINS GROWN PRIMARILY FOR FEED

On the previous pages, one or more enterprise budgets are presented for four crops that could be grown for feed--corn grain, oats, barley and rye. The budgets constructed are for grains fed to livestock. However, the excess production not needed for feed may be sold if marketing expenses are considered. If corn or oats are grown as cash crops, the budgets in the next section should be used.

In constructing these budgets, 100 acres of the enterprise are included in the 500 total acres of cropland and new field equipment at 1979 prices is used. Different acreages either of grain or of cropland should not affect the variable costs. As long as the machinery investment is altered accordingly, fixed costs should not be greatly affected.

Corn Grain Fed

The most common grain for livestock feed is corn. Enterprise budgets are constructed for four yield levels ranging from 120 to 60 bushels per acre. The 120 bushels per acre budget should only be used for excellent soils with superior management.

The corn is harvested and stored for feeding with no artificial drying. It is stored as high moisture corn; however, no significant changes in the crop budget are required if the corn is stored in cribs because no artificial drying is required. If the corn is dried prior to storage, the budgets in the next section for corn grain for sale should be used to adjust the costs in these budgets. As with the roughages, the storage costs are charged to the livestock enterprises.

1. INCOME

The value of farm production is obtained by multiplying the yield and the price of $2.70 per bushel. If the user chooses to adjust the $2.70 price, it should be kept in mind that this is the price at harvest time since there are no storage costs. Again the gross income (off-farm sales) is $0.00 since the grain is to be fed.

2. VARIABLE EXPENSES

Similar management practices are used in growing corn grain and corn silage. As in the corn silage budgets, the inputs used are for continuous corn. When this is not the case, the cost for nitrogen can be reduced and adjustments made for herbicide and other chemicals cost. As with corn silage, growing costs are large and per bushel costs do not decline substantially with increased yields.

Variable harvesting costs are small and almost constant for the various yield levels. Less labor is required than for corn silage because of the relative ease of harvest. Little additional labor is required for higher yields.

3. FIXED EXPENSES

The fixed expenses are again based on the 500 acres of cropland and 100 acres of corn for feed. The new machinery complement is indicated in Table 3, page 18. The planting equipment costs are shared with 100 acres of corn silage and 100 acres of a row crop for sale and the harvesting equipment is shared with 100 acres of a row crop and 100 acres of a grain grown as a cash crop. On smaller or more specialized farms the fixed costs would not be significantly different as long as appropriate adjustments are made in the size of machinery and corresponding investment.

4. TOTAL VARIABLE AND FIXED EXPENSES

Although total costs are less than for corn silage, corn grain is a costly enterprise. As Table 9 illustrates, higher yields may be an effective means of reducing per unit costs.

Table 9. Variable and Fixed Costs per Bushel for Corn Grain Fed for Four Yield Levels Under Assumptions of the Crop Budgets.

Item	Yield (Bushel)			
	120	100	80	60
	----------Dollars Per Bushel----------			
Variable	1.25	1.35	1.33	1.52
Fixed	1.34	1.39	1.47	1.59
Variable & Fixed	2.59	2.74	2.80	3.11

5. FEED EQUIVALENT PRODUCED

In these enterprise budgets the feed equivalents for grain are measured in terms of bushels of corn.[1/] The corn equivalent, consequently, is the yield level assumed.

Oats Fed

Enterprise budgets are constructed for 80, 60 and 40 bushels per acre of oats. The income and variable expenses are calculated in the same way as in the previous budgets. The fixed costs are based on the machinery complement indicated in Table 8, page 31. The questionable profitability of oats is shown by greater variable and fixed costs than value of production for all yields. Profitability may be altered when the straw is also harvested and/or an alfalfa seeding is established.

As indicated in the previous section, the feed equivalent of the grain is measured in terms of bushels of corn. The oats yield is converted to

[1/] This measure is used to be consistent with NEWPLAN Program 65.

bushels of corn equivalent based on the energy contained in the two grains.[1/] The greater protein content of oats than corn (13.2 versus 10.2 percent on dry matter basis) should be kept in mind in ration formulation if large quantities of oats are grown.

Barley Fed and Rye Fed

Since neither barley nor rye are grown for feed in significant quantities, only one yield level is budgeted for each. Variable expenses are estimated using the same procedure as for the other crops. The fixed expenses are based on the machinery complement in Table 8, page 31. The same procedure used to calculate corn equivalent for oats is used with barley and rye.[2/]

[1/] Using NEWPLAN 31, Form 2 Feed Ingredient Tables, one bushel of corn (56 pounds) contains 47.6 pounds of dry matter (15 percent moisture). Corn contains 0.95 Mcal net energy per pound of dry matter giving 45.22 Mcal per bushel of corn. Similarly, a 32-pound bushel of oats has 28.8 pounds of dry matter (10 percent moisture). Oats contain 0.80 Mcal net energy per pound of dry matter giving 23.04 Mcal per bushel of oats.

Given that a bushel of corn contains 45.22 Mcal of net energy and a bushel of oats contains 23.04 Mcal, a bushel of oats is 0.5095 bushels of corn equivalent (23.04 ÷ 45.22 = 0.5095). This factor multiplied by the yield of oats gives the bushels of corn equivalent. For example, 80 bushels of oats times 0.5095 gives 40.8 bushels of corn equivalent.

[2/] Barley and rye have 0.80 and 0.79 Mcal net energy respectively.

ENTERPRISE BUDGETS

FOR

CROPS GROWN TO BE SOLD AS

CASH CROPS

Enterprise	Corn Grain Sold		Corn Grain Sold		Corn Grain Sold		Corn Grain Sold	
Production Level	High		Above Average		Average		Low	
Enterprise Code Number	41		42		43		44	
INCOME:								
Yield Per Acre, bu.		120		100		80		60
Price, $/bu.		2.70		2.70		2.70		2.70
Value of Production		$324.00		$270.00		$216.00		$162.00
1 [a] Gross Income (Off-Farm Sales)		$324.00		$270.00		$216.00		$162.00
VARIABLE EXPENSES:								
Growing								
Seed, 80,000 ker. unit	(.35)	19.25	(.30)	16.50	(.28)	15.40	(.26)	14.30
Fertilizer:								
Nitrogen, lb.	(130)	29.90	(100)	23.00	(80)	18.40	(60)	13.80
Phosphorus, lb.	(60)	13.20	(50)	11.00	(30)	6.60	(20)	4.40
Potassium, lb.	(60)	7.80	(50)	6.50	(30)	3.90	(20)	2.60
Lime [b]		7.30		7.30		7.30		7.30
Herbicide, Other Chemicals [c]		19.20		19.20		10.00		5.75
Power and Equipment:								
Fuel, Oil, Grease		5.00		5.00		4.50		4.50
Repairs & Maintenance		3.80		3.80		3.20		3.20
Other		3.30		3.30		2.20		2.20
Total Growing Cost		$108.75		$ 95.60		$ 71.50		$ 58.05
Harvesting								
Power and Equipment:								
Fuel, Oil, Grease		2.70		2.55		2.10		1.90
Repairs & Maintenance		3.00		2.75		2.30		2.15
Other		3.85		3.30		2.75		2.75
Total Harvesting Cost		$ 9.55		$ 8.60		$ 7.15		$ 6.80
Selling [h]								
Truck, Tractor & Equipment		5.00		4.20		3.40		2.50
Drying		27.00		22.50		18.00		13.50
Other		2.20		2.20		1.65		1.10
Total Selling Cost		$ 34.20		$ 28.90		$ 23.05		$ 17.10
Interest on Operating Expenses [i]		$ 8.40		$ 7.30		$ 5.60		$ 4.50
2 Total Selected Variable Expenses		$160.90		$140.40		$107.30		$ 86.45
4 Family & Hired Labor, Hours [j]	(7)	29.75	(6.9)	29.35	(6.6)	28.05	(6.4)	27.20
Total Variable Expenses		$190.65		$169.75		$135.35		$113.65
FIXED EXPENSES:								
Power and Equipment [k]		37.40		37.40		37.40		37.40
Truck [l]		1.50		1.50		1.50		1.50
Interest (Power, Equip., Truck) [m]		15.35		15.35		15.35		15.35
Building Use [n]		4.70		4.70		4.70		4.70
Dryer [o]		19.20		19.20		19.20		19.20
Land Charge, Value/Acre [p]	(900)	81.00	(700)	63.00	(500)	45.00	(300)	27.00
Property Tax [q]		16.65		12.95		9.25		5.55
Insurance [r]		4.00		4.00		4.00		4.00
Total Fixed Expenses		$179.80		$158.10		$136.40		$114.70
TOTAL VARIABLE AND FIXED EXPENSES [s]		$370.45		$327.85		$271.75		$228.35

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops.
The power and equipment complement is indicated in Table 3, page 18.

Enterprise	Wheat Sold		Wheat Sold		Wheat Sold	
Production Level	High		Average		Low	
Enterprise Code Number	46		47		48	
INCOME:						
Yield Per Acre, bu.		60		45		30
Price, $/bu.		4.00		4.00		4.00
Value of Production		$240.00*		$180.00 *		$120.00*
1 [a/] Gross Income (Off-Farm Sales)		$240.00		$180.00		$120.00
VARIABLE EXPENSES:						
Growing						
Seed, bu.	(2.0)	15.40	(2.0)	15.40	(2.0)	15.40
Fertilizer:						
Nitrogen, lb.	(60)	13.80	(40)	9.20	(20)	4.60
Phosphorus, lb.	(60)	13.20	(40)	8.80	(20)	4.40
Potassium, lb.	(40)	5.20	(40)	5.20	(20)	2.60
Lime [b/]		7.30		7.30		7.30
Herbicide, Other Chemicals [d/]		0.60		0.60		0.00
Power and Equipment:						
Fuel, Oil, Grease		3.30		2.95		2.65
Repairs & Maintenance		2.00		1.85		1.75
Other		1.10		1.10		0.85
Total Growing Cost		$ 61.90		$ 52.40		$ 39.55
Harvesting						
Power and Equipment:						
Fuel, Oil, Grease		2.70		2.55		1.90
Repairs & Maintenance		3.00		2.75		2.60
Other		2.20		1.65		1.10
Total Harvesting Cost		$ 7.90		$ 6.95		$ 5.60
Selling [h/]						
Truck, Tractor & Equipment		3.00		2.75		2.50
Drying		0.00		0.00		0.00
Other		2.75		2.40		2.20
Total Selling Cost		$ 5.75		$ 5.15		$ 4.70
Interest on Operating Expenses [i/]		$ 4.15		$ 3.55		$ 2.75
2 Total Selected Variable Expenses		$ 79.70		$ 68.05		$ 52.60
4 Family & Hired Labor, Hours [j/]	(3.3)	14.00	(3.2)	13.60	(3.1)	13.20
Total Variable Expenses		$ 93.70		$ 81.65		$ 65.80
FIXED EXPENSES:						
Power and Equipment [k/]		40.05		40.05		40.05
Truck [l/]		1.50		1.50		1.50
Interest (Power, Equip., Truck) [m/]		16.40		16.40		16.40
Building Use [n/]		4.70		4.70		4.70
Land Charge, Value/Acre [p/]	(900)	81.00	(700)	63.00	(500)	45.00
Property Tax [q/]		16.65		12.95		9.25
Insurance [r/]		4.30		4.30		4.30
Total Fixed Expenses		$164.60		$142.90		$121.20
TOTAL VARIABLE AND FIXED EXPENSES [s/]		$258.30		$224.55		$187.00

*If straw is harvested for bedding purposes, appropriate increases in both the value of production and expenses are necessary.

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops. The power and equipment complement is indicated in Table 8, page 31.

Enterprise		Oats Sold		Oats Sold		Oats Sold
Production Level		High		Average		Low
Enterprise Code Number		50		51		52
INCOME:						
Yield Per Acre, bu.		80		60		40
Price, $/bu.		1.35		1.35		1.35
Value of Production		$108.00*		$ 81.00*		$ 54.00*
1[a/] Gross Income (Off-Farm Sales)		$108.00		$ 81.00		$ 54.00
VARIABLE EXPENSES:						
Growing						
Seed, bu.	(2.5)	10.00	(2.5)	10.00	(2.5)	10.00
Fertilizer:						
Nitrogen, lb.	(50)	11.50	(35)	8.05	(20)	4.60
Phosphorus, lb.	(40)	8.80	(40)	8.80	(20)	4.40
Potassium, lb.	(40)	5.20	(40)	5.20	(20)	2.60
Lime[b/]		7.30		7.30		7.30
Herbicide, Other Chemicals[d/]		0.60		0.60		0.00
Power and Equipment:						
Fuel, Oil, Grease		4.40		4.40		4.00
Repairs & Maintenance		2.70		2.70		2.30
Other		2.20		2.20		1.65
Total Growing Cost		$ 52.70		$ 49.25		$ 36.85
Harvesting						
Power and Equipment:						
Fuel, Oil, Grease		2.70		2.55		1.90
Repairs & Maintenance		3.00		2.75		2.60
Other		2.20		1.65		1.10
Total Harvesting Cost		$ 7.90		$ 6.95		$ 5.60
Selling[h/]						
Truck, Tractor & Equipment		3.75		3.15		2.50
Drying		0.00		0.00		0.00
Other		1.10		1.10		1.10
Total Selling Cost		$ 4.85		$ 4.25		$ 3.60
Interest on Operating Expenses[i/]		3.60		3.35		2.55
2 Total Selected Variable Expenses		$ 69.05		$ 63.80		$ 48.60
4 Family & Hired Labor, Hours[j/]	(3.3)	14.05	(3.1)	13.20	(3)	12.75
Total Variable Expenses		$ 83.10		$ 77.00		$ 61.35
FIXED EXPENSES:						
Power and Equipment [k/]		$ 40.05		$ 40.05		$ 40.05
Truck[l/]		1.50		1.50		1.50
Interest (Power, Equip., Truck)[m/]		16.40		16.40		16.40
Building Use[n/]		4.70		4.70		4.70
Land Charge, Value/Acre[p/]	(900)	81.00	(700)	63.00	(500)	45.00
Property Tax [q/]		16.65		12.95		9.25
Insurance [r/]		4.30		4.30		4.30
Total Fixed Expenses		$164.60		$142.90		$121.20
TOTAL VARIABLE AND FIXED EXPENSES[s/]		$247.70		$219.90		$182.55

*If straw is harvested for bedding purposes, appropriate increases in both the value of production and expenses are necessary.

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops.
The power and equipment complement is indicated in Table 8, page 31.

Enterprise	Soybeans Sold	Soybeans Sold	Soybeans Sold	Soybeans Sold
Production Level	High	Above Average	Average	Low
Enterprise Code Number	53	54	55	56
INCOME:				
Yield Per Acre, bu.	45	35	25	15
Price, $/bu.	6.30	6.30	6.30	6.30
Value of Production	$283.50	$220.50	$157.50	$ 94.50
1[a/] Gross Income (Off-Farm Sales)	$283.50	$220.50	$157.50	$ 94.50
VARIABLE EXPENSES:				
Growing				
Seed, bu.	(1.2) 15.30	(1.2) 15.30	(1.2) 15.30	(1.2) 15.30
Fertilizer:				
Nitrogen, lb.	(15) 3.45	(10) 2.30	(10) 2.30	(10) 2.30
Phosphorus, lb.	(50) 11.00	(40) 8.80	(30) 6.60	(25) 5.50
Potassium, lb.	(50) 6.50	(40) 5.20	(30) 3.90	(25) 3.25
Lime[b/]	7.30	7.30	7.30	7.30
Herbicide, Other Chemicals[e/]	6.20	6.20	6.20	0.00
Power and Equipment:				
Fuel, Oil, Grease	4.95	4.95	4.50	4.50
Repairs & Maintenance	3.80	3.80	3.20	3.20
Other	2.20	2.20	1.10	1.10
Total Growing Cost	$ 60.70	$ 56.05	$ 50.40	$ 42.45
Harvesting				
Power and Equipment:				
Fuel, Oil, Grease	2.70	2.55	2.10	1.90
Repairs & Maintenance	3.00	2.75	2.30	2.15
Other	1.65	1.65	1.10	1.10
Total Harvesting Cost	$ 7.35	$ 6.95	$ 5.50	$ 5.15
Selling[h/]				
Truck, Tractor & Equipment	3.75	3.45	3.15	2.80
Drying	0.00	0.00	0.00	0.00
Other	1.65	1.65	1.10	1.10
Total Selling Cost	$ 5.40	$ 5.10	$ 4.25	$ 3.90
Interest on Operating Expenses[i/]	4.05	3.75	3.30	2.85
2 Total Selected Variable Expenses	$ 77.50	$ 71.85	$ 63.45	$ 54.35
4 Family & Hired Labor, Hours[j/]	(3.9) 16.60	(3.8) 16.15	(3.6) 15.30	(3.5) 14.90
Total Variable Expenses	$ 94.10	$ 88.00	$ 78.75	$ 69.25
FIXED EXPENSES:				
Power and Equipment[k/]	37.40	37.40	37.40	37.40
Truck[l/]	1.50	1.50	1.50	1.50
Interest (Power, Equip., Truck)[m/]	15.35	15.35	15.35	15.35
Building Use[n/]	4.70	4.70	4.70	4.70
Land Charge, Value/Acre[p/]	(900) 81.00	(700) 63.00	(500) 45.00	(300) 27.00
Property Tax[q/]	16.65	12.95	9.25	5.55
Insurance[r/]	4.00	4.00	4.00	4.00
Total Fixed Expenses	$160.60	$138.90	$117.20	$ 95.50
TOTAL VARIABLE AND FIXED EXPENSES[s/]	$254.70	$226.90	$195.95	$164.75

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops.
The power and equipment complement is indicated in Table 3, page 18.

Enterprise	Red Kidney Dry Beans		Black Turtle Soup Beans	
Production Level	Average		Average	
Enterprise Code Number	58		59	
INCOME:				
Yield Per Acre, cwt.		14		16
Price, $/cwt.		20.00		17.00
Value of Production		$280.00		$272.00
1[a] Gross Income (Off-Farm Sales)		$280.00		$272.00
VARIABLE EXPENSES:				
Growing				
Seed, lb.	(80)	32.00	(80)	32.00
Fertilizer:				
Nitrogen, lb.	(25)	5.75	(25)	5.75
Phosphorus, lb.	(75)	16.50	(75)	16.50
Potassium, lb.	(50)	6.50	(50)	6.50
Lime[b]		7.30		7.30
Herbicide, Other Chemicals[f]		13.85		13.85
Power and Equipment:				
Fuel, Oil, Grease		7.20		7.20
Repairs & Maintenance		5.30		5.30
Other		4.40		4.40
Total Growing Cost		$ 98.80		$ 98.80
Harvesting				
Power and Equipment:				
Fuel, Oil, Grease		4.30		4.30
Repairs & Maintenance		4.50		4.50
Other		3.30		3.30
Total Harvesting Cost		$ 12.10		$ 12.10
Selling[h]				
Truck, Tractor & Equipment		2.50		2.50
Drying		0.00		0.00
Other		1.65		1.65
Total Selling Cost		$ 4.15		$ 4.15
Interest on Operating Expenses[i]		6.35		6.35
2 Total Selected Variable Expenses		$121.40		$121.40
4 Family & Hired Labor, Hours[j]	(4.6)	19.55	(4.6)	19.55
Total Variable Expenses		$140.95		$140.95
FIXED EXPENSES:				
Power and Equipment[k]		45.50		45.50
Truck[l]		1.50		1.50
Interest (Power, Equip., Truck)[m]		18.55		18.55
Building Use[n]		4.70		4.70
Land Charge, Value/Acre[p]	(700)	63.00	(700)	63.00
Property Tax[q]		12.95		12.95
Insurance[r]		4.90		4.90
Total Fixed Expenses		$151.10		$151.10
TOTAL VARIABLE AND FIXED EXPENSES[s]		$292.05		$292.05

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops. The power and equipment complement is indicated in Table 10, page 44.

Enterprise	Sunflowers Sold		Sunflowers Sold		Sunflowers Sold	
Production Level	High		Average		Low	
Enterprise Code Number	61		62		63	
INCOME:						
Yield Per Acre, lb.		2,500		2,000		1,500
Price, $/lb.		0.12		0.12		0.12
Value of Production		$300.00		$240.00		$180.00
1[a] Gross Income (Off-Farm Sales)		$300.00		$240.00		$180.00
VARIABLE EXPENSES:						
Growing						
Seed, lb.	(8)	8.40	(7)	7.35	(6)	6.30
Fertilizer:						
Nitrogen, lb.	(100)	23.00	(80)	18.40	(60)	13.80
Phosphorus, lb.	(50)	11.00	(30)	6.60	(20)	4.40
Potassium, lb.	(50)	6.50	(30)	3.90	(20)	2.60
Lime[b]		7.30		7.30		7.30
Herbicide, Other Chemicals[g]		8.00		3.10		0.00
Power and Equipment:						
Fuel, Oil, Grease		5.00		4.50		4.50
Repairs & Maintenance		3.80		3.20		3.20
Other		3.30		2.20		2.20
Total Growing Cost		$ 76.30		$ 56.55		$ 44.30
Harvesting						
Power and Equipment:						
Fuel, Oil, Grease		2.70		2.10		1.90
Repairs & Maintenance		3.00		2.30		2.15
Other		3.85		2.75		2.75
Total Harvesting Cost		$ 9.55		$ 7.15		$ 6.80
Selling[h]						
Truck, Tractor & Equipment		5.00		3.40		2.50
Drying		2.50		2.00		1.50
Other		2.20		1.65		1.10
Total Selling Cost		$ 9.70		$ 7.05		$ 5.10
Interest on Operating Expenses[i]		5.25		3.90		3.10
2 Total Selected Variable Expenses		$100.80		$ 74.65		$ 59.30
4 Family & Hired Labor, Hours[j]	(7)	29.75	(6.6)	28.05	(6.4)	27.20
Total Variable Expenses		$130.55		$102.70		$ 86.50
FIXED EXPENSES:						
Power and Equipment[k]		37.40		37.40		37.40
Truck[l]		1.50		1.50		1.50
Interest (Power, Equip., Truck)[m]		15.35		15.35		15.35
Building Use[n]		4.70		4.70		4.70
Dryer[o]		9.60		9.60		9.60
Land Charge, Value/Acre[p]	(900)	81.00	(500)	45.00	(300)	27.00
Property Tax[q]		16.65		9.25		5.55
Insurance[r]		4.00		4.00		4.00
Total Fixed Expenses		$170.20		$126.80		$105.10
TOTAL VARIABLE AND FIXED EXPENSES[s]		$300.75		$229.50		$191.60

The footnotes are on page 43 following the budgets for crops grown to be sold as cash crops.
The power and equipment complement is indicated in Table 3, page 18.

FOOTNOTES TO CASH CROP BUDGETS

a/ The numbers in the left-hand margin are reference values stored for use with NEWPLAN Programs 36 and 65.

b/ A 500-lb. application of 100% calcium carbonate (the equivalent of 770 lbs. of magnite ENV 65) for non-calcareous soils. Calcareous soils generally do not require lime replacement.

c/ Furadan (10 lbs.), Lasso (1 qt.), and Atrazine (1/2 gal.) are used for high and above average production levels of cash corn grain. Lasso (1 qt.) and Atrazine (1/2 gal.) are used for average yields. Atrazine only (1/2 gal.) is used for low yields.

d/ 2,4-D(1/2 pt.) is used for high and above average yields of wheat and oats.

e/ Treflan (3/4 qt.) is used for high, above average and average yields of soybeans.

f/ Eptam 7E (4-1/2 pts.) is used for red kidney beans and black turtle soup beans.

g/ High sunflower yields receive Treflan (3/4 pt.) and Paraquot (1 pt.). Average yields receive Treflan only (3/4 pt.).

h/ Cash crops are sold at harvest and thus no storage costs are incurred.

i/ Operating capital is tied up for six months at an 11 percent interest rate.

j/ The labor requirement estimates are based on total man-hours of labor disappearance, not on machinery use time.

k/ Depreciation to be 14 percent of new cost.
For corn grain, soybeans and sunflowers see Table 3, page 18.
For wheat and oats see Table 8, page 31.
For red kidney and black turtle soup beans see Table 10, page 44.

l/ A $6,100 pick-up truck with depreciation at 12.5 percent of new cost.

m/ An 11 percent interest rate on one-half the new values.

n/ Depreciation and interest is 10 percent of new cost of machinery storage.

o/ An automatic batch dryer that can dry 4.5 tons wet corn per hour. Cost new is $12,000; depreciation and interest are 16 percent of new cost. To corn, 100% of the fixed costs of an automatic batch dryer that can dry 4.5 tons wet corn per hour are allocated. Depreciation and interest are 16 percent of new cost. For sunflowers, the fixed costs of the dryer are only one half that of corn. On many farms, corn is the only crop that is dried. Farms growing sunflowers usually grow corn also.

p/ Interest rate is nine percent.

q/ Property taxes are $1.85 per $100 of market value.

r/ Insurance is 1.5 percent of new cost.

s/ The total variable and fixed expense estimate is for a specific farm size and technology, with all investments at 1979 price levels. This figure does not represent "the" cost of producing the crop in New York State.

Table 10. Power and Equipment Complement and 1979 Investment Costs for Red Kidney and Black Turtle Soup Beans.[a/]

Item	New Cost	Proportion Charged to Beans	Proportional Cost
Tractor (125 hp. with cab)	$30,000	0.15	$ 4,500
Plow 5-16" bottoms	6,500	0.235	1,528
Planter	5,000	0.33	1,650
Disc Harrow (14')	4,000	0.235	940
Spring Tooth Harrow (18')	1,900	0.235	447
Tractor (60 hp.)	13,000	0.20	2,600
Cultivator (4 row)	2,000	0.33	660
Bean Combine (44")	19,000	1.00	19,000
Grain Wagons 2 @ 1,800	3,600	0.33	1,188
		Total	$32,513
		Per Acre	$325.13

[a/] 500 tillable acres with 100 acres each of hay crop, corn silage, corn grain for feed, a row cash crop and a non-row cash crop.

CROPS GROWN TO BE SOLD AS CASH CROPS

Of the 500 acres of cropland considered throughout this publication, 200 are for cash crops--100 as a small grain and 100 as a row crop. The crops are sold at harvest; there are no storage costs; however, selling costs are included. Enterprise budgets are constructed for corn grain sold, wheat sold, oats sold, soybeans sold, red kidney dry beans sold, black turtle soup beans sold and sunflowers sold.

Corn Grain Sold

The yield levels and most of the income and expense items are identical with the budgets for corn grain fed. The first change is that gross income (off-farm sales) is the same as value of farm production, rather than zero.

The most important difference is that significant selling expenses are included. These expenses include drying the corn and transporting it to the place of sale. The fixed expenses are again based on Table 3, page 18 and are identical with those for corn grain fed except for the addition of the costs associated with owning a dryer.

Wheat Sold

Enterprise budgets are constructed for three yield levels--60, 45 and 30 bushels per acre. The price received is $4.00 per bushel. Variable and fixed expenses are calculated with the fixed expenses for the machinery complement in Table 8, page 31.

Oats Sold

The only change from the oats fed budgets is a charge to cover selling costs. Oats are less profitable than corn grain or wheat as a cash crop. The machinery complement is given in Table 8, page 31.

Soybeans Sold

Enterprise budgets are constructed partly because of the current interest in some circles in growing soybeans in New York. The variable costs are based on 1979 prices for the machinery complement in Table 3, page 18. It is somewhat unlikely that 35 bushels per acre yields could be consistently obtained in New York and 30 bushels would probably be more common.

Red Kidney Dry Beans Sold and Black Turtle Soup Beans Sold

Due to the difficulty in obtaining data, only one budget is constructed for each crop. In addition, since the production technology is very similar,

all expenses are the same for the two crops. The fixed costs are based on the power and machinery complement in Table 10, page 44.

Sunflowers Sold

Sunflower enterprise budgets are constructed because of much current interest. The fixed costs are based on 1979 costs for the machinery complement in Table 3, page 18.

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