August 1983 A.E. Res. 83-30

COST OF PRODUCTION

Update

For 1982

CAULIFLOWER - Long Island

KRAUT CABBAGE

STORAGE CABBAGE

CUSTOM RATES

NEW YORK STATE

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CONTENTS

Introduction

The agricultural industry in New York has long benefited from a continuing research project dealing with specific farm enterprise cost and return data. Commonly known as the New York Farm Cost Account project, this program has provided information for livestock and crop enterprises most prevalent in the State. Some crops, however, are not adequately represented in the records kept by the cooperating farmers to provide enough data to be meaningful to the whole industry. These include various crops grown in sufficient volume to merit specific study to maintain up-to-date cost of production information.

Special crop studies for the 1982 crop year were undertaken for Long Island cauliflower and kraut and storage cabbage grown in Western New York State. In addition to these crop studies, an effort was made to gather current data for custom rates for farm operations in the State. This publication presents the results of these studies. Only a summary of the custom rate study results are included in this publication. Complete results are published in 1982 Custom Rates for Farm Operations in New York State, A.E. Res. 83-14, D.P. Snyder, Department of Agricultural Economics, Cornell University, Ithaca, New York 14853-0398.

Funding for the cabbage study was aided by a grant from the research fund of the New York Cabbage Research Association. With this help, a study of the production costs was made of both direct seeded and transplanted kraut and storage cabbage grown in New York.

Procedure

Through the cooperation of industry and extension personnel, growers were identified and given the opportunity to participate in the Long Island cauliflower and Western New York cabbage cost and return studies for 1982. Nine cauliflower growers and 26 cabbage growers agreed to provide the necessary information. Data collection involved a detailed interview with each grower using a procedure developed for crop production cost studies by Cornell University. The questionnaire was designed to determine the grower's cash costs for the crop and to estimate and allocate appropriate overhead costs including labor, tractor, equipment, land, and other costs related to the production and disposition of the crop. The approach used relies heavily upon results and experience from the New York Farm Cost Account research project for various cost factors not available apart from continuing supervised records kept by cooperating farm operators.

A detailed explanation of the procedure and forms used to accumulate crop costs and to analyze the crop enterprise is available in a bulletin published by Cornell.*

Data for the custom rate study was obtained from questionnaires distributed to farmers throughout the State via agricultural agents in each county. Responses were summarized and analyzed at the College. As indicated earlier, only a summary of the results of this study are included here. Complete results are published under separate cover.

The Growing Season in 1982

Weather has a major influence on crop production in New York State. Even though good cultural practices are followed, good yields are highly dependent upon timing and amount of rainfall and temperatures and on the length of the growing season. The following two tables indicate climatic conditions during the 1982 growing season in several areas of the State.

Temperatures during the 1982 growing season were abnormally cool throughout the State except for the month of May. An unusually warm planting season in May was followed by a cool summer, especially during June and August. Precipitation was generally below normal, except for June, in most regions of the State. In June, however, most stations, especially on Long Island at Riverhead, reported significantly higher than normal rainfall.

Long Island cauliflower growers had a cooler than normal growing season. Precipitation was below normal except for June when Riverhead received nearly nine inches more rain than normal.

Temperatures for Western New York cabbage growers were warmer than normal in May but below normal for the rest of the season. Moisture was generally adequate throughout the growing season.

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*Enterprise Analysis: A Guide for Determining Field and Vegetable Crop Costs and Returns, A.E. Ext. 76-4, D.P. Snyder, Department of Agricultural Economics, Cornell University, Ithaca, New York 14853-0398.

Table 1. Growing Season Temperature, Degrees F
1982 Station Data and Departure from Normal

	May		June		July		August		September		Season Avg.	
Station	Mo. avg.	+/- Norm	Mo. avg.	+/- Norm	Mo. avg.	+/- Norm	Mo. avg.	+/- Norm	Mo. avg.	+/- Norm	Mo. avg.	+/- Norm
Alfred	56.5	1.9	59.0	-4.5	65.8	-1.2	60.8	-4.4	58.0	- .9	60.0	-1.8
Binghamton	59.7	4.6	62.1	-2.7	70.0	.9	64.4	-2.9	61.0	.8	63.4	.1
Lowville	56.0	1.4	60.1	-4.1	64.2	-1.2	60.7	-5.5	57.7	-1.6	59.7	-2.2
Riverhead	61.0	1.9	64.7	-3.5	73.5	.2	69.9	-2.4	64.6	-1.7	66.7	-1.1
Albany	59.5	1.8	62.9	-4.6	70.1	-1.9	65.5	-4.1	60.5	-1.4	63.7	-2.0
Gloversville	59.5	3.2	62.7	-3.0	70.1	.1	65.8	-1.9	62.1	1.7	64.0	- .0
Gouverneur	58.1	3.2	59.8	-4.8	64.7	-4.2	61.8	-5.0	57.2	-2.2	60.3	-2.6
Batavia	60.6	4.8	62.3	-3.6	69.2	.2	64.2	-3.7	60.6	- .7	63.4	- .6
Geneva	59.8	3.3	62.7	-4.0	71.0	- .4	65.6	-3.9	61.0	-1.6	64.0	-1.3
Ithaca	57.7	2.5	61.5	-3.5	68.8	- .6	63.5	-4.0	60.2	- .5	62.3	-1.2

Source: Climatological Data; NOAA, Environmental Data Service, Monthly Reports, New York, 1981, Vol. 94, Nos. 5 to 9.

Table 2. Growing Season Precipitation, Inches
1982 Station Data and Departure from Normal

	May		June		July		August		September		Season Avg.	
Station	Mo. total	+/- Norm	Mo. total	+/- Norm	Mo. total	+/- Norm	Mo. total	+/- Norm	Mo. total	+/- Norm	Mo. total	+/- Norm
Alfred	3.46	- .30	6.67	2.91	3.35	- .38	1.49	-1.51	3.04	.11	3.60	.32
Binghamton	3.89	.06	7.09	3.50	1.87	-1.96	2.94	- .67	1.86	-1.16	3.53	-.05
Lowville	2.06	-1.36	3.50	.56	2.54	-1.37	3.96	.38	4.58	1.27	3.33	-.10
Riverhead	2.95	- .47	11.63	8.92	1.74	-1.57	2.83	-1.47	1.94	-1.15	4.22	.85
Albany	2.60	- .66	6.48	3.48	2.43	- .69	2.01	- .86	1.42	-1.70	2.99	-.09
Gloversville	2.51	-1.40	5.82	2.01	.88	-3.02	2.22	-1.24	2.30	-1.30	2.75	-.99
Gouverneur	2.41	-1.19	4.68	1.87	2.52	- .79	4.40	.81	3.30	- .35	3.46	.07
Batavia	3.45	.28	3.60	.91	2.06	- .99	3.75	.25	2.96	.09	3.16	.11
Geneva	2.09	- .93	4.74	1.64	2.64	- .42	.74	-2.08	2.68	.09	2.58	-.34
Ithaca	2.96	- .59	5.74	2.34	2.90	- .77	1.99	-1.50	3.68	.60	3.45	.02

Source: Climatological Data; NOAA, Environmental Data Service, Monthly Reports, New York, 1981, Vol. 94, Nos. 5 to 9.

LONG ISLAND FALL CAULIFLOWER - 1982

Economic data for Long Island cauliflower production was last obtained for the 1959 crop year. Although acreage planted to cauliflower is less than half what it was 25 years ago, cauliflower continues to be an important vegetable crop to growers in eastern Suffolk County. In 1982, about 2,000 acres were planted to cauliflower which continues a gradual upward trend in acreage over the past decade.

In relation to other major crops grown on Long Island, cauliflower acreage is now over 10 percent of a declining potato acreage and is about 50 percent more than the cabbage acreage. Cauliflower is generally marketed through the Long Island Cauliflower Association in Riverhead.

Growing Costs

Costs to grow fall cauliflower on Long Island in 1982 are summarized in Table 3. The nine farms in the study had an average of 15 acres of cauliflower which yielded an average of 475 crates per acre.

Each of the cost items listed in Table 3 includes all of the fixed and variable costs inherent to the item. Labor costs include employers' costs for worker's compensation, social security, and fringe benefits, as well as cash wages. Tractor and equipment costs include depreciation, interest, fuel, repairs, and insurance, etc. Land costs are an average of the costs of owned land and rented land as experienced by these growers.

Total growing costs for cauliflower in 1982 averaged $1,284 per acre. With an average yield of 475 crates per acre, growing costs amounted to $2.70 per crate. Cauliflower is a very labor intensive crop and, as such, required 62 hours of labor for the various activities related to growing the crop. Labor costs were the largest single growing cost and, at $352 per acre, amounted to 27 percent of all growing costs.

Fertilizer and chemicals were the next most significant costs in growing the crop. Fertilizer, at $240 per acre, and chemicals, at $123 per acre, together made up another 28 percent of the total cost. Land costs averaged $104 per acre and is an average of the cost of owned and rented cropland as experienced by these growers. Most growers paid cash rent for their cauliflower cropland at an average cost of $77 per acre. "All other" costs, at $103 per acre, includes a share of the cost of overhead items such as pickup trucks, utilities, other miscellaneous costs, and the costs of supervising and managing large amounts of casual labor.

Table 3. Long Island Cauliflower Growing Costs 136 Acres on 9 Farms New York, 1982

Item	Rates per acre	Cost Per acre	Cost Per crate
Number of farms		9	
Acres per enterprise		15	
Yield per acre planted, crates		475	
Labor	62 hours	$ 352	$ .74
Tractor	13 hours	94	.20
Equipment, large trucks		93	.20
Custom work, equipment rent		10	.02
Land use		104	.22
Lime, cover crop, manure		38	.08
Fertilizer: lbs. N-163, P-298, K-149		240	.50
Plants	10,000 no.	100	.21
Chemicals		123	.26
Interest on operating capital		27	.06
All other		103	.21
Total growing costs		$1,284	$2.70
Total growing cost excluding land		$1,180	$2.48
Land cost at average rent cost		$77	$0.16
Total growing cost using rent cost		$1,257	$2.64

Over three-quarters of the labor to grow cauliflower is casual labor used to plant, hoe, and tie the crop. Thus, when this direct cost is added to the direct costs for fertilizer, fuel, and chemicals, and to grow the transplants, nearly two-thirds of the total growing costs directly affect the grower's cash flow.

Homegrown Transplant Costs

The cost of plants, as shown in Table 3, reflects the growers' costs of raising their own transplants. These costs are shown in detail in Table 4. The nine farms grew an average of 144,000 plants for their own cauliflower enterprise. As with cauliflower in the field, the seed bed operation is labor intensive. Well over half the cost of growing the cauliflower transplants is used for labor, particularly for pulling and sorting the plants just prior to the field transplanting operation. Seed was the second most significant cost of transplants at $1.70 per thousand plants. Total cost to grow cauliflower transplants on these farms was $10.16 per thousand plants including pulling and sorting.

Table 4. Home Grown Cauliflower Transplants
Growing Costs (including pulling and sorting)
New York, 1982

Item	Cost per Thousand Plants
Number of farms	9
Acres per cauliflower enterprise	15
Plants grown per farm, thousand	144
Labor 1.0 hours	$ 5.86
Tractor	.34
Equipment, large trucks	.52
Custom work, equipment rent	--
Land use	.38
Lime, cover crop, manure	--
Fertilizer	.22
Seed	1.70
Chemicals	.40
Interest on operating capital	.25
All other	.49
Total growing costs	$10.16

Harvesting Costs

Harvesting costs for fall cauliflower includes making up the crates in which the crop is harvested, spreading the crates in the field, covering them, and loading the crates on the truck in the field as well as the actual cutting operation. Tying the heads prior to harvest was considered one of the growing activities.

Table 5 indicates a total harvesting cost of $446 per acre for these cauliflower growers. Of this cost, 88 percent was for labor to hand cut the crop, prepare crates, and load the trucks. On the average, 63 hours of labor were required to harvest the crop. Yielding an average of 475 crates per acre, cauliflower cost $0.94 per crate to harvest. Harvest cost per crate is not likely to be affected by yield because of the labor intensive nature of the harvest operation.

Table 5. Long Island Cauliflower Harvesting Costs 136 Acres on 9 Farms New York, 1982

Item	Rates per acre	Cost	
		Per acre	Per crate
Number of farms		9	
Acres per enterprise		15	
Yield per acre planted, crates		475	
Labor	63 hours	$392	$ .83
Tractor	13 hours	9	.02
Equipment, large trucks		4	.01
All other		41	.08
Total harvesting costs		$446	$0.94

Selling Costs

Most of the Long Island fall cauliflower crop is marketed through the Long Island Cauliflower Association. The selling costs for this study include the costs to haul the crop from the field to the LICA auction in Riverhead. In the case of two of the largest enterprises, all and nearly all of the cauliflower was loaded on buyers' trucks in the field. Thus, the figures in Table 6 include crate costs for all cauliflower grown on these farms but no hauling or market costs for about a third of the production. However, for the group of nine growers in this study, selling costs averaged $779 per acre and $1.64 per crate of cauliflower.

Table 6. Long Island Cauliflower
Selling Costs
136 Acres on 9 Farms
New York, 1982

Item	Cost	
	Per acre	Per crate
Number of farms	9	
Acres per enterprise	15	
Yield per acre planted, crates	475	
Crates hauled	64,806	
Labor	$ 44	$ .09
Truck	40	.08
Crates	626	1.32
Marketing	69	.15
Total selling costs	$779	$1.64

Note - Includes two farms where most of the crop was sold FOB, the farm.

Because one third of the cauliflower grown by the study group was sold at the farm, the results shown in Table 6 understate selling costs for the seven growers tho delivered their cauliflower to the LICA auction in Riverhead. Therefore, Table 6A shows the costs for seven growers in the study who sold over 85 percent of their production through LICA. For these growers, selling costs averaged $873 per acre and $1.90 per crate including $1.41 per crate for the knocked down crate itself. Making up the crates was included as a harvest cost.

Table 6A. Long Island Cauliflower
Selling Costs
90 Acres on 7 Farms
New York, 1982

Item	Cost	
	Per acre	Per crate
Number of farms	7	
Acres per enterprise	13	
Yield per acre planted, crates	458	
Crates hauled	41,452	
Labor	$ 65	$ .14
Truck	58	.13
Crates	647	1.41
Marketing	103	.22
Total selling costs	$873	$1.90

Note - These growers sold 88 percent of their crop through LICA.

Costs and Returns

Costs and returns are summarized in Table 7 for all nine growers in the study. Total costs to produce (grow and harvest) fall cauliflower averaged $1,730 per acre and $3.64 per crate. Selling the crop cost an additional $779 per acre resulting in a total cost of $2,509 per acre and $5.28 per crate.

Returns for these growers averaged $6.05 per crate and, at a yield of 475 crates per acre, totaled $2,874 per acre. Profits averaged $365 per acre and $0.77 per crate. Expressed another way, these growers received $1.15 for each dollar their cauliflower crop cost them in 1982.

Table 7. Long Island Fall Cauliflower
Costs and Returns
136 Acres on 9 Farms
New York, 1982

Item	Cost or Return	
	Per acre planted	Per crate
Number of farms	9	
Acres per enterprise	15	
Yield per acre planted, crates	475	
Costs to: Grow	$1,284	$2.70
Harvest	446	.94
Produce	$1,730	$3.64
Sell	779	1.64
Total costs	$2,509	$5.28
Returns	$2,874	$6.05
Profit	$ 365	$0.77
Return per dollar of cost	$1.15	

When the cauliflower enterprises for the seven growers who sold most of their crop through LICA and very little to buyers at the farm are averaged together, as in Table 7A, the costs and returns change somewhat but the profits remain attractive for 1982. These seven growers, who used similar marketing practices as well as production practices, had a profit of $318 per acre and $0.69 per crate of cauliflower.

Table 7A. Long Island Fall Cauliflower
Costs and Returns
90 Acres on 7 Farms
New York, 1982

Item	Cost or Return	
	Per acre planted	Per crate
Number of farms	7	
Acres per enterprise	13	
Yield per acre planted, crates	458	
Costs to: Grow	$1,394	$3.04
Harvest	429	.94
Produce	$1,823	$3.98
Sell	873	1.90
Total costs	$2,696	$5.88
Returns	$3,014	$6.58
Profit	$ 318	$0.69
Return per dollar of cost	$1.12	

Selected Factors

Table 8 provides a listing of selected factors for each cauliflower enterprise to illustrate ranges and variations between the nine enterprises included in the study.

Table 8. Long Island Cauliflower
Selected Factors
136 Acres on 9 Farms
New York, 1982

Farm No.*	Yield per acre	Average per acre planted: Grow cost	Harvest cost	Profit	Average per crate: Cost	Return	Return per $ of cost
	crates	$	$	$	$	$	$
407	440	1,235	411	500	5.71	6.85	1.20
406	411	1,185	523	-115	5.00	4.72	0.94
404	614	936	432	1,082	3.64	5.41	1.48
403	441	1,486	502	85	6.43	6.63	1.03
405	474	1,661	548	-19	6.39	6.35	0.99
409	538	1,319	426	853	5.19	6.78	1.31
408	429	1,289	327	23	5.71	5.77	1.01
401	477	1,486	305	329	5.88	6.57	1.12
402	346	1,291	159	183	5.55	6.08	1.10
Range	346 to 614	936 to 1,661	159 to 548	-115 to 1,082	3.64 to 6.43	4.72 to 6.85	0.94 to 1.48
Weighted Average	475	1,284	446	365	5.29	6.05	1.15

*Ranked from largest to smallest acreage (all less than 30 acres per enterprise).

UPSTATE CABBAGE PRODUCTION - 1982

Economic information for cabbage grown in western New York State has been very scarce in recent years. In fact, the last formal study of the economics of cabbage production costs was conducted for the 1962 crop. At that time, the focus was on kraut cabbage costs and returns. In 1980, a study* was made to determine the packing and storage costs for storage (market) cabbage in western New York.

Recent interest by the industry in cabbage production costs prompted the New York Cabbage Research Association to help fund the current economic study of the 1982 cabbage crop. The results of this study should be helpful to the cabbage industry in New York.

Since the last study, at least two significant technologies have become common in the production process. The use of direct seeding has become quite popular in spite of greater labor requirements. With the use of this technique, labor requirements have shifted from the need for a large transplanting crew to a greater need for thinning and hoeing. However, seed and other costs are enough lower than costs associated with transplants that total growing costs are lower for direct seeding. Mechanical harvesting is used by most kraut cabbage growers and represents a major substitution of capital for labor in processing cabbage production.

The data presented in this report was obtained from interviews with 26 cabbage growers in western New York. These growers provided data for 40 cabbage enterprises and nine home grown transplant enterprises. The data came from over 2,100 acres of cabbage which represents over 25 percent of the 1982 cabbage acreage in upstate New York State.

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*Cost of Production Update for 1980 - ... Market Cabbage - Packing and Storage Costs; A.E. Res. 81-11, D.P. Snyder, Department of Agricultural Economics, Cornell University, Ithaca, New York 14853-0398.

Homegrown Transplant Costs

Most of the cabbage growers who used transplants, rather than direct seeding, purchased their plants either from the South or locally. In several cases, because of the high cost of seed, the grower provided the seed and contracted with a Southern grower to grow the plants.

Nine of these 21 growers prepared seed beds of their own and grew transplants for their cabbage enterprise. Table 9 summarizes the costs of raising cabbage transplants by these nine growers. These growers grew an average of 695,000 plants on 2.2 acres of seedbed at an average cost of $2,502 per acre. The major costs were for labor, which was used mostly for pulling and sorting, and seed. These costs comprised 80 percent of the total cost of the transplants. The average total cost of transplants for these growers was $7.80 per thousand plants used. This compares favorably with the cost of purchased transplants which averaged $12.53 per thousand for the 12 growers who purchased their transplants.

Table 9. Homegrown Cabbage Transplants
Growing Costs (including pulling and sorting)
New York, 1982

Item	Cost per Thousand Plants
Number of farms	9
Plants grown per farm, thousand	695
Labor 1.1 hours	$3.87
Tractor	.16
Equipment, large trucks	.33
Custom work, equipment rent	---
Land use	.21
Lime, cover crop, manure	.03
Fertilizer	.13
Seed	2.36
Chemicals	.15
Interest on operating capital	.20
All other	.37
Total growing costs	$7.80
Purchased transplants	
12 farms @ 374 M per farm	$12.53

KRAUT CABBAGE

There are two important areas in New York State where kraut cabbage is grown. Both are located in the northern half of western New York and include Ontario and Yates Counties and Monroe, Genesee and Orleans Counties. Seventeen kraut cabbage growers were interviewed and provided the data used in this study. These growers produced 1,161 acres of kraut cabbage which accounted for about a third of the State crop in 1982.

Enterprises ranged from five to 115 acres in size and averaged 48 acres with 70 percent of the enterprises between 25 and 70 acres each. Several growers used both direct seeding and transplanting to grow their crop. Thus, from the 17 growers interviewed, 24 enterprise records were obtained. The following tables present data for both planting methods where the distinction was important such as in growing costs and overall enterprise results.

Growing Costs

Table 10 shows the individual cost items that contributed to the cost of growing kraut cabbage. The 24 enterprise records that were obtained provided 13 records for direct seeded kraut cabbage enterprises and 11 records for transplanted cabbage enterprises. The growing costs for these two planting methods are presented and compared.

In this group of kraut cabbage growers, those who direct seeded their crop had larger enterprises and their yields averaged somewhat, though not significantly, higher. The 13 direct seeded enterprises average 56 acres in size and yielded 25.7 tons of cabbage per acre. On the other hand, the 11 transplanted enterprises averaged 40 acres of cabbage that yielded 24.4 tons per acre.

Total growing costs per acre were lower for direct seeded cabbage as shown in Table 10. The major difference in growing costs between the two planting methods was in seed and plant costs. Even though some cabbage seed cost as much as $250 per pound, seed for direct seeded enterprises cost $27 per acre as compared to $118 per acre for purchased or homegrown transplants.

Another major difference was in labor costs. The additional labor required to thin and hoe direct seeded cabbage more than offset the extra labor needed to transplant cabbage seedlings. The result was higher labor costs for the direct seeding enterprises to grow the crop.

Chemical costs were lower for transplanted cabbage. Land costs also averaged less for transplanted cabbage but were more related to land values and rental rates than to planting method. Although fertilizer costs were similar for both planting methods, direct seeded kraut cabbage received less phosphorus, more potassium, and about the same nitrogen as compared to transplanted cabbage.

Excluding land costs, direct seeding kraut cabbage cost $49 per acre less to grow than transplanted kraut cabbage. Other cost comparisons are shown in Table 10.

Table 10. Kraut Caggage
Growing Costs
1161 Acres from 24 Enterprises
New York, 1982

Item	Cost per acre	
	Direct seeded	Transplanted
Number of enterprises	13	11
Acres per enterprise	56	40
Yield per acre planted, tons	25.7	24.4
Labor	$137	$ 97
Tractor	44	49
Equipment, large trucks	43	42
Custom work, equipment rent	4	3
land use	95	79
Lime, cover crop, manure	13	13
Fertilizer	82	86
Seed, plants	27	118
Chemicals	36	27
Interest on operating capital	9	10
All other	26	25
Total growing costs	$516	$549
Total growing costs per ton	$ 20	$ 23
Total growing costs excluding land	$421	$470
Physical factors per acre -		
Labor, hours	27.9	21.6
Tractor, hours	5.1	6.0
Pounds of N	121	117
P	112	136
K	212	157

Planting Methods Compared on the Same Farms

Seven of the 17 kraut cabbage growers included in the study used both direct seeding and transplanting to grow cabbage. Table 11 provides data to compare growing costs for both planting methods under the same management.

On these farms, transplanted cabbage had a somewhat better yield than direct seeded cabbage. The general pattern of costs per acre for the various input items was quite similar to the larger group of kraut cabbage growers as shown in Table 10. Total growing costs were lower for direct seeded cabbage - $531 per acre compared to $600 per acre for transplanted kraut cabbage on the same farms.

Table 11 shows that growers using both planting methods did not apply as much potash to direct seeded cabbage as did the larger group. Table 10 shows an average of 212 pounds of potash applied per acre of direct seeded cabbage for 13 growers compared to only 161 pounds for the seven growers averaged in Table 11. The added potash did not seem to increase the yield of direct seeded cabbage.

Table 11. Kraut Cabbage
Growing Costs on the Same 7 Farms
For Two planting Methods
New York, 1982

Item	Cost per acre	
	Direct seeded	Transplanted
Number of enterprises	7	7
Acres per enterprise	56	36
Yield per acre planted, tons	25.9	28.2
Labor	$157	$115
Tractor	44	47
Equipment, large trucks	48	53
Custom work, equipment rent	4	4
Land use	99	90
Lime, cover crop, manure	9	11
Fertilizer	74	77
Seed, plants	27	134
Chemicals	35	29
Interest on operating capital	9	11
All other	25	29
Total growing costs	$531	$600
Total growing costs per ton	$ 20	$ 21
Total growing costs excluding land	$432	$510
Physical factors per acre -		
Labor, hours	33.6	25.1
Tractor, hours	5.1	5.4
Pounds of N	120	118
P	101	116
K	161	157

Harvesting Costs

Planting method made no difference as far as harvesting costs were concerned. Table 12 shows the costs related to the mechanical harvest of kraut cabbage for 20 enterprises. These costs include the actual harvest operation and loading of the trucks in the field. Hauling the crop from the field is not included as part of the harvest operation.

Mechanical harvesting of kraut cabbage for these 20 growers cost an average of $135 per acre which amounted to $5.21 per ton at 25.9 tons per acre. An average of 8.0 hours of labor was required to harvest the crop.

Table 12. Kraut Cabbage
Harvesting Costs
1001 Acres From 20 Enterprises
New York, 1982

Item	Cost	
	Per acre	Per ton
Number of enterprises	20*	
Acres per enterprise	50	
Yield per acre planted, tons	25.9	
Labor	$ 49	$1.88
Tractor	15	.56
Large trucks	17	.67
Equipment	42	1.63
Custom harvest	--	--
All other	12	.47
Total harvesting costs	$135	$5.21
Labor, hours	8.0	0.3

*Includes only enterprises using mechanical harvesters operated by the grower - no hand or custom harvesting.

Selling Costs

The grower hauled his own crop to the buyer's plant in all but one of the 24 kraut cabbage enterprises. The selling costs shown in Table 13 are mostly hauling costs experienced by the grower using his own labor and trucks. No custom hauling costs are included. In addition to hauling costs, selling costs include an interest charge on accounts receivable in cases where processors paid growers according to a delayed payment schedule. Grower contributions to cabbage research are also included.

Hauling costs averagd $81 per acre and $3.14 per ton. Interest on accounts receivable and research contributions averaged $13 per acre and $0.50 per ton for this group of growers. Both of these costs varied considerably between growers because of various distances, quantities and payment schedules. Table 13 shows that hauling the crop required 2.9 hours per acre and 8.8 tons of cabbage were hauled per hour on the average.

Table 13. Kraut Cabbage
Selling Costs
1095 Acres From 23 Enterprises*
New York, 1982

Item	Cost	
	Per acre	Per ton
Number of enterprises		23
Acres per enterprise		48
Yield per acre planted, tons		25.8
Tons hauled		28,278
Labor	$18	$0.70
Truck	63	2.44
Custom haul	—	—
Total hauling costs	$81	$3.14
Interest on accounts receivable, research	13	.50
Total selling costs	$94	$3.64
Hauling labor	2.9 hours/acre	8.8 tons/hour

*Excludes one enterprise with custom hauling costs.

Costs and Returns

In Table 14, all costs and returns for the 24 kraut cabbage enterprises are summarized by planting method. Total costs for direct seeded cabbage were somewhat lower than transplanted cabbage, but not significantly lower. The slightly higher yield for direct seeded kraut cabbage resulted in higher total returns since the returns per ton were the same for both groups of growers.

With lower costs, higher yield and the same return per ton, direct seeded kraut cabbage enterprises showed a profit of $158 per acre which was $72 per acre higher than the profit for the transplanted kraut cabbage enterprises. Kraut cabbage, when either planting method was used, was profitable in 1982 for these enterprises. Direct seeded kraut cabbage enterprises were more profitable, however, and returned $1.21 per dollar of cost compared to $1.11 for transplanted kraut cabbage.

Table 14. Kraut Cabbage
Costs and Returns
1161 Acres From 24 Enterprises
New York, 1982

Item		Direct seeded	Transplanted
Number of enterprises		13	11
Acres per enterprise		56	40
Yield per acre planted, paid tons		25.7	24.4
		------ per acre ------	
Costs to:	Grow	$516	$549
	Harvest	142	130
	Produce	$658	$679
	Sell	93	94
	Total costs	$751	$773
Total returns		$909	$859
Profit		$158	$ 86
		------ per ton ------	
Costs to:	Grow	$ 20	$ 23
	Harvest	6	5
	Produce	$ 26	$ 28
	Sell	3	4
	Total costs	$ 29	$ 32
Total returns		$ 35	$ 35
Profit		$ 6	$ 3
Return per dollar of cost		$1.21	$1.11

Selected Factors

Each group of kraut cabbage growers included individuals working with their own resources and applying their own skills and techniques to earn a profit. In the proceedng tables, averages for each group have been presented. The results of individual operations make up the averages. In Tables 15 and 16 are presented selected factors for each kraut cabbage enterprise included in the direct seeded and transplanted groups. The data will illustrate the ranges, variations and averages for each group. Variations within each group for the various factors are great but tend to be less for the direct seeded kraut cabbage enterprises.

Table 15. Kraut Cabbage
Direct Seeded - Selected Factors
726 Acres from 13 Enterprises
New York, 1982

Enterprise No.*	Yield per acre	Average per acre planted			Average per ton		Return per $ of cost
		Grow cost	Harvest cost	Profit	Cost	Return	
	Tn	$	$	$	$	$	$
108	25.6	556	126	90	32	35	1.11
112	26.3	440	134	257	26	35	1.38
101	24.3	490	180	254	31	41	1.34
106	24.2	464	146	180	29	36	1.26
102	28.2	456	139	237	24	32	1.36
110	24.3	555	163	3-	33	33	1.00
103	27.1	639	139	49	33	35	1.05
104	25.0	530	131	154	30	36	1.21
107	26.9	561	102	217	28	36	1.29
111	27.0	402	89	340	20	33	1.62
109	25.0	633	236	23-	37	36	0.98
105	20.9	516	104	7	33	34	1.01
113	30.3	466	201	223	28	35	1.26
Range	20.9 to 30.3	402 to 639	89 to 236	-23 to 340	20 to 37	32 to 41	0.98 to 1.62
Weighted Avg. of 13	25.7	516	142	158	29	35	1.21

*Ranked from largest to smallest acreage.

Table 16. Kraut Cabbage
Transplanted - Selected Factors
435 Acres from 11 Enterprises
New York, 1982

Enterprise No.*	Yield per acre	Average per acre planted			Average per ton		Return per $ of cost
		Grow cost	Harvest cost	Profit	Cost	Return	
	Tn	$	$	$	$	$	$
208	27.0	415	89	323	21	33	1.57
209	15.4	418	137	52-	40	37	0.92
203	27.1	671	135	22	34	35	1.02
202	25.4	401	196	144	31	36	1.18
211	15.1	539	100	159-	46	35	0.77
206	35.4	696	118	345	26	36	1.38
204	25.0	678	131	1	36	36	1.00
205	24.2	587	149	53	34	36	1.06
207	25.4	697	126	59-	38	35	0.94
201	30.7	901	103	52	33	35	1.05
210	30.2	622	200	47	34	35	1.05
Range	15.1 to 35.4	401 to 901	89 to 200	-159 to 345	21 to 46	33 to 37	0.77 to 1.57
Weighted Avg. of 11	24.4	549	130	86	32	35	1.11

*Ranked from largest to smallest acreage.

Factors Affecting Profits

Profits, in any enterprise, depend upon a proper balance between costs of production, price of the product produced, and productivity. Price is basically related to the quantity of the product and the demand for it in the marketplace. These are largely determined by factors external to the individual business.

The other two items affecting profit - costs and productivity - can be most readily influenced by the management available to the business. It is the management that brings together labor and capital to earn a profit. Beyond that, and most importantly for crop farmers, profits depend upon the quantity and distribution of precipitation and temperature throughout the growing season. Except for irrigation, growers have very little control over the rainfall and temperature patterns so critical to profitable crop production.

Cost Control - Table 17 illustrates the relationship between costs and profits for direct seeded and transplanted kraut cabbage enterprises in 1982. For each group, growers were ranked by total cost per acre to grow, harvest, and sell the kraut cabbage crop. The median grower was dropped so as to have the same number of growers in the high and low cost groups for each planting method. The results are interesting.

The high and low cost direct seeded groups had the same size enterprises and received the same yield per acre as shown in Table 17. In this comparison, the low cost group had the higher profit per acre in spite of a somewhat lower return per ton of cabbage. When higher profits are received with the same yield and a lower price, lower costs must have occurred. Although not shown in the table, the lower cost group had lower labor and equipment costs per acre as well as lower fertilizer and chemical costs per acre. Seed costs were the same and land costs were 12 percent higher for the low cost group compared to the high cost group.

On the other hand, when transplanted kraut cabbage enterprises were sorted into high and low cost groups, it was the high cost group that had the higher profit per acre (Table 17). Both groups received the same return per ton of cabbage but the high cost group did receive a substantially higher yield from a smaller acreage. As with the direct seeded comparison, the high cost transplant growers had higher labor and equipment costs per acre. The high cost group also had substantially higher land costs, chemical costs, and transplant costs. All of the growers in the high cost group purchased their transplants while only two growers in the low cost group used purchased transplants; the other three growers grew their own transplants. Both groups had the same fertilizer cost per acre even though the high cost group had a yield 42 percent higher than the low cost group. Clearly, the higher yield with the same price more than offset the effects of higher costs to produce higher profits than those received by the low cost group.

Table 17. Kraut Cabbage
Relation of Total Costs to Profits
22 Enterprises
New York, 1982

Item	Total Costs			
	Direct Seeded		Transplanted	
	High	Low	High	Low
Number of enterprises	6	6	5	5
Acres per enterprise	58	55	29	53
Yield per acre, tons	25.5	25.8	30.2	21.3
	- - - - - - - - per acre - - - - - - - -			
Cost to: Grow	$560	$462	$700	$454
Harvest	158	130	127	131
Sell	107	82	110	87
Total costs	$825	$674	$937	$672
Total returns	$918	$892	$1,064	$744
Profit	$ 93	$218	$127	$ 72
	- - - - - - - - per ton - - - - - - - -			
Cost to: Grow	$ 22	$ 18	$ 23	$ 21
Harvest	6	5	4	6
Sell	4	3	4	5
Total costs	$ 32	$ 26	$ 31	$ 32
Total returns	$ 36	$ 34	$ 35	$ 35
Profit	$ 4	$ 8	$ 4	$ 3
Return per dollar of cost	$1.11	$1.32	$1.14	$1.11

Low costs, then, do not necessarily mean higher profits. However, cost control must be exercised and cannot be ignored. The key is effective cost control which can enhance the potential for higher profits. This will include the use of good land, good seed or plants, adequate but not excessive fertilizer and chemical usage and timely operations efficiently and effectively performed. These practices do not occur easily or without thought, but managers who exercise them will have done what they can to control costs and to enhance their profit potential.

Productivity - Productivity involves people. People produce by using the various resources at their disposal. In the case of crop farmers, land is used, along with many inputs, to produce the crop. The effective use of labor and capital involves cost control, as shown in the previous section, but also relates to the quantity of crop produced per acre. Thus, yield per acre is a common measure of crop production and, while maximum yield is not necessarily equal to optimum yield, high yields are directly related to high profits.

The relation of yield to profits in kraut cabbage production is shown in Table 18. The direct seeded and transplanted kraut cabbage enterprises were ranked by yield and the median enterprise was dropped to produce equal numbers in the high and low yield groups for each planting method. Size of enterprise was also about the same for each planting method group. Yields for the transplanted group varied considerably more than for the direct seeded group. This fact is also shown by comparing the yield ranges shown in Tables 15 and 16.

The high yield groups for both direct seeded and transplanted cabbage received significantly higher profits than the low yield groups. The high yield direct seeded group had lower total costs and the same return per ton and, with a five percent higher yield, had a profit per acre averaging $96 or 78 percent higher than the low yield group. The higher profit resulted from both higher yields and lower costs.

The transplanted cabbage groups, however, show a clearer effect of yield on profits. The high yield group had a 49 percent higher yield. It also had 11 percent higher total costs and a five percent lower return per ton. In spite of higher costs and a lower price, the high yield group had profits averaging $221 per acre or $8 per ton more than the low yield group. The high yield group had higher growing costs for most inputs except for fertilizer which was 14 percent less per acre than for the low yield group. The high yield group had lower overall harvesting costs per acre because of significantly lower equipment costs per acre.

The factors essential to effective cost control mentioned earlier are even more essential for high yields. High productivity in the form of high yields and effective use of labor, equipment and other resources are essential for the profits necessary for the continuation of the enterprise.

Table 18. Kraut Cabbage
Relation of Yield to Profits
22 Enterprises
New York, 1982

Item	Yield			
	Direct Seeded		Transplanted	
	Low	High	Low	High
Number of enterprises	6	6	5	5
Acres per enterprise	50	52	37	39
Yield per acre, tons	24.3	25.6	19.8	29.5
	- - - - - - - - per acre - - - - - - - -			
Cost to: Grow	$522	$494	$491	$602
Harvest	162	128	143	114
Sell	82	92	94	93
Total costs	$766	$714	$728	$809
Total returns	$888	$932	$717	$1,019
Profit	$122	$218	$-11	$210
	- - - - - - - - per ton - - - - - - - -			
Cost to: Grow	$ 21	$ 19	$ 25	$ 20
Harvest	7	5	7	4
Sell	3	4	5	3
Total costs	$ 31	$ 28	$ 37	$ 27
Total returns	$ 36	$ 36	$ 36	$ 34
Profit	$ 5	$ 8	$- 1	$ 7
Return per dollar of cost	$1.16	$1.31	$0.98	$1.26

STORAGE CABBAGE

While some storage cabbage is grown in the Ontario County area of New York State, most cabbage for storage is grown in Genesee, Monroe, and Orleans Counties. Storage cabbage was grown on 14 of the farms visited in this study.

Enterprises ranged from 12 to 150 acres in size and averaged 59 acres each. Sixty-two percent of the enterprises ranged from 26 to 100 acres each. Two of the growers used both direct seeding and transplanting methods and, therefore, from the 14 farms, data for six direct seeded and 10 transplanted cabbage enterprises were obtained. The following tables present data for both planting methods where the distinction was important such as in growing costs and overall enterprise results.

Growing Costs

Total costs to grow an acre of direct seeded storage cabbage averaged $68 less per acre than for transplanted storage cabbage. Table 19 compares growing costs and other factors for the two planting methods. The six direct seeded enterprises averaged 35 acres each and ranged from 13 to 100 acres with only one enterprise over 50 acres. The 10 transplanted enterprises averaged 74 acres each and ranged from 12 to 150 acres.

As with kraut cabbage, more labor was used to grow direct seeded storage cabbage than transplanted storage cabbage. The higher labor cost was more than offset by lower seed costs than transplant costs. Other costs varied as shown in Table 19.

One major difference was in the quantity of potash used per acre. Although fertilizer cost per acre was quite similar for the two planting methods, direct seeded enterprises received considerably more potash per acre than did the transplanted cabbage. Similar amounts of nitrogen and phosphorus were used for both groups of cabbage enterprises. As with kraut cabbage, the higher level of potash did not seem to enhance the yield of direct seeded cabbage.

Total costs for direct seeded storage cabbage averaged $501 per acre compared to $569 for transplanted storage cabbage. Excluding land costs, direct seeded cabbage cost $77 per acre less than transplanted cabbage.

Table 19. Storage Cabbage
Growing Costs
947 Acres from 16 Enterprises
New York, 1982

Item	Cost per acre	
	Direct seeded	Transplanted
Number of enterprises	6	10
Acres per enterprise	35	74
Yield per acre planted, tons	24.7	26.5
Labor	$106	$ 91
Tractor	37	44
Equipment, large trucks	46	42
Custom work, equipment rent	14	12
Land use	84	75
Lime, cover crop, manure	7	14
Fertilizer	96	98
Seed, plants	22	87
Chemicals	54	67
Interest on operating capital	9	11
All other	24	27
Total growing costs	$501	$569
Total growing costs per ton	$ 20	$ 21
Total growing costs excluding land	$417	$494
Physical factors per acre -		
Labor, hours	22.0	20.0
Tractor, hours	4.2	5.4
Pounds of N	126	129
P	144	136
K	263	152

Harvesting Costs

Of the 16 storage cabbage growers included in this study, three growers used at least some custom work or rented equipment to harvest their crop. Therefore, to keep the harvesting costs as comparable between enterprises as possible, only data from the 13 growers who did all their own harvesting were included in the harvesting cost data presented in Table 20. Planting method made no difference in the harvest operation so no distinction was made between direct seeded and transplanted enterprises.

These 13 storage cabbage growers had enterprises averaging 53 acres in size and an average yield of 26.7 tons per acre in 1982. Harvesting was done by hand on these farms, with no mechanical aids, and required 37 hours of labor per acre.

Labor included time to spread boxes or baskets in the field, cut and place the cabbage in the containers, load the trucks or wagons in the field, and haul the crop and place it in storage on the farm. Trucks or tractors and wagons were used to transport the cabbage to farm storage. Only about 15 percent of the cabbage on these farms was not stored on the farm. In these cases, hauling costs to the off-farm storage was not included as a harvest cost, but rather as a "selling" cost.

Equipment costs of $39 per acre included the cost for boxes, bins, baskets, and wagons used in the harvest operation. Harvesting costs totalled $406 per acre and $15.21 per ton in 1982 for these enterprises.

Table 20. Storage Cabbage Harvesting Costs 683 Acres from 13 Enterprises New York, 1982

Item	Cost	
	Per acre	Per ton
Number of enterprises	13*	
Acres per enterprise	53	
Yield per acre planted, tons	26.7	
Labor	$237	$ 8.88
Tractor	89	3.33
Large trucks	4	.15
Equipment	39	1.46
Custom harvest	--	--
All other	37	1.39
Total harvesting costs	$406	$15.21
Labor, hours	37	1.4

*Excludes three enterprises with custom harvest costs.

Costs and Returns

In Table 21, all costs and returns for the 16 storage cabbage enterprises are summarized by planting method. With similar returns and lower costs per acre, the direct seeded enterprises showed a profit of $156 per acre compared to $83 per acre for transplanted enterprises.

Returns per ton were based on actual and estimated market values at the time of storage. The somewhat lower yield for the direct seeded enterprises was offset by a higher price per ton with resulting similar returns per acre for the two groups.

Selling costs, shown in Table 21, included the costs for some cabbage to be hauled from the field to an off-farm storage facility as well as a contribution to cabbage research paid by some growers. Direct seeded storage cabbage enterprises showed a higher selling cost because the group included smaller enterprises without farm storage where growers hauled the crop to off-farm storage.

Table 21. Storage Cabbage
Costs and Returns
947 Acres From 16 Enterprises
New York, 1982

Item		Direct seeded	Transplanted
Number of enterprises		6	10
Acres per enterprise		35	74
Yield per acre planted, paid tons		24.7	26.5
		----- per acre -----	
Costs to:	Grow	$501	$569
	Harvest	376	410
	Produce	$877	$979
	Sell	22	5
	Total costs	$899	$984
Returns		$1,055	$1,067
Profit		$156	$ 83
		----- per ton -----	
Costs to:	Grow	$ 20	$ 21
	Harvest	15	16
	Produce	$ 35	$ 37
	Sell	1	-
	Total costs	$ 36	$ 37
Total returns		$ 43	$ 40
Profit		$ 7	$ 3
Return per dollar of cost		$1.17	$1.08

Profits, on both a per acre and per ton basis, average higher for direct seeded storage cabbage which returned $1.17 for each dollar of cost compared to $1.08 return per dollar of cost for transplanted storage cabbage.

Selected Factors

In Table 22, various factors are presented for direct seeded and transplanted storage cabbage enterprises for comparison of individual enterprises. The data show the ranges and variation within each group as well as for the overall group of 16 storage cabbage enterprises included in the study.

Table 22. Storage Cabbage
Selected Factors
947 Acres from 16 Enterprises
New York, 1982

Enterprise No.*	Yield per acre	Average per acre planted			Average per ton		Return per $ of cost
		Grow cost	Harvest cost	Profit	Cost	Return	
	Tn	$	$	$	$	$	$
Direct Seeded							
404	22.0	499	361	18	39	40	1.02
401	32.5	429	431	765	26	50	1.89
406	30.3	526	368	313	30	40	1.35
405	17.7	523	240	-262	47	32	0.68
402	22.6	607	310	43	45	47	1.04
403	19.3	560	549	-499	66	40	0.61
Transplanted							
508	27.0	547	434	99	36	40	1.10
509	26.7	539	428	98	36	40	1.10
510	30.3	640	368	201	33	40	1.20
502	20.5	519	456	-257	48	35	0.74
501	24.6	765	421	100	48	52	1.08
506	29.6	510	289	409	29	43	1.48
503	26.7	507	400	163	34	40	1.18
507	26.7	516	371	-222	33	25	0.75
504	28.6	640	594	- 91	43	40	0.93
511	16.7	560	212	-105	46	40	0.86
Range	16.7 to 32.5	429 to 765	212 to 594	-499 to 765	26 to 66	25 to 52	0.61 to 1.89
Weighted Avg. of 16	26.1	554	402	99	37	41	1.10

*Each group is ranked from largest to smallest acreage.

CUSTOM RATES FOR FARM OPERATIONS

Introduction

Custom rate surveys have been conducted in recent years in New York for 1970 and 1976. This current study was designed to provide up-to-date information on an important topic of interest to a large cross-section of New York farm operators.

Custom rates have continued to increase as labor and equipment costs have increased over the years. Information from the New York Farm Cost Account project illustrates the reasons behind these increases. From 1976 to 1981, these records show that labor costs to produce an acre of corn silage have increased 38 percent and tractor and equipment costs have increased 92 percent. Equipment costs per cow on the same 11 dairy farms increased by 68 percent from 1976 to 1981. Regular farm workers on Cost Account farms cost about 60 percent more in 1981 than they did in 1976. Also, a sample of prices for major pieces of farm equipment from the New York Crop Reporting Service data indicates an increase of about 74 percent during that period.

A few examples of data from earlier studies will illustrate how custom rates have changed. Moldboard plowing that cost $7 per acre in 1970 increased to $10 per acre in 1976 and $14 per acre in 1982. Custom combining corn cost $15 per acre in 1970, $20 per acre in 1976 and $26 per acre in 1982. In 1970, baling hay cost $0.15 per bale; the 1976 study showed the same cost but in 1982 the cost increased to $0.28 per bale.

Procedure

The study results do not deal with calculated or estimated costs of labor and equipment to do various farm operations. Rather, the results reflect prices actually paid by farmers who hired the work done or prices charged by custom operators.

A survey form was prepared and distributed to extension agents throughout the state. They, in turn, distributed the form to their clientele and solicited their response. Survey forms were received, tabulated and summarized by the author and his staff. Responses to the basic farm custom rate survey totalled 856 and provide the main body of data for this report. These results represent actual custom rates paid in 1982 by users in the field.

This report includes only a summary (Table 23) of the most common custom rates reported. The full report* may be obtained from local extension offices or directly from the author.

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*1982 Custom Rates for Farm Operations in New York State, A.E. Res. 83-14, D.P. Snyder, Department of Agricultural Economics, Cornell University, Ithaca, New York 14853-0398.

Survey Results

Custom rates charged and paid for most farm operations varied considerably. Rates were most commonly based on units of physical output - acres, bales, tons, etc. In those cases, size of equipment and efficiency were more important to the custom operator than to the buyer of the service. On this basis, rates can be expected to vary because of field conditions, field size and distance. Competition in the area and importance of custom work to both parties are also factors that affect rates.

In some cases and for some jobs, custom rates were based on time. When hourly rates are charged, size of equipment and operator performance are important considerations to the customer.

Most custom rates included fuel costs. When fuel was a significant factor, the data are presented for the custom operation with and without fuel.

Because of the number of responses received from counties throughout the State, considerable data is available on a county basis. The data are presented in the full report for each operation by county when five or more reports were received.

The format for the survey results shows the number of observations for each operation to indicate the amount of information on which the rates are based. The range of charges reported is given as well as the average.

A single "typical" rate was difficult to identify. Some measure of the most common rates are provided by data for the range and average of the middle third of the number of reports for each operation. Rates for clusters or groups of reports within a narrow range of rates are also shown. In many cases, reports indicated the number of units or volume of work performed. Rates charged for a known volume will help the reader determine the significance of the survey results.

The survey data are presented in the most meaningful way possible within the limits of the descriptions of equipment provided by the respondents. For several items, individual reports are listed separately because numbers were few and descriptions varied. Every reasonable effort was used to provide indications of the variation, range and magnitude of the rates paid and/or charged for these custom operations.

Throughout the report, custom rates include charges for the operator of the equipment as well as for the equipment itself.

The last section in the full report summarizes the rental rates of various items of farm equipment reported by members of the New York Farm Equipment Dealers Association. These data also include some equipment rental rates reported by farmer respondents.

Table 23 summarizes the most commonly reported custom rates for the middle third of all responses. Complete details are available in the full report as indicated earlier.

Table 23. Summary of Common Custom Rates
Custom Rates, New York, 1982

Custom job	No. of Reports	Rate per acre* Range	Rate per acre* Average
		$	$
Plowing - moldboard	32	12-15	14
chisel	9	9-12	10
Disc	10	6-8	7
Harrow	7	5-6	5
Spread lime - w/o material	13	4.25-5.00	4.67
w/o material	11	5.00-8.00	6.41/ton
w/material	21	23.00-27.50	24.75/ton
Spread fertilizer - bulk dry	30	4.25-5.00	4.54
liquid	26	4.25-4.50	4.47
side dressing	8	5.50-6.50	5.98
anhydrous ammonia	6	5.00-6.00	5.46
Plant corn - conventional	35	7-10	9
no-till	10	15-24	19
Drill small grain - conventional	18	6-8	7
no-till	12	18-35	21
Seed hay crops - conventional	11	6-8	7
Pesticide application - ground	67	4.25-5.00	4.65
air	15	5.00-6.00	5.40
Mow, condition hay	16	7-10	8
Mow, bale, store hay	25	0.50-0.70	0.57/bale
Bale hay - conventional	18	0.25-0.30	0.28/bale
- large round	13	4.50-5.00	4.94/bale
Combine - small grain w/fuel	68	18-21	20
w/o fuel	25	18-20	19
- shelled corn w/fuel	44	25-28	26
w/o fuel	18	24-25	25
- HM ear corn	11	25-27	25
Pick corn	23	18-20	20
Silage harvest	11	30-40	34
	13	40-50	47/hour
Dry corn	14	2.9-3.3¢	3.1¢/point
Bulldozing - small	23	30-35	32/hour
medium	20	40-48	42/hour
large	27	50-60	57/hour
Backhoeing - small	7	27-30	28/hour
medium	11	34-35	35/hour
large	5	35-40	37/hour
Trenching	11	0.38-0.45	0.41/foot

* Rate per acre unless otherwise specified.

Range and average rates are for middle third of all reports for each operation except no-till drilling of small grains.