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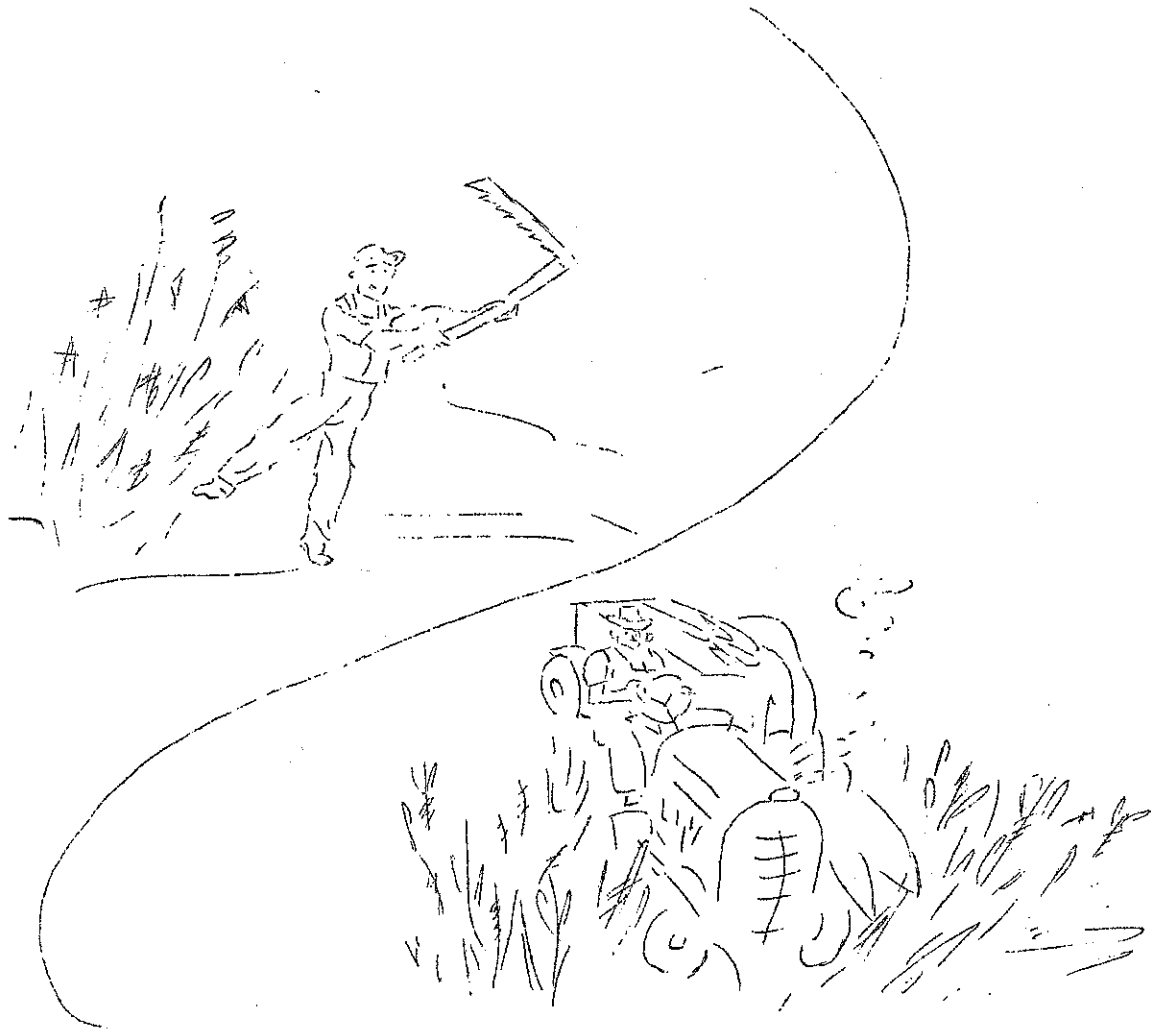
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LABOR DISTRIBUTION  
FOR MAJOR ENTERPRISES ON NEW YORK  
COST ACCOUNT FARMS  
1914 - 1950



Prepared by

Byron Huddleston

Department of Agricultural Economics  
Cornell University Agricultural Experiment Station  
New York State College of Agriculture  
Cornell University, Ithaca, New York

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## INTRODUCTION

Farm labor now as in the past is an important and valuable item in operating a farm business. It comprises today about one-half of all farm production expenses. Because of this farmers and others are most interested in the use which is made of their labor and the efficiency with which they produce farm products.

Technical developments in farming methods and materials along with more specialization and commercialization in agriculture have influenced the labor requirements of farm enterprises and the distribution of labor in farming operations. Farmers, through the use of improved plants, animals, machinery and equipment have been able to reduce the time required per unit of production for most farming enterprises. At the same time, shifts have occurred in the time of year that certain farming operations are carried out.

Information on labor was taken from records of cost account farmers. These farmers are in general among the better farmers of the State. They tend to lead the way in adapting improved farming methods and their records indicate the important changes which are occurring.

### Acknowledgements

This study was made under the direction of Professors C. D. Kearl and S. W. Warren, Department of Agricultural Economics, Cornell University.

Acknowledgement is also made to the many New York Farmers whose detailed farm records kept in cooperation with the Cornell Department of Agricultural Economics made this study possible.

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LABOR DISTRIBUTION FOR MAJOR ENTERPRISES  
ON NEW YORK COST-ACCOUNT FARMS, 1948-1950

Use of Labor, 1948-50

The cost account farmers averaged over 11,000 hours per farm during each of the years 1948-50. Crops accounted for 47 per cent of all labor and 31 per cent of all labor was used on livestock enterprises. Ten per cent of the labor was used in maintenance work of which 3 per cent was on maintenance of machinery and equipment and 7 per cent was in maintenance and improvement of real estate. Twelve per cent of all labor was used in "overhead" and miscellaneous jobs.

Almost half of all work done between the first of November and the first of April was spent on livestock (Table 1).

Forty-one per cent of the work on crops was done in September and October -- this included a large portion of crop harvesting that involved hard labor. Although mechanization has reduced the time required for many farm jobs, hand labor is still important during the harvest season. Further reduction in the amount of expensive hand labor required to harvest crops is still a challenge to research workers and farmers.

TABLE 1. RELATIVE IMPORTANCE OF LABOR ON MAJOR ENTERPRISE GROUPS  
BY MONTHS  
New York Cost Account Farms, 1948-50

	Percent of total work for month				Total
	Crops	Live- stock	Main- tenance	Overhead and Miscellaneous	
January	16	51	14	19	100
February	19	51	12	18	100
March	25	49	10	16	100
April	33	39	13	15	100
May	41	33	13	13	100
June	51	27	12	10	100
July	60	22	9	9	100
August	54	24	12	10	100
September	72	15	6	7	100
October	71	17	5	7	100
November	35	40	11	14	100
December	19	50	14	17	100
Average	47	31	10	12	100

The amount of labor on livestock was relatively uniform throughout the year. However there was slightly less time spent on these enterprises from May through October. These six months required 77 per cent as much labor as the six months, November through April, when livestock required

the most labor (Figure 1).

Forty-nine per cent of all maintenance work on all farms was done during the five months, April through August.

FIGURE 1. LABOR DISTRIBUTION FOR CROPS AND LIVESTOCK  
BY 10-DAY PERIODS  
New York Cost Account Farms 1948-50

Per Cent  
of All  
Labor

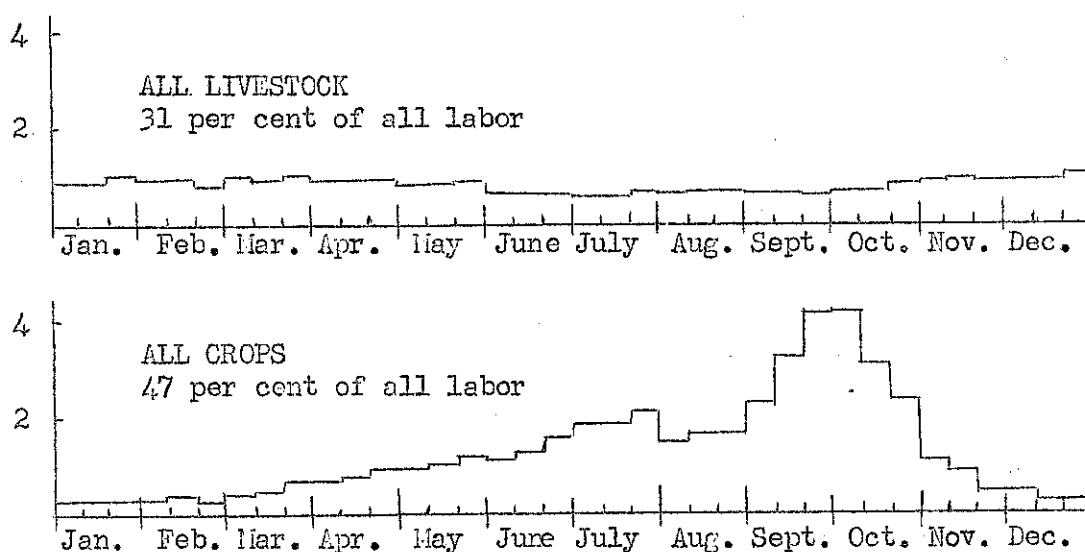


TABLE 2. DISTRIBUTION OF LABOR ON MAJOR ENTERPRISE GROUPS  
BY MONTHS  
New York Cost Account Farms, 1948-50

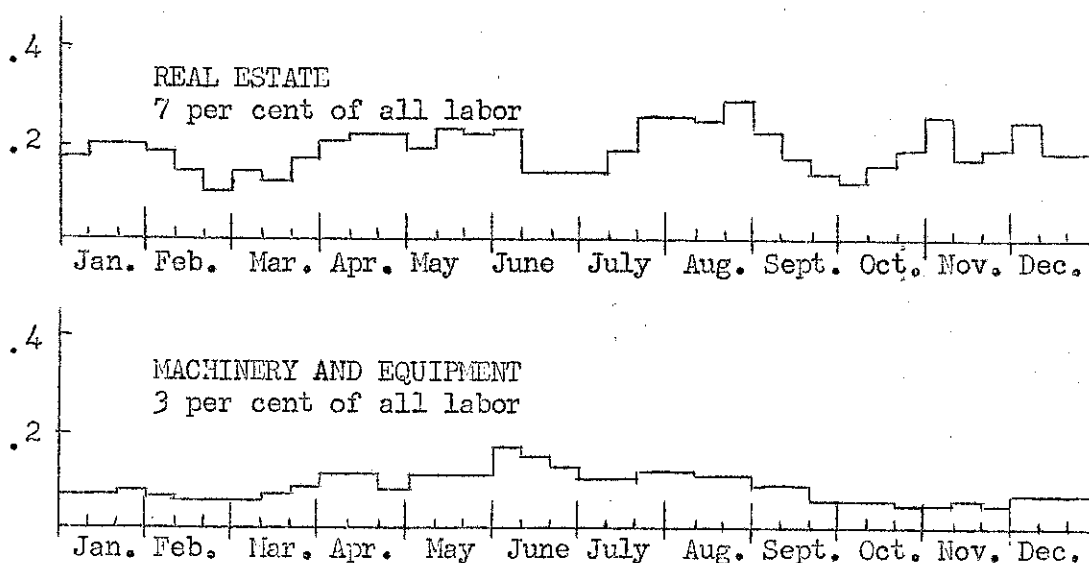
Month	Per cent of total work					Total
	Crops	Live-stock	Real-estate	Machinery & Equip.	Overhead & Misc.	
January	.93	2.95	.57	.22	1.09	5.76
February	1.02	2.77	.42	.19	1.00	5.40
March	1.61	3.07	.43	.22	1.04	6.37
April	2.49	2.93	.64	.30	1.12	7.48
May	3.19	2.60	.64	.33	1.01	7.77
June	4.06	2.12	.51	.45	.79	7.93
July	5.80	2.09	.59	.32	.86	9.66
August	4.98	2.17	.80	.34	.88	9.17
September	9.86	2.11	.53	.24	.90	13.64
October	9.76	2.37	.47	.17	1.03	13.80
November	2.49	2.86	.62	.16	1.02	7.15
December	1.11	2.91	.61	.21	1.03	5.87
Total	47.30	30.95	6.83	3.15	11.77	100.00

Most of the work on machinery and equipment was done from April to September (Table 2). Although much of the repair and overhauling of machinery and equipment is done during winter months, a large share of the work is done during the busy growing and harvesting season.

Labor on real estate included such work as maintenance and improvement of buildings, fences, water systems and drains. More work on real estate was done in August than in any other month (Figure 2). Part of the reason why a large part of the repair work is done in the spring and summer is because warm weather is more suitable for many building and repair jobs than the winter months.

FIGURE 2. DISTRIBUTION OF LABOR ON REAL ESTATE,  
MACHINERY AND EQUIPMENT  
New York Cost Account Farms, 1948-50

Per Cent  
of Total  
Hours



August tends to be an important month for maintenance because on fruit, vegetable and dairy farms it is an "in-between" month when there is less demand for labor on crops.

Miscellaneous and overhead work, such as bookkeeping and storage, is distributed relatively uniform throughout the year, becoming somewhat lighter during the busy crop season.

#### Yields of Crops and Livestock Products

Milk produced per cow increased from 62 hundred pounds to 96 hundred pounds per year between 1914 and 1950. It should be noted that these yields are approximately 30 per cent greater than the average for the state. Eggs per hen increased from 86 to 191. The cost account farm egg production of

191 eggs per hen is about the same as that for the state.

Yields of most crops were also higher in the more recent periods (Table 3). For example, corn for grain, corn silage and potato yields increased each successive period and yields of wheat, dry beans, tomatoes and apples were higher in 1948-50 than in any previous period. Canning factory peas and pears show no trend toward higher yields.

The effect of variation in yield on the number of hours spent on a crop during the year is most important for those crops that include a lot of hand labor in harvesting. Harvest of crops with machinery involves going through the same operations regardless of yield. However, when light yields are harvested somewhat less time is spent in hauling, storing and selling and often the harvesting equipment can be operated at higher speeds. All of this tends to reduce the time required per acre.

TABLE 3. YIELDS OF CROPS AND LIVESTOCK PRODUCTS  
BY SELECTED PERIODS, 1914-1950  
New York Cost Account Farms

Crop	Unit	1914- 1917	1926- 1928	1930- 1932	1933- 1935	1938- 1940	1948- 1950
Milk per cow	(cwt.)	62	73				96
Eggs per hen	(eggs)	86*	124				191
Corn for grain	(bu.)	26	27		29		47
Wheat	(bu.)	26	19		25		30
Oats	(bu.)	35	42		32		38
Hay	(tons)	1.6	1.7			2.0**	1.9
Corn silage	(tons)	5.9	7.6		8.8		9.6
Grass silage	(tons)						6.7
Potatoes	(bu.)	96	147		170	222**	349
Dry beans	(bu.)	10	14		14		18
Cabbage	(tons)	6.5	9.4		7.6		8.9
Canning factory peas	(tons)	1.2		.9	.7	.9	.9
Canning factory tomatoes	(tons)			7.7	7.7	8.5	9.4
Apples	(bu.)	180	155		196		259
Pears	(bu.)	88			63	93***	72

\* 1916-1918

\*\* 1940

\*\*\* 1938 and 1939

#### Weather Summary 1914-1950

Although annual precipitation has varied considerably from year to year, the amount of rainfall in recent years is not much different from that of 40 years ago. Annual precipitation was below the normal of 39.3



inches during five out of the six periods and fluctuated from 2.2 inches above normal in 1926-28 to 2.4 inches below normal in 1933-35 (Table 4).

Length of the growing season and growing season temperatures also have changed little during the past 40 years (Table 5). For each there was considerable variation from year to year but there is no indication at any station for which data were available that the growing season is getting longer or shorter or that temperatures during the growing season have had any trend.

TABLE 4. ANNUAL PRECIPITATION FOR NEW YORK AND LENGTH OF GROWING SEASON AT FIVE STATIONS FOR SELECTED YEARS 1914-1950 1/

Year	Annual Total for New York State		Length of Growing Season <u>2/</u>				
	Precipitation (inches)	Departure from Normal (inches)	Albany	Wappinger Falls	Rochester	Canton	Ithaca
1914-17	38.5	-0.8	162	153	180	146	152
1926-28	41.5	+2.2	188	150	186	155	168
1930-32	37.5	-1.8	196	154	185	157	158
1933-35	36.9	-2.4	176	153	180	154	154
1938-40	38.7	-0.6	174	150	189	179	162
1948-50	38.5	-0.8	184	151	171*	137	154
Normal	39.3						

TABLE 5. GROWING SEASON AND WEATHER CONDITIONS AT FIVE NEW YORK STATIONS FOR SELECTED YEARS 1914-1950 1/

Year	May 1 --- September 30									
	Temperature					Precipitation				
	Albany	Wappinger Falls	Rochester	Canton	Ithaca	Albany	Wappinger Falls	Rochester	Canton	Ithaca
	(Degrees)					(Inches)				
1914-17	65.8	67.0	64.4	61.7	63.9	14.0	19.3	14.9	14.5	19.8
1926-28	65.5	64.1	63.8	60.8	62.1	16.5	21.9	13.8	15.2	14.6
1930-32	68.1	67.0	66.9	63.4	65.9	16.1	19.2	12.9	15.1	14.9
1933-35	67.7	67.1	66.7	63.4	65.8	18.6	20.7	11.2	14.6	20.0
1938-40	65.8	66.4	66.4	63.3	65.6	17.8	24.1	12.7	17.5	15.7
1948-50	67.5	66.8	65.6	63.5	64.0	17.0	17.5	12.8	14.0	17.3

1/ Weather Bureau, U. S. Department of Commerce, Annual Summaries

2/ From last killing frost in spring to first killing frost in the fall

\* Two year average

## LABOR DISTRIBUTION ON LIVESTOCK

### Cows

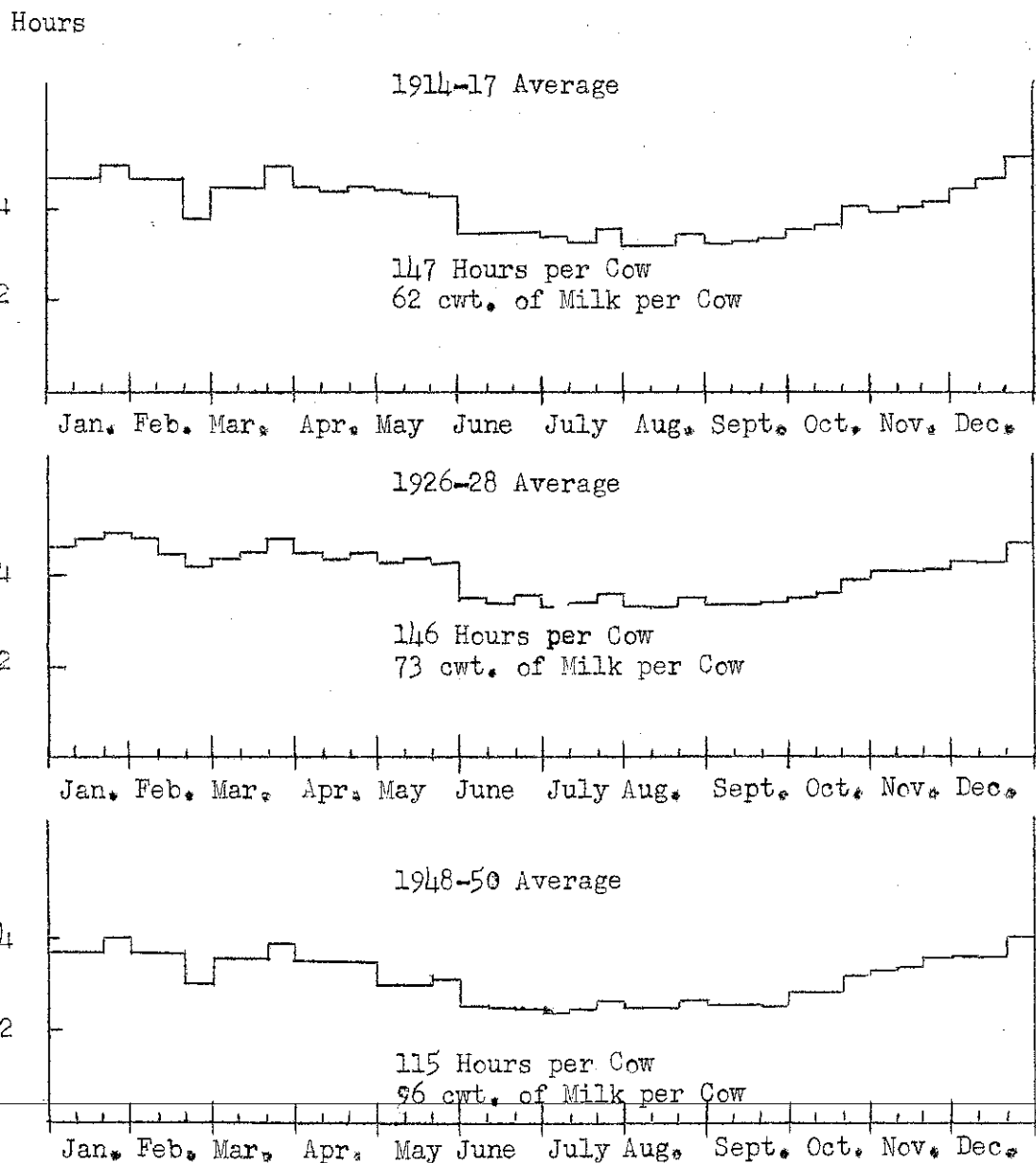
Distribution of labor throughout the year on dairy cows is about the same now as it was in 1914-17 (Figure 3). The amount of labor spent per cow has been reduced 22 per cent from 147 hours in 1914-17 to 115 hours in 1948-50. During the same period milk produced per cow per year has increased 55 per cent from 62 hundred pounds in 1914-17 to 96 hundred pounds in 1948-50.

Cows required the least amount of labor from June through September. Forty-four per cent more work was required during December, January, February and March than during the four months June through September. Summer work is reduced mainly through less time spent in feeding, bedding and cleaning barns.

Climate has not changed enough during the past 37 years to effect the time when cows are left out of the barn and the seasonal decrease in labor requirements occurred on the first of June in each of the three periods studied. The distribution for the most recent period indicates that farmers are getting their cows out somewhat earlier now than in past years.

Between 1914-17 and 1948-50 the decrease of 32 hours spent per cow reflects improvements in efficiency in doing chore work. Methods of milking, marketing milk, feeding and cleaning barns as well as improved barn arrangements have enabled dairymen to decrease hours of labor per cow and also handle greater production.

FIGURE 3. LABOR DISTRIBUTION PER COW  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



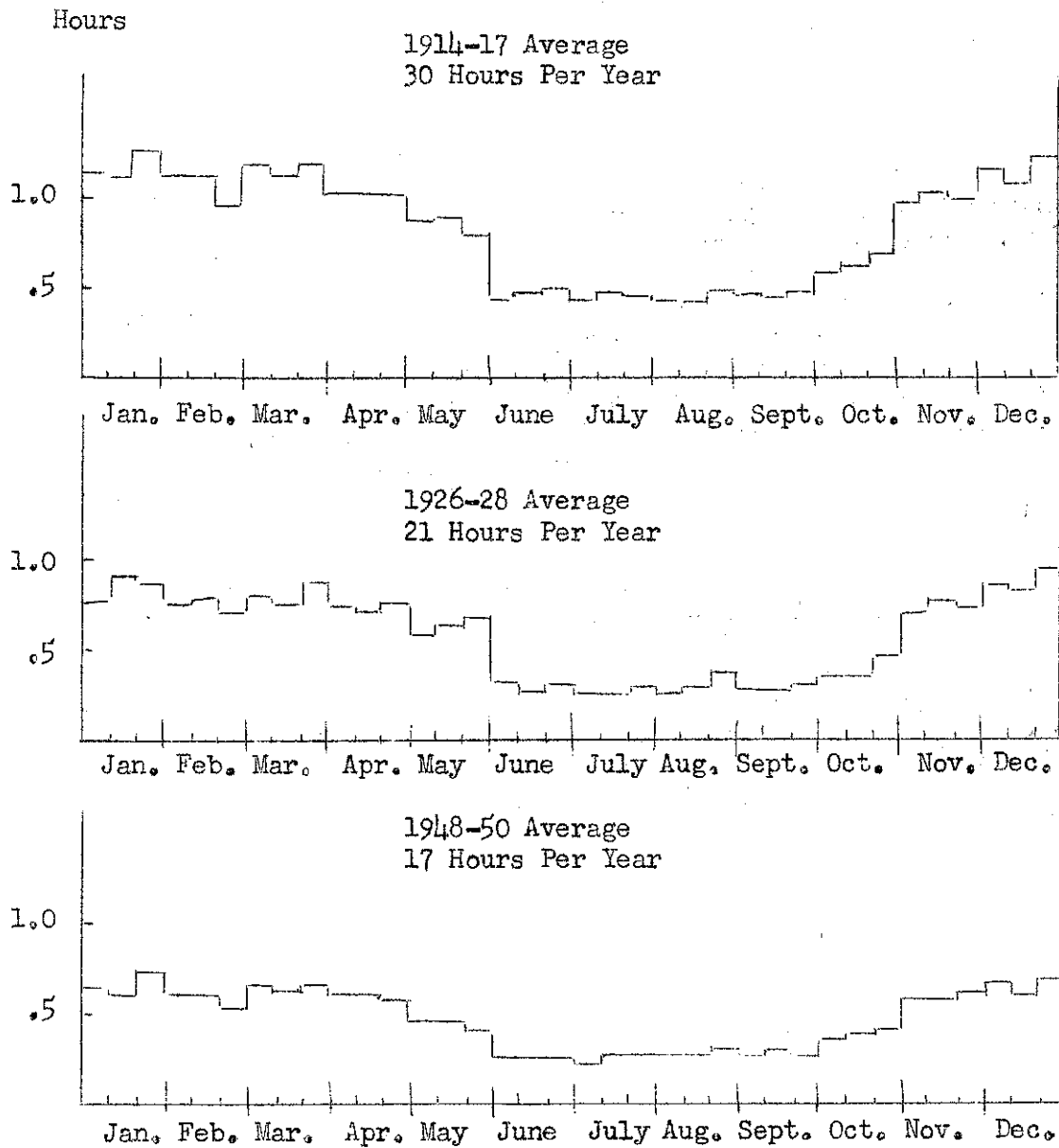
### Heifers

Labor on heifers followed the same general pattern throughout the year during 1948-50 as it did in 1914-17 (Figure 4). The number of hours spent per heifer during the year, however, was reduced 43 per cent from 30 hours in 1914-17 to 17 hours in 1948-50.

Seventy-four per cent of the work on heifers in 1948-50 was done during the six months, November through April. During June, July, August, September and October, heifers were on pasture most of the time and required a total of only four hours per heifer during the five month period which was 26 per cent of the total labor required during the year.

Labor requirements were greatly reduced on the first of June in all three periods. Work on heifers increased somewhat during October and made a sharp increase the first of November when heifers were kept in the barn most of the time. The greatest change in labor used in caring for heifers has been in the total amount of labor spent per heifer each year.

FIGURE 4. LABOR DISTRIBUTION PER HEIFER  
BY 10-DAY PERIODS  
New York Cost Account Farms



### Hens

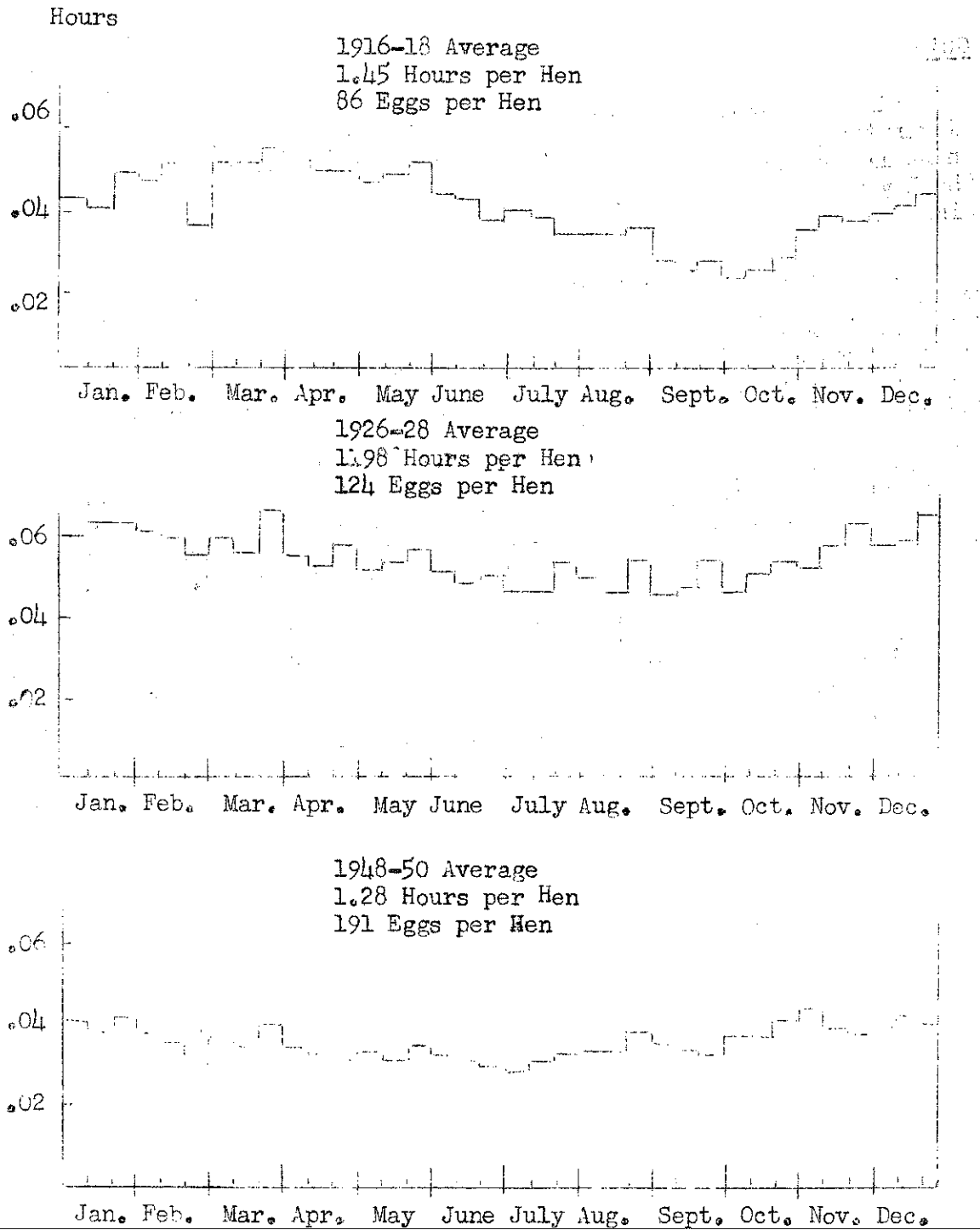
The amount of labor spent per bird per year was 1.45 hours in 1916-18. It increased to 1.98 hours in 1926-28 and dropped to 1.28 hours in 1948-50. Eggs produced per hen increased from 86 in 1916-18 to 124 in 1926-28 and to 191 in the 1948-50 period.

In 1916-18 most of the labor on hens was done during the spring and winter months with the least work done in September and October (Figure 5). During this period most replacement chicks were started in April, May and June and went into the laying house the last of October, November and December. Labor per bird decreased during the summer months.

By 1926-28 there had been a shift toward earlier started replacement flocks which was accompanied by corresponding shifts in the seasonal pattern of labor distribution. July, August and September were the months of lowest labor expenditures. The seasonal variation in the amount of time spent per layer was not nearly as great as during the earlier period. It should be particularly noticed that there was not the decrease in labor per bird during August, September and October of 1926-28 that there was during the same months in 1916-18.

Labor per hen was 1.28 hours in 1948-50. This was 65 per cent as much labor as was required in 1926-28. Along with this decrease in labor there was a 54 per cent increase in the number of eggs produced per bird. During the 1948-50 period there was 75 per cent as much labor spent in July, the month with the least amount of labor spent on hens, as there was in December, the month with the most labor spent per bird. The most recent period was characterized by having less seasonal fluctuations than the previous periods and with the months of lowest labor requirements still earlier in the year.

FIGURE 5. LABOR DISTRIBUTION PER HEN  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



### Chicks

Sixteen minutes of labor were spent per chick in 1948-50 compared to 41 minutes per chick in 1916-18. Back in 1916-18 chicks were usually started in April and May (Figure 6). Chicks raised in 1916-18 as replacements for the laying flock were housed as layers by November first. Between November first and April first practically no labor was used.

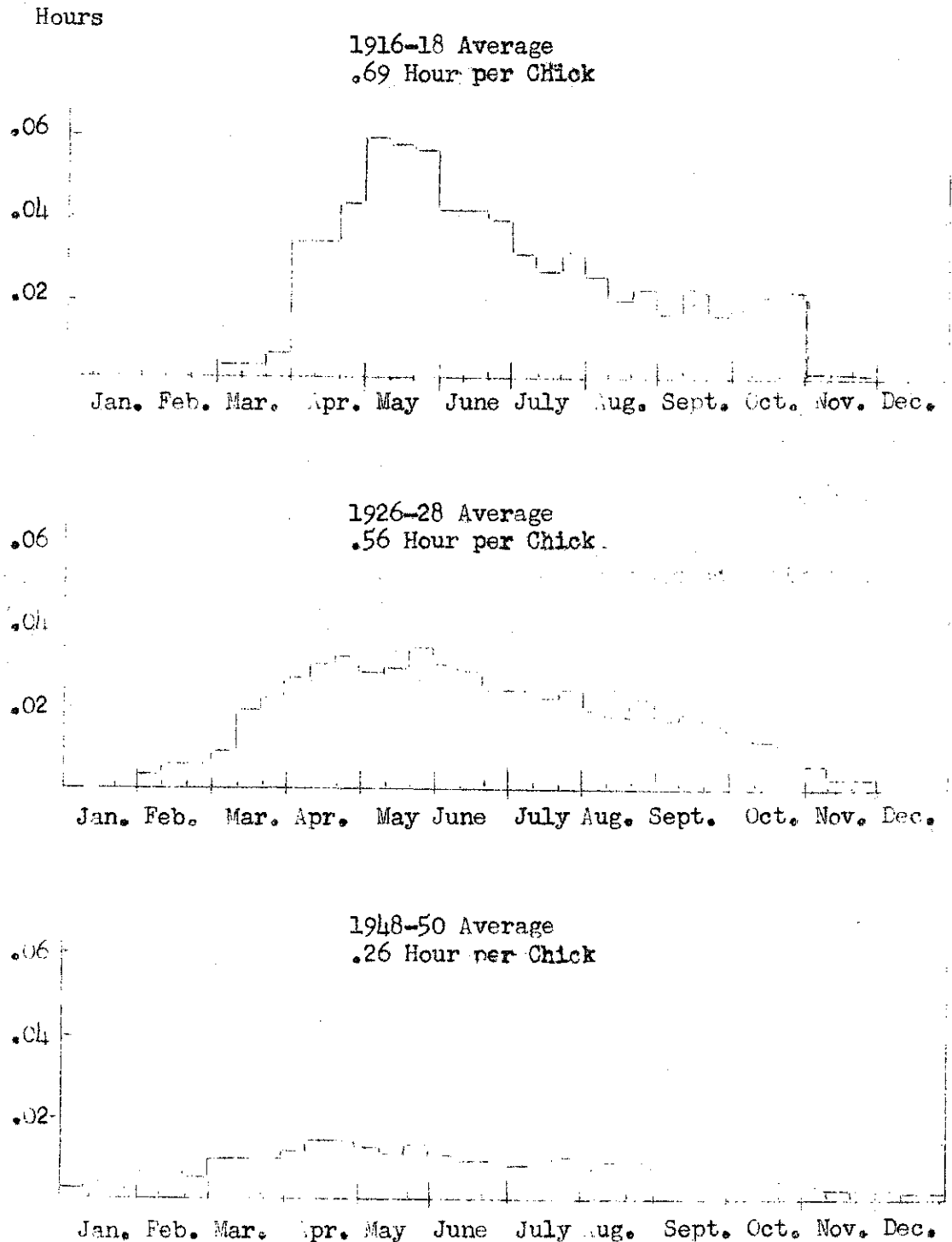
By 1926-28 the starting of chicks was becoming more of a year-round business. Some poultrymen were starting their chicks as early as the first ten days in February. Twelve per cent of all labor on chicks was done in February and March compared to 2 per cent during these same months in 1916-18. The amount of labor required to raise a chick decreased from 41 minutes in 1916-18 to 34 minutes in 1926-28.

In 1948-50 the shift had advanced further toward earlier hatched chicks, larger flocks and the use of more labor saving methods and equipment. April and May were no longer the traditional months to start chicks. Some poultrymen were starting chicks during the fall and winter months.

Associated with the shift toward the starting of chicks in all months of the year has been a leveling of the seasonal labor requirements for the enterprise. Although individual poultrymen have peaks in labor requirements for their rearing enterprise, when all farms are considered the extreme peaks of time spent in raising chicks have disappeared.



FIGURE 4. LABOR DISTRIBUTION PER CHICK RAISED  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



## LABOR DISTRIBUTION ON FIELD CROPS

### Corn for Grain

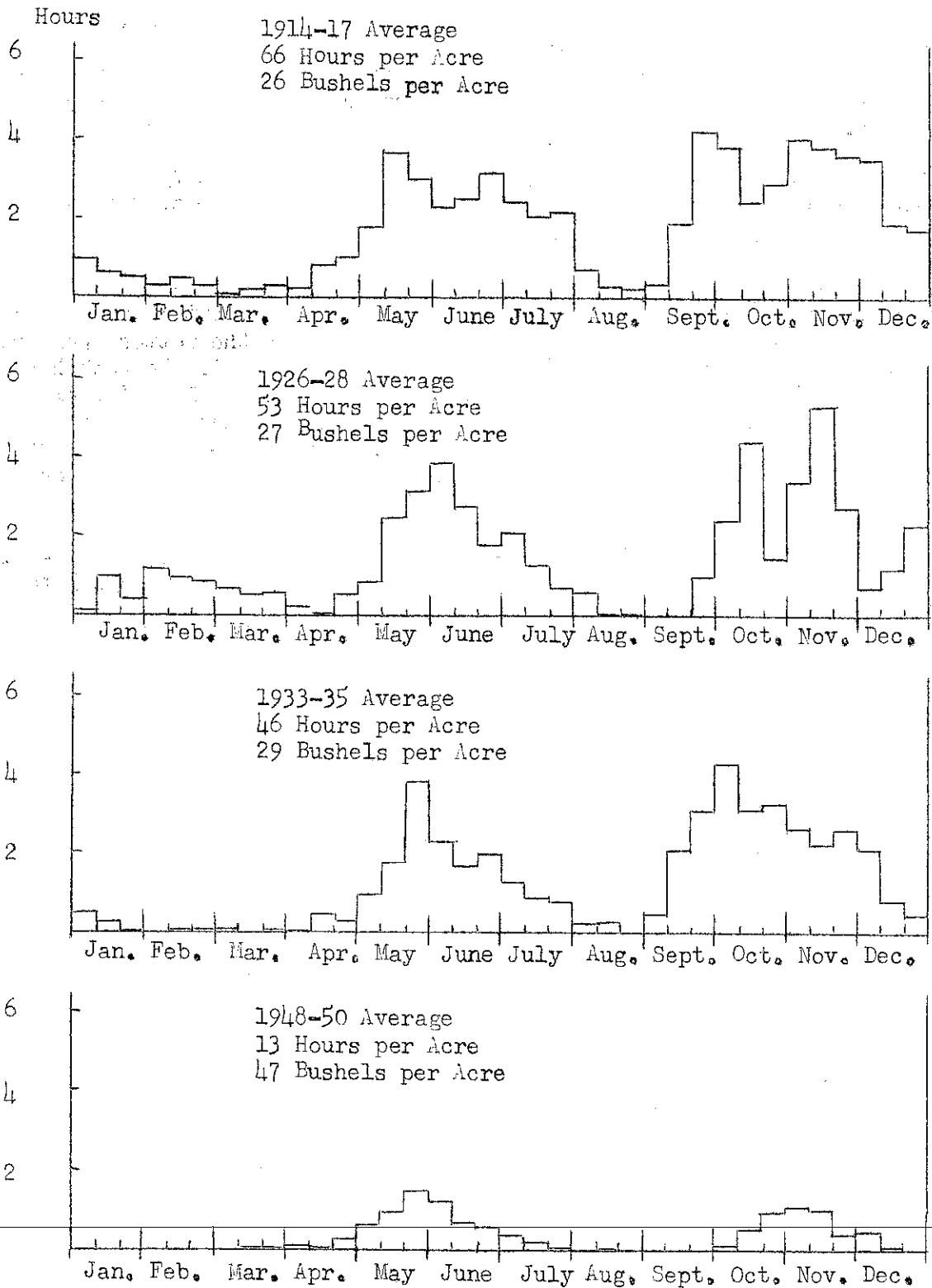
Corn production has been revolutionized. Hours of labor per acre have gone down 80 per cent and yield has increased considerably during the past 37 years. Furthermore, the change has come about mainly during the past 15 years. (Figure 7). From 1933-35 to 1948-50 hours of labor per acre decreased by 72 per cent. In 1948-50 it took 13 hours to grow and harvest an acre of corn. In 1933-35 it took 46 hours per acre. Labor in 1926-28 amounted to 53 hours and 66 hours of work were spent per acre in 1914-17.

Yields did not change very much from 1914-17 to 1933-35. Most of the corn grown was open-pollinated and about the same kind of equipment was used in the three periods. Yield per acre on cost account farms in 1914-17 was 26 bushels, in 1926-28 the yield averaged 27 bushels and increased to 29 bushels in 1933-35. For the 1948-50 period the average yield was 47 bushels.

Time of planting was about the same in 1948-50 as it was in previous periods. The big difference was in the amount of time required to do the job. Labor used in cultivation during August and September almost dropped out of the picture amounting to 2 per cent of the total work on corn during 1948-50.

Harvest began in October and was over by the tenth of December in 1948-50. During the previous periods, 1914-17, 1926-28 and 1933-35, the job of gathering and husking lasted for several months. The common practice was to cut the corn and husk it during the winter months. By 1933-35 the amount of work done in January and February had been reduced but in 1948-50 work on corn during these months had been almost eliminated.

FIGURE 7. LABOR DISTRIBUTION PER ACRE OF CORN FOR GRAIN  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



### Winter Wheat

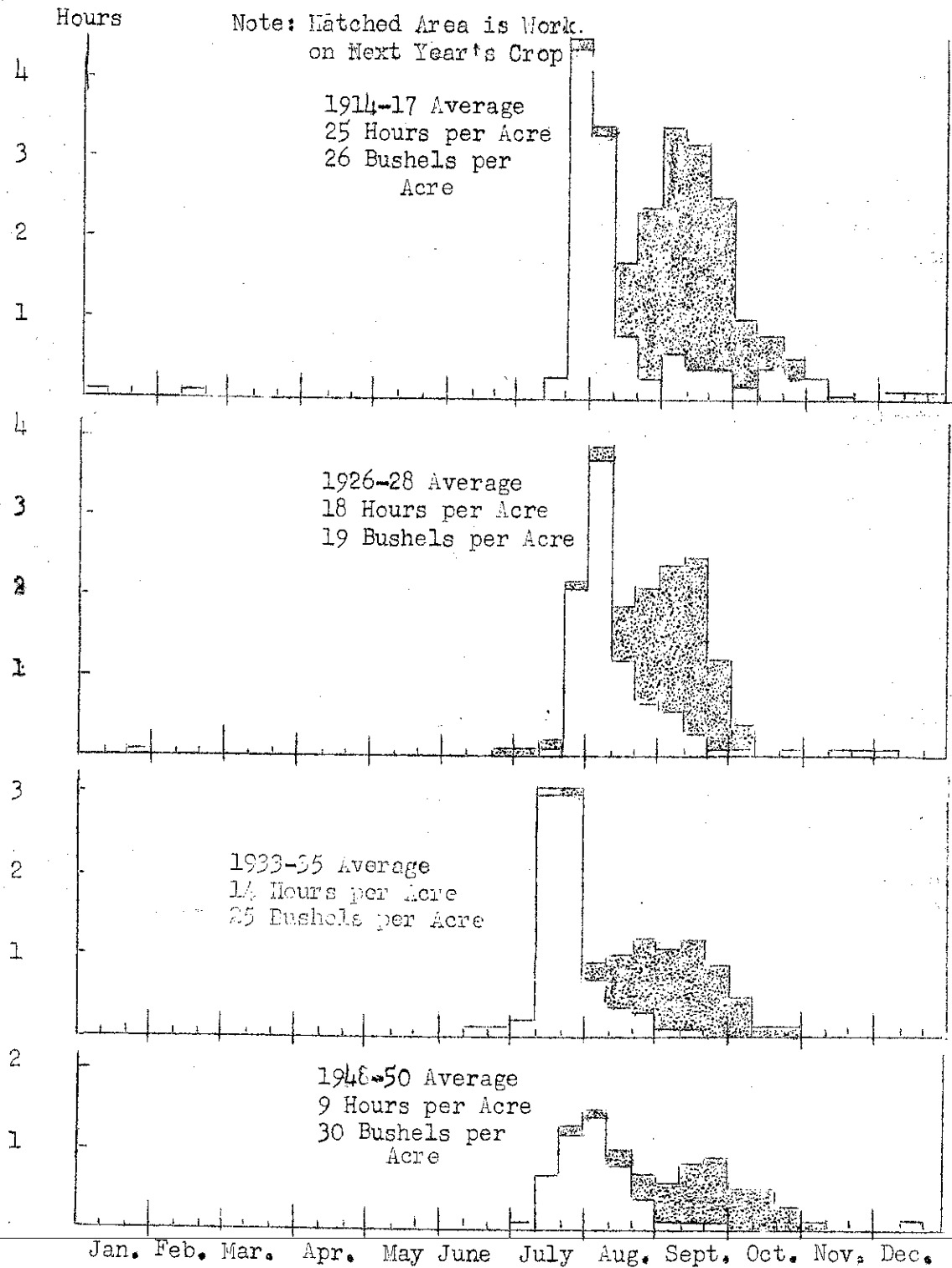
The trend in winter wheat production during the past 37 years has been toward fewer total hours of labor per acre, fewer harvesting hours due mainly to the use of combines and less growing time spent in fall-plowing and seeding through the use of tractor power and more modern equipment. Labor per acre was reduced each period from 25 hours in 1914-17 to 9 hours in 1948-50 (Figure 8). The most significant reduction in labor was from 1933-35 to 1948-50 when the number of hours spent per acre of wheat was reduced 36 per cent.

Yields were highest in the more recent period but varied from 26 bushels in 1914-17 to 19 bushels in 1926-28 and from 25 bushels in 1933-35 to 30 bushels in 1948-50.

Precipitation during 1933-35 was 2.4 inches below normal -- the least in any of the periods -- and the peak harvest season was about 10 days earlier in that period than in any of the other periods. During the wettest period, 1926-28 when total precipitation was 2.2 inches above normal, the peak harvest period was about 10 days later than usual. These periods reflect the effect of weather and drying conditions on time of harvest. The harvest season in the first period, 1914-17, and the most recent period, 1948-50, came at about the same time. In recent years, because most wheat is now combined, there is little winter work connected with harvesting the crop.

Peak seasons of work leveled off -- especially from 1933-35 to 1948-50. Fall work on next years' crop in 1948-50 reached a peak about 10 days later than the two previous periods and 20 days later than in 1914-17.

FIGURE 8. LABOR DISTRIBUTION PER ACRE OF WINTER WHEAT  
BY 10-DAY PERIODS  
New York Cost Account Farms



Oats.

The major changes in oat production during the past 37 years are that labor used in growing and harvesting have been reduced 72 per cent and combines have almost eliminated the job of thrashing. Seed bed preparation and planting was done in less time with tractor power in 1948-50 than with horse power in 1914-17. Both periods, 1926-28 and 1933-35 indicated the change toward fewer hours of labor required in all major operations in oat production (Figure 9).

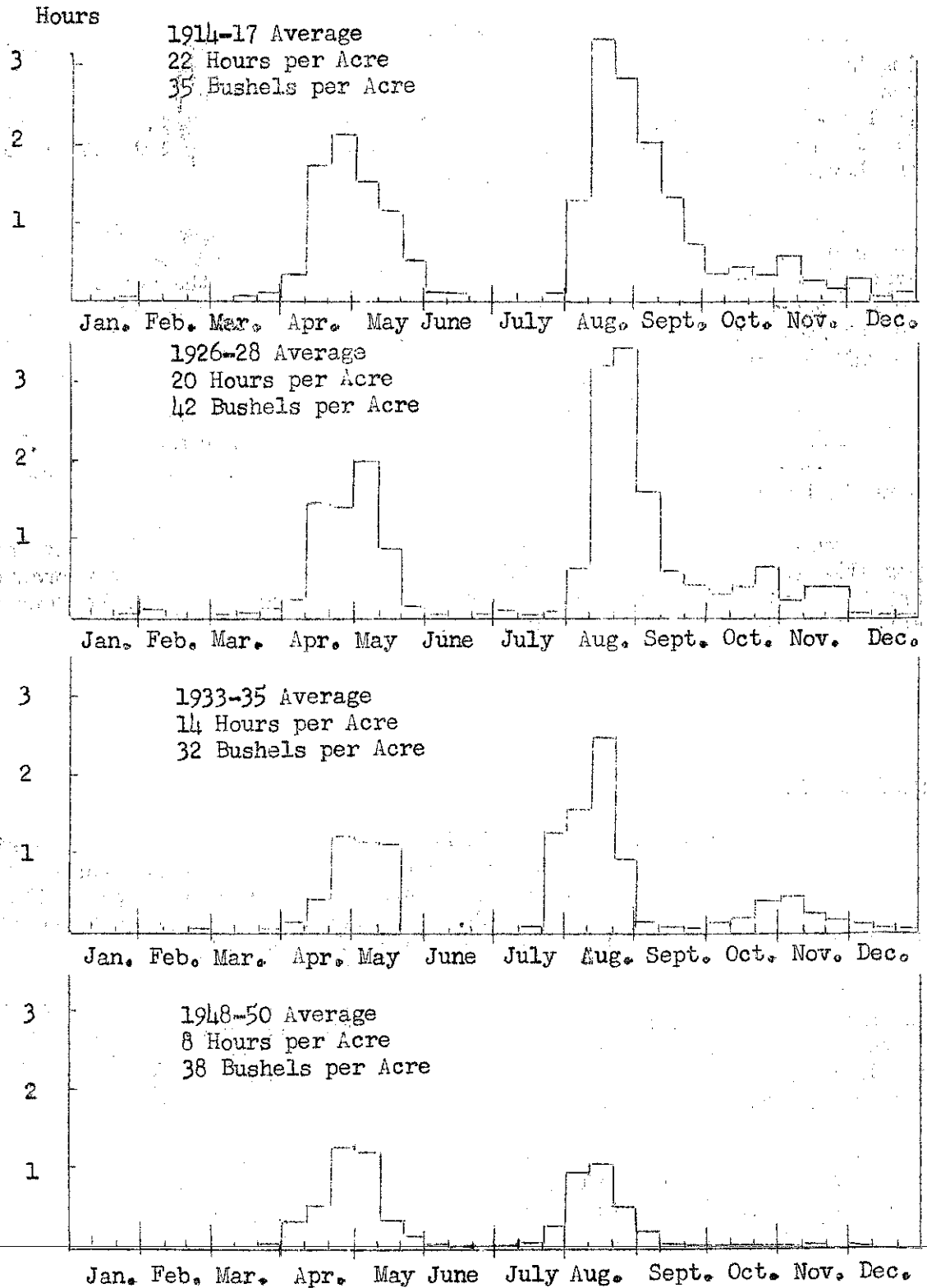
The job of harvesting was reduced from 14 hours per acre in 1914-17 to 4 hours per acre in 1948-50. The use of modern power equipment enabled farmers to practically finish harvesting and fall plowing by the tenth of September in 1948-50, but as late as 1933-35 farmers were doing 14 per cent of the total hours of labor on oats after the first of October.

Hours of labor per acre of oats have been cut from 22 hours in 1914-17 to 20 hours in 1926-28 and from 14 hours per acre in 1933-35 to 8 hours in 1948-50. The most significant reduction in labor per acre was from 1933-35 to 1948-50 when the number of hours spent per acre of oats were reduced 44 per cent.

There has been no trend toward higher oat yields on cost account farms. In 1914-17 the average yield per acre was 35 bushels. In 1926-28 the average yield was 42 bushels. The 1933-35 crops averaged 32 bushels and 38 bushels per acre were produced in 1948-50.

The time when work was started in the spring was the same in all periods. During 1948-50 and 1933-35 the spring work got into full swing 10 days later than in the two earlier periods but the job was done in shorter time. Demands upon labor during harvest have leveled off and the harvest was almost over in 1948-50 by the time it was well under way in 1914-17.

FIGURE 9. LABOR DISTRIBUTION PER ACRE OF OATS  
BY 10-DAY PERIODS  
New York Cost Account Farms



### Hay

There has been a steady shift toward fewer hours of labor and harvesting hay earlier during the past 37 years. The peak of the hay harvesting season has leveled out and moved from a high during the last 10 days of July in 1914-17 to about 20 days earlier in 1948-50 (Figure 10). There was very little hay harvested after August during 1948-50, but in 1914-17 and 1926-28 the harvest season was extended through September.

Hours of man labor required per acre of hay has been reduced over 40 per cent since 1914-17. At that time, 13 hours of labor were required per acre of hay -- this included all work done throughout the year. During the years 1926-28 the amount of labor required per acre was reduced to 12 hours and in 1940 only 10 hours were required. In 1948-50 labor used on hay dropped to only 7 hours per acre.

Yields of hay have increased by one-fourth during the past 37 years. All kinds of hay in 1914-17 yielded 1.6 tons per acre compared to 1.7 tons in 1926-28. In 1936-40 the yield had increased to 2.0 tons and was 1.9 tons in 1948-50.

Developments in haying equipment and methods of harvesting have made it possible to reduce the amount of labor and time required for hay production and harvesting. A large percentage of the necessary work can be done in earlier periods of favorable weather.

### Grass Silage

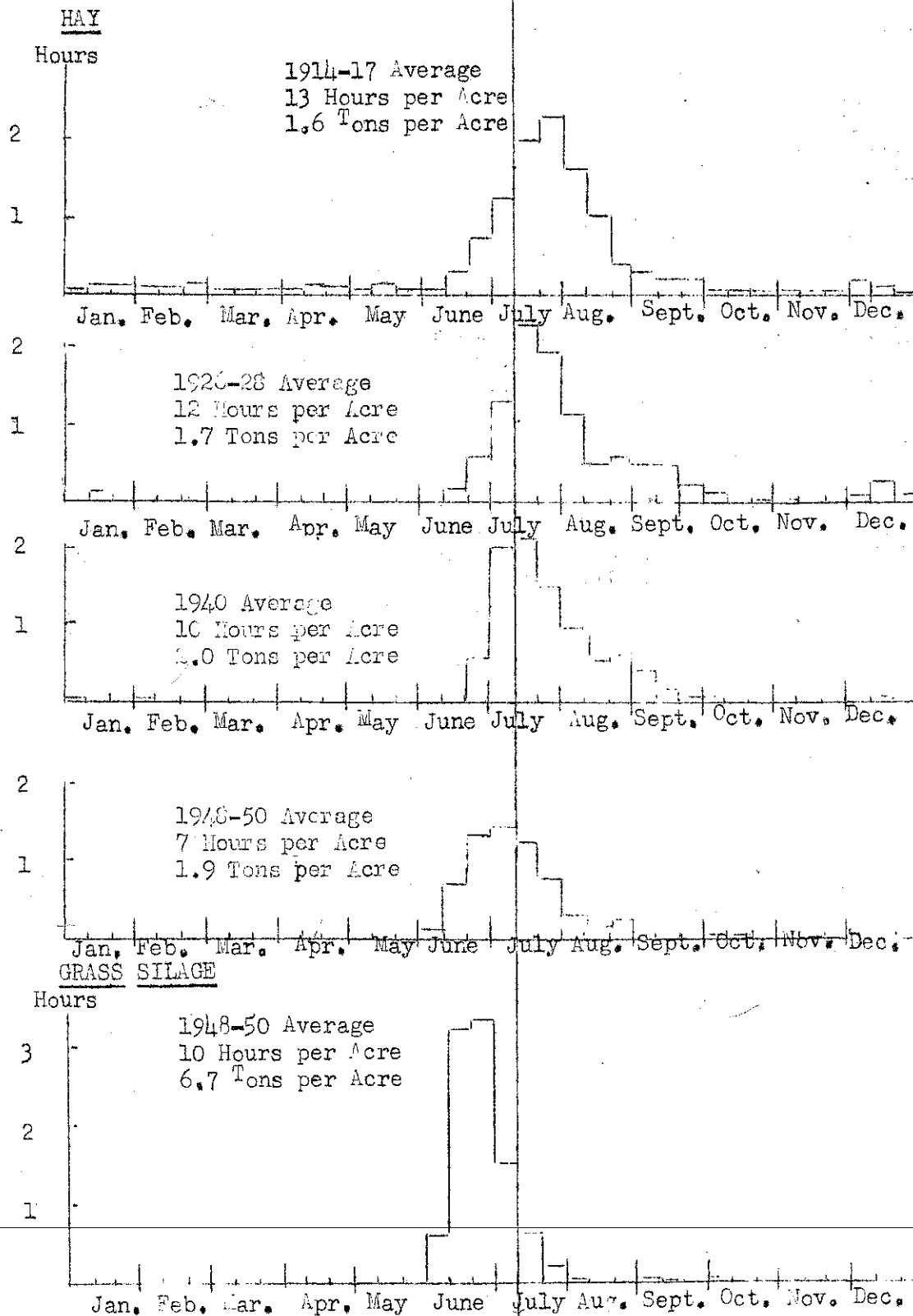
The more recent development in harvesting the hay crop is grass silage. This method of harvesting "hay" has pushed the harvest season forward until many farmers now start haying early in June and most of the grass silage is in the silo by the end of the month. The peak of grass silage harvesting is about 10 days ahead of the regular hay crop (Figure 10).

In 1948-50 grass silage required 19 hours of labor per acre for growing and harvesting. The average yield was 6.7 tons per acre. Since grass silage is ready for harvest ahead of the peak of haying season some farmers are combining these methods of harvesting forage to spread the harvest season and partly reduce the acute demand for labor all at one time.

Grass silage as a method of harvesting and storing grasses and legumes has been widely adapted only recently. The development of suitable equipment for the job has enabled farmers to include grass silage as an economical method of obtaining roughage for livestock.



FIGURE 10. LABOR DISTRIBUTION PER ACRE OF HAY AND GRASS SILAGE  
BY 10-DAY PERIODS  
New York Cost Account Farms



### Corn Silage

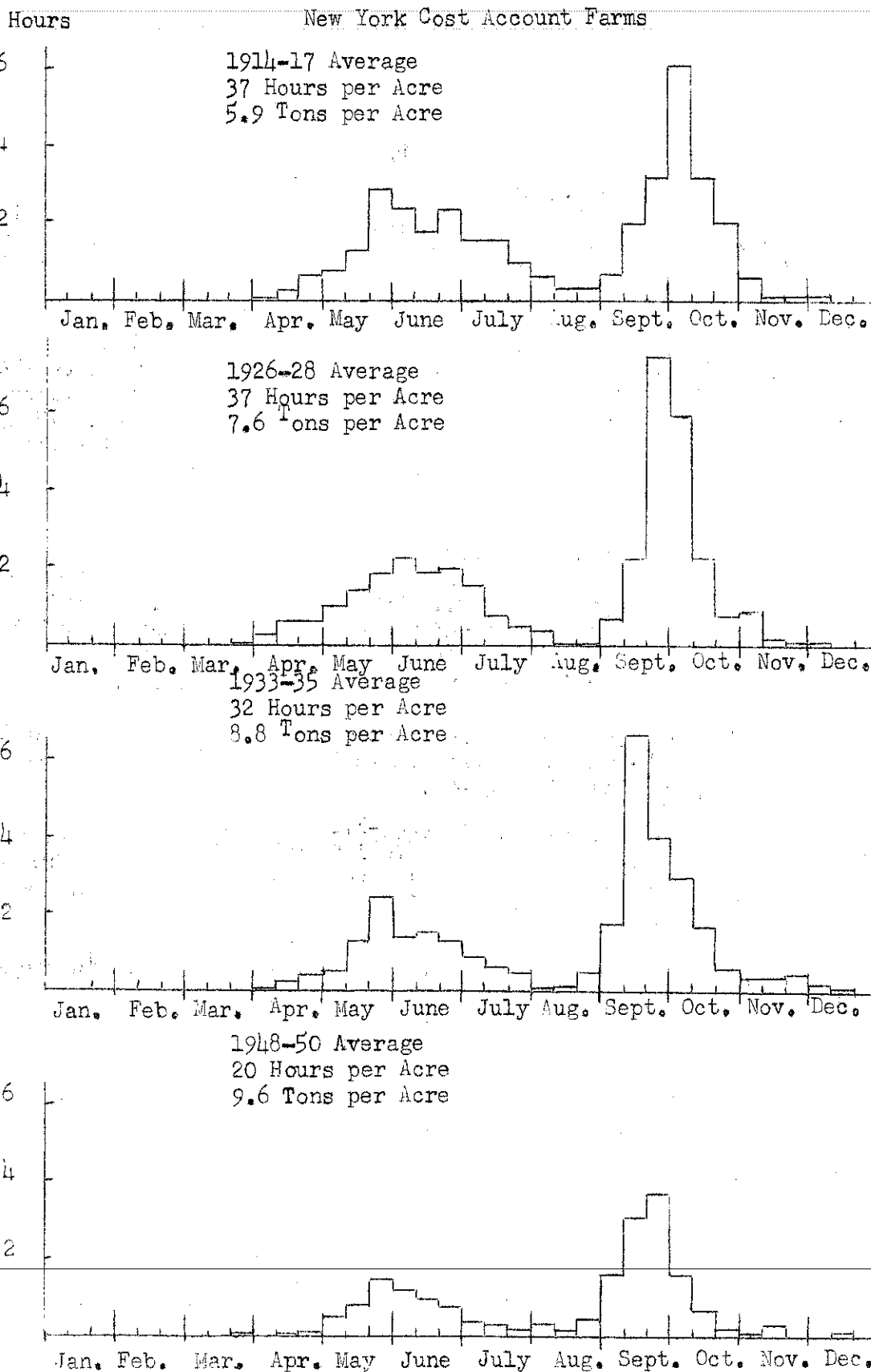
Time spent in growing and harvesting corn silage decreased 46 per cent from 1914-17 and 1926-28 to 1948-50 and yield per acre increased each period (Figure 11). In 1914-17 and 1926-28 there was an average of 37 hours spent per acre on corn silage compared to 32 hours in 1933-35 and 20 hours in 1948-50.

Yield per acre increased from 5.9 tons in 1914-17 to 7.6 tons in 1926-28 and from 8.8 tons in 1933-35 to 9.6 tons in 1948-50.

The peak of seed bed preparation and planting was during the last of May in 1914-17, 1933-35 and 1948-50 and was 10 days later in 1926-28. There was a decrease in the amount of time spent in growing corn silage -- especially during 1933-35 and 1948-50. There were 18 hours spent per acre between April first and August twentieth in 1914-17 compared to 16 hours in 1926-28 with 12 hours being used during the same period in 1933-35 and 8 hours in 1948-50.

In 1948-50 and 1926-28 the peak of harvest was during the last 10 days in September. In 1914-17 this peak was 10 days later and in 1933-35 the peak was 10 days earlier. The harvest season started about the first of September in each period. Less work was done during July and August in 1948-50 than in any of the earlier periods.

FIGURE 11. LABOR DISTRIBUTION PER ACRE OF CORN SILAGE  
BY 10-DAY PERIODS



## LABOR DISTRIBUTION ON VEGETABLES

### Potatoes

Potato yields increased from 96 bushels per acre in 1914-17 to 349 bushels per acre in 1948-50. Along with the increase in yield came a 22 per cent increase in hours of labor required per acre. This 264 per cent increase in yield with only a 22 per cent increase in labor reflects a large reduction in the amount of labor required to produce and market a bushel of potatoes.

The harvest season peak was 10 days earlier in 1948-50 than in 1914-17 (Figure 12). Peak of the planting season has moved up 20 days since the 1914-17 period. Less time is spent in planting now than in the earlier periods. Harvesting requires most of the time spent on potatoes. In 1948-50 labor during the month of August amounted to 43 per cent of the total hours of labor spent on potatoes during the year.

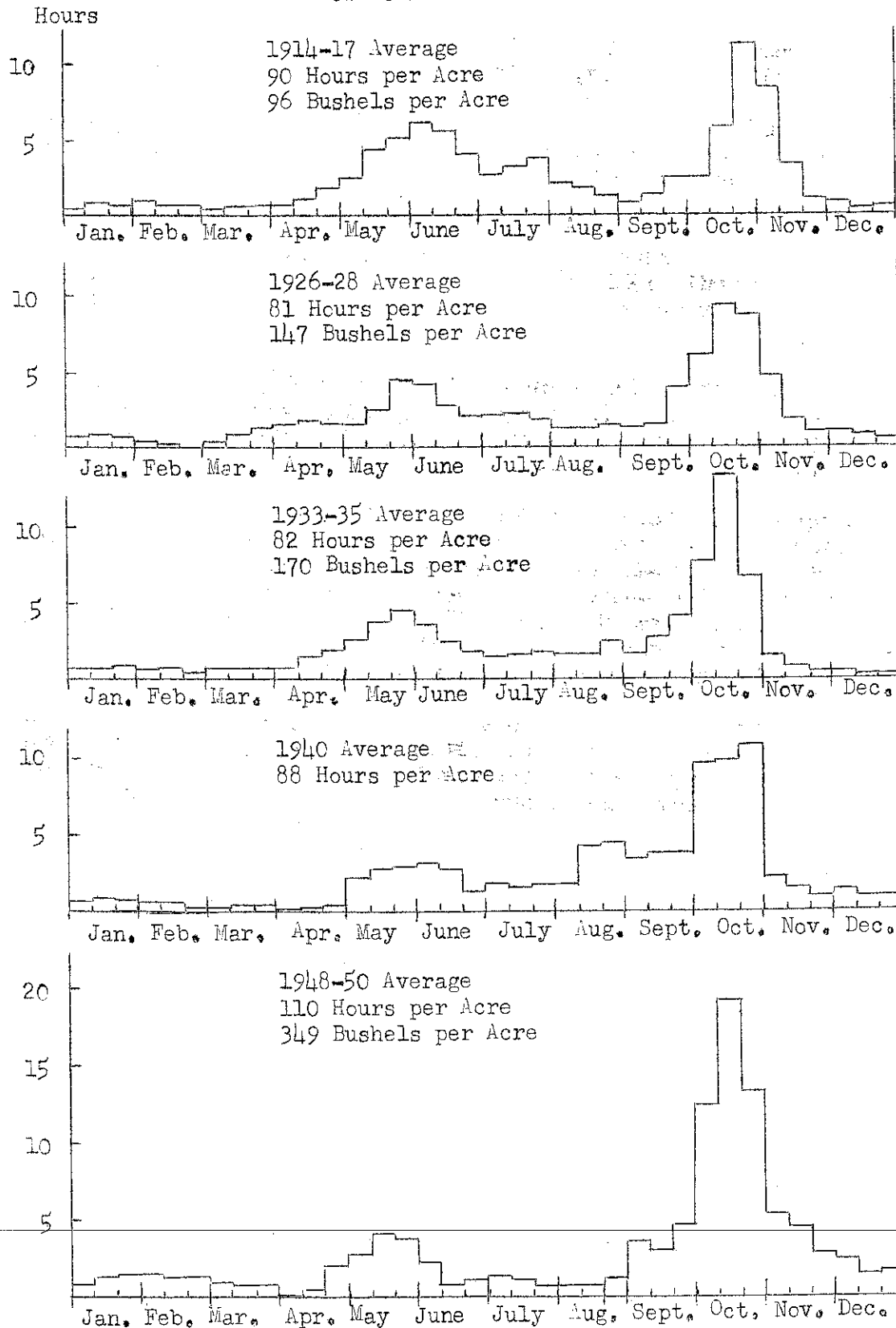
Storage came into the picture more during the 1948-50 period increasing the amount of winter labor. The summer growing labor has been materially reduced with the shift from horse drawn equipment to one-row tractor equipment and further to equipment that will handle several rows. Spraying and dusting has become more mechanized and the change from insect control by hand to control through the use of mechanized equipment reduced the amount of labor spent during the growing season in June, July and August.

Total labor spent per acre of potatoes decreased from 90 hours in 1914-17 to 81 hours in 1926-28, then increased to 82 hours in 1933-35, with 88 hours in 1940 and 110 hours in 1948-50.

Yield per acre was 96 bushels in 1914-17. The average yield increased to 147 bushels in 1926-28 and increased to 170 bushels per acre in 1933-35. In 1940 the average yield was 222 bushels and 349 bushels per acre were harvested in 1948-50.

Labor saving methods and equipment have made rapid strides in keeping up with increasing yields.

FIGURE 12. LABOR DISTRIBUTION PER ACRE OF POTATOES  
BY 10-DAY PERIODS  
New York Cost Account Farms



### Cabbage

Hand labor is still important in cabbage production even with improved equipment used in ground preparation, planting, cultivating and hauling. Growing and harvesting required 78 hours per acre of cabbage in 1948-50 compared to 91 hours in 1914-17. There were 103 hours spent per acre in 1926-28 and 97 hours in 1933-35. Between 1948-50 and 1914-17 the amount of labor used per acre was reduced 14 per cent and the average yield increased 37 per cent.

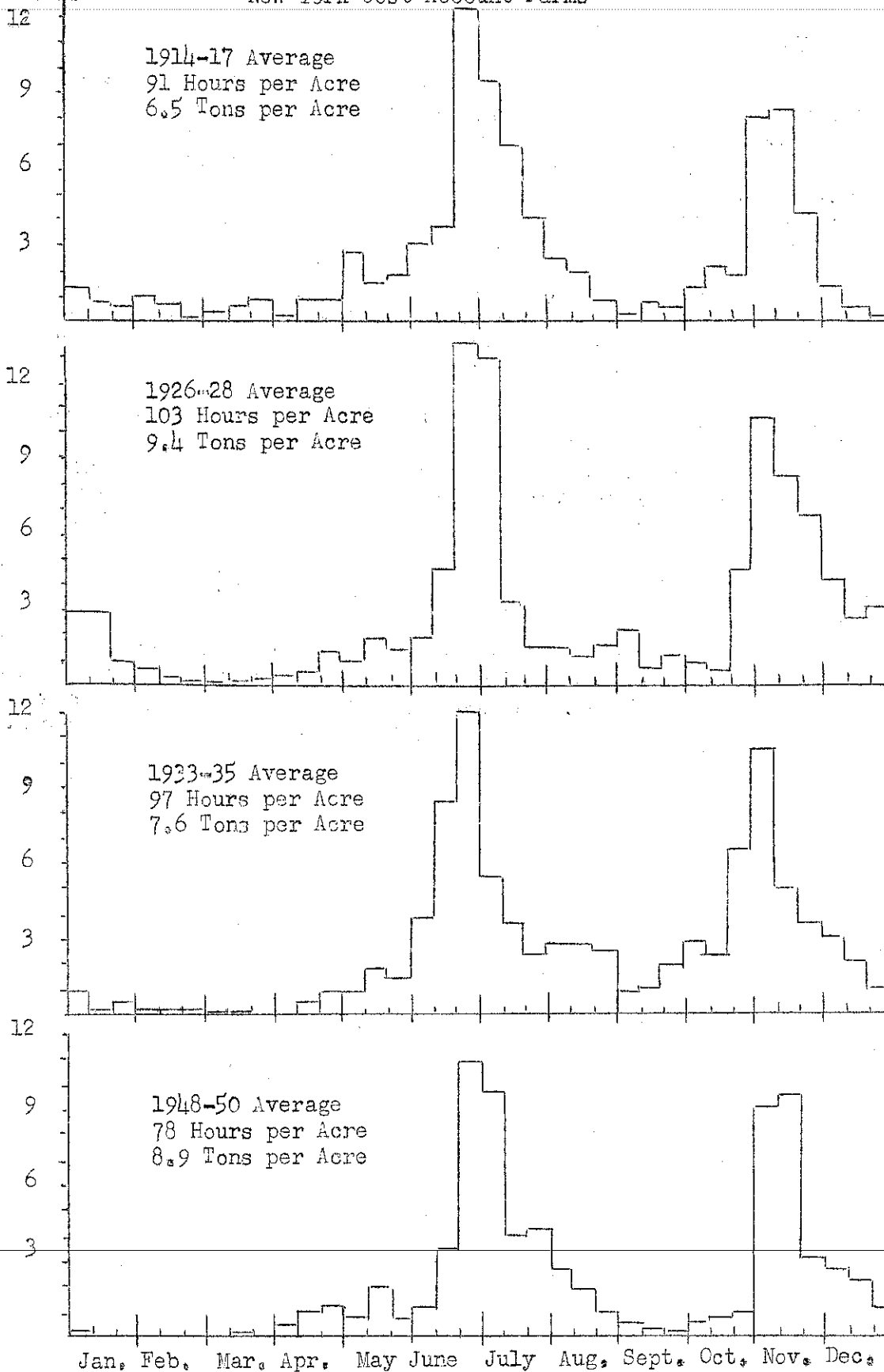
Yield per acre increased from 6.5 tons in 1914-17 to 9.4 tons in 1926-28. In 1933-35 both yields and hours per acre were down from 1926-28. By 1948-50 yields were increasing and labor spent per acre continued to decline (Figure 13).

There has been no change in the time of planting or harvesting cabbage during the periods studied. Peak of the planting season has been during the last 10 days in June over the past 37 years. The main harvest season continues to start November first.

Storage during the fall and winter has depended to a large extent upon price. During 1914-17 some labor on cabbage was done during the winter but not as much as in 1926-28 when 16 per cent of all labor on cabbage was done during December and January. In 1933-35 the number of hours spent during December and January was 9 per cent of the total labor on cabbage. During 1948-50 the crop was sold by the first of the year and less than one per cent of all labor on cabbage was done in January and February.

Farmers have reduced the amount of labor required in growing -- especially in September and October. It is likely that in the near future cabbage harvesting equipment may be developed that will reduce the amount of expensive hand labor that is now required to harvest the crop.

FIGURE 13. LABOR DISTRIBUTION PER ACRE OF CABBAGE BY 10-DAY PERIODS  
New York Cost Account Farms



### Dry Beans

The number of hours of labor per acre decreased 41 per cent between 1914-17 and 1948-50. At the same time yield per acre increased considerably. The greatest reduction in labor used on dry beans was during the growing season (Figure 14). The amount of work done during the growing season has leveled out. In 1914-17 there was an average of 37 hours spent per acre compared to 27 hours in 1926-28. In 1933-35 labor per acre dropped to 24 hours and averaged 22 hours in 1948-50.

Yield during the 1914-17 period was 10 bushels per acre compared to 14 bushels per acre during the two periods 1926-28 and 1933-35. The average yield in 1948-50 had increased to 18 bushels per acre -- 29 per cent above the two previous periods.

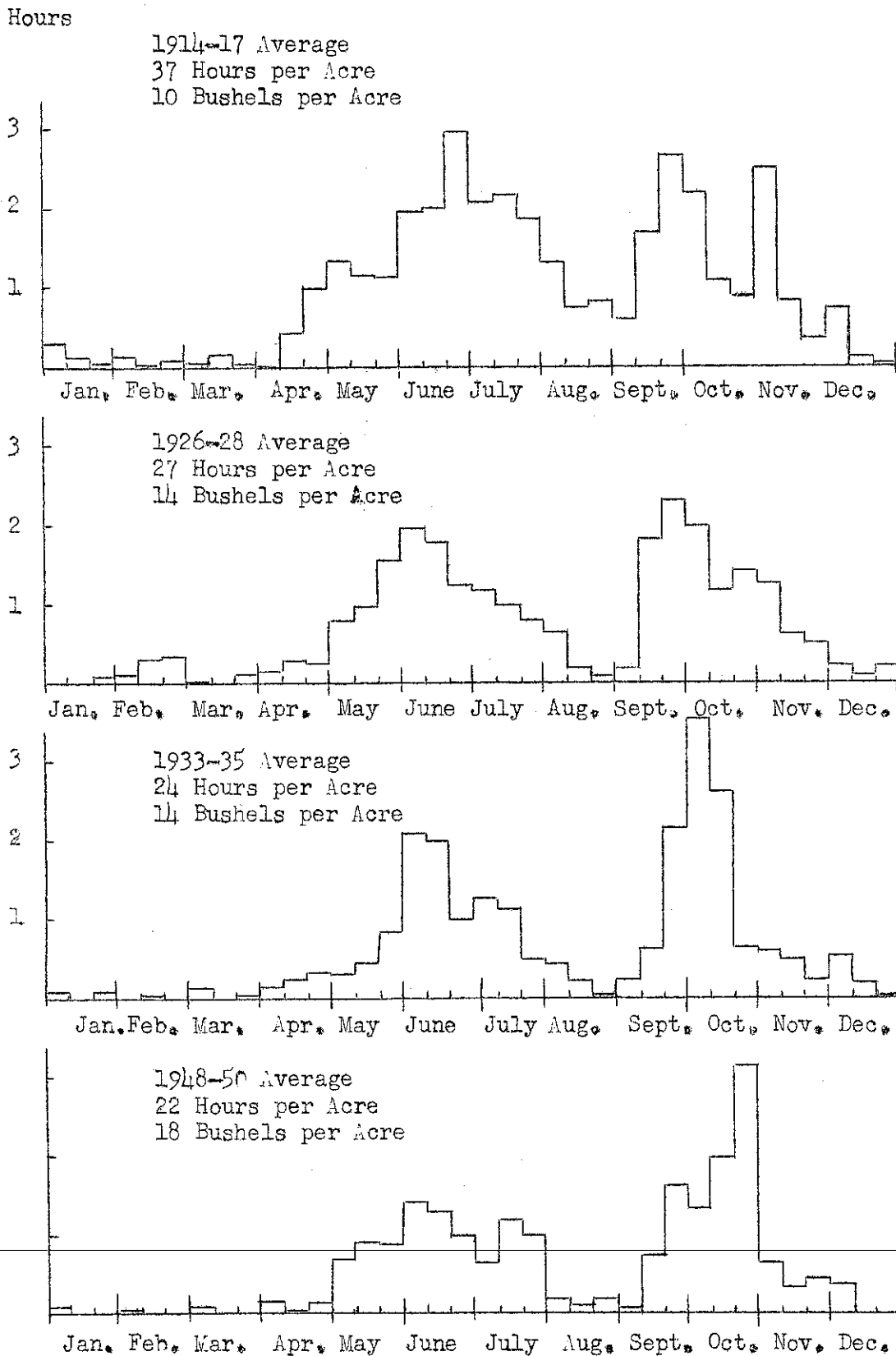
From 1914-17 to 1926-28 the peak of the planting season moved 20 days earlier from the last to the first 10 days in June. It was still early in 1948-50. Peak of the harvest moved later in the season from the last 10 days in September during 1914-17 and 1926-28 to the first 10 days in October during 1933-35 and to the last period in October during 1948-50.

The amount of work done in August decreased each period from 8 per cent of the total work done in 1914-17 to 3 per cent in 1948-50.

The amount of labor used in growing dry beans has been reduced through the use of more efficient equipment but harvesting still requires a relatively large amount of labor. Fifty-one per cent of the total labor on dry beans in 1948-50 was used during September, October, November and December.



FIGURE 14. LABOR DISTRIBUTION PER ACRE OF DRY BEANS  
BY 10-DAY PERIODS  
New York Cost Account Farms



Canning Factory Peas

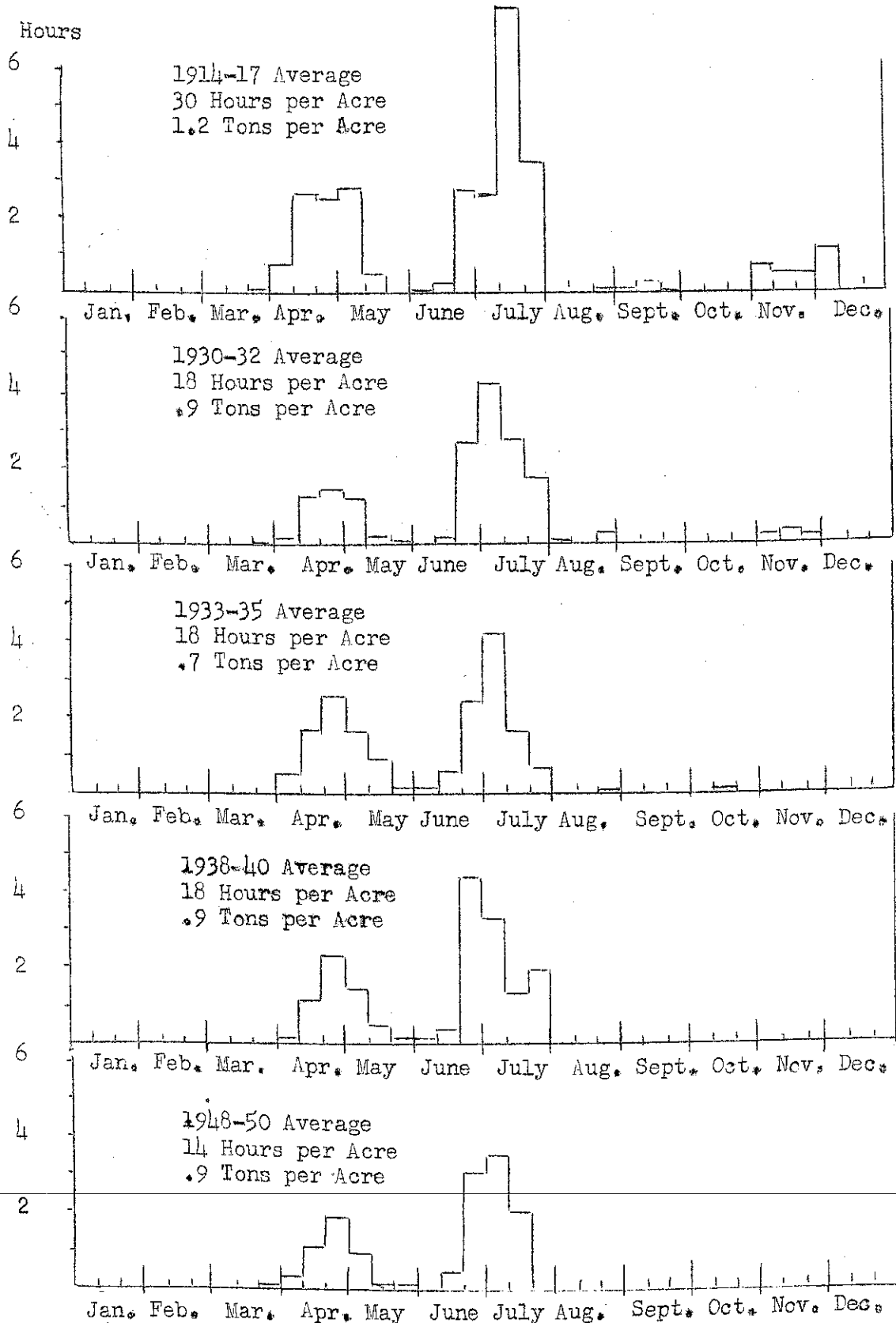
In 1914-17 farmers spent 30 hours per acre on canning factory peas. In 1930-32, 1933-35 and 1938-40 it required 18 hours per acre to grow and harvest the pea crop. In 1948-50 labor was reduced to 14 hours per acre which was 22 per cent below 1938-40.

Yields during the same 37 years went from 1.2 tons per acre in 1914-17 to 0.9 tons per acre in 1930-32 and to 0.7 tons in 1933-35. The average yield per acre was 0.9 tons in 1938-40 and 1948-50.

The time that work is done in the spring showed very little change during the past 37 years (Figure 15). Spring work started about April first, reached the height of activity during the last 10 days in April and was about over by May 10. Harvesting also was well under way at the same time - May tenth - during all four periods between 1914 to 1950. The peak of the harvest season shifted about 10 days earlier from 1914-17 to 1948-50. The end of the harvest was over 10 days earlier in 1948-50 than in any of the previous periods.

During 1948-50 growing used 34 per cent of all labor spent on peas and harvesting required 66 per cent.

FIGURE 15. LABOR DISTRIBUTION PER ACRE OF CANNING FACTORY PEAS  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



Canning Factory Tomatoes

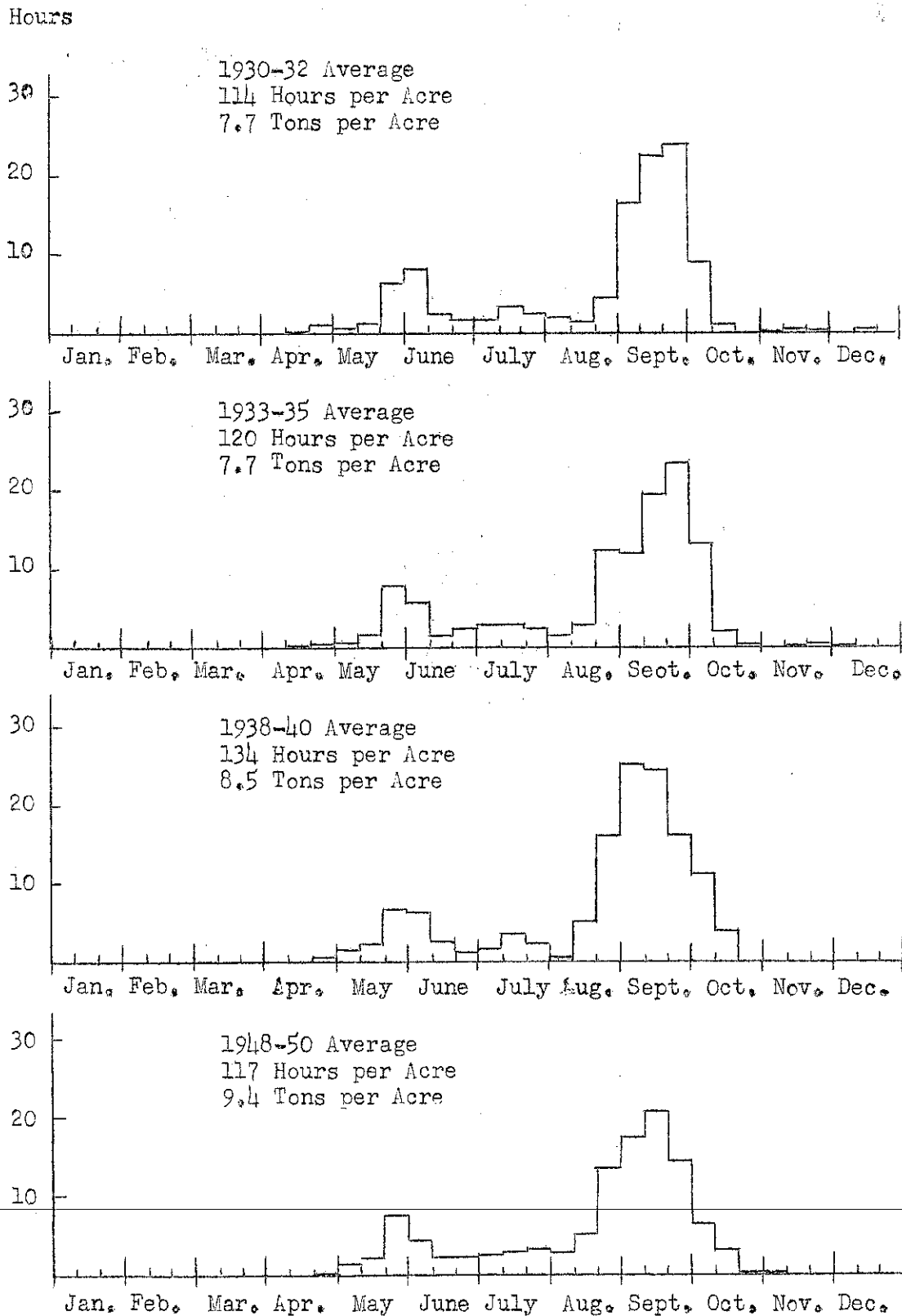
Cost account records since 1930 show that 114 hours per acre were spent on canning factory tomatoes in 1930-32, 120 hours in 1933-35, 134 hours in 1938-40 and 117 hours in 1948-50.

Yield per acre in 1930-32 and 1933-35 was 7.7 tons per acre. In 1938-40 the average was 8.5 tons and 9.4 tons were harvested per acre in 1948-50.

In all four periods between 1930 and 1950 most of the planting was done during the last of May and the first 10 days in June (Figure 16). The peak planting period was during the last 11 days of May in 1933-35, 1938-40 and 1948-50 and was 10 days later in 1930-32. The harvest season also started 10 days later in 1930-32 than in the other three periods. In 1930-32 and 1933-35 the peak of harvest was during the last 10 days in September. In 1938-40 the busiest harvest period was during the first 20 days in September. The middle of September was the peak of harvest in 1948-50. In all the periods the harvest was over by the 20th of October.

Harvesting requires most of the labor on tomatoes. The number of hours spent on tomatoes between August twentieth and October twentieth amounted to 69 per cent of all labor on tomatoes in 1930-32 and 70 per cent of all labor in 1938-40. Seventy-three per cent of all labor was spent during this same two month period in 1938-40 and in 1948-50 the percentage was 66.

FIGURE 16. LABOR DISTRIBUTION PER ACRE OF CANNING FACTORY TOMATOES  
 BY 10-DAY PERIODS  
 New York Cost Account Farms



## LABOR DISTRIBUTION ON FRUIT

### Apples

Farmers cared for their apple orchards and handled a 44 per cent larger crop in 5 per cent less time in 1948-50 than they did in 1914-17. Labor used per acre of apples decreased from 129 hours in 1914-17 to 91 hours in 1926-28. In 1933-35 the amount of labor per acre went up to 109 hours and was 123 hours in 1948-50.

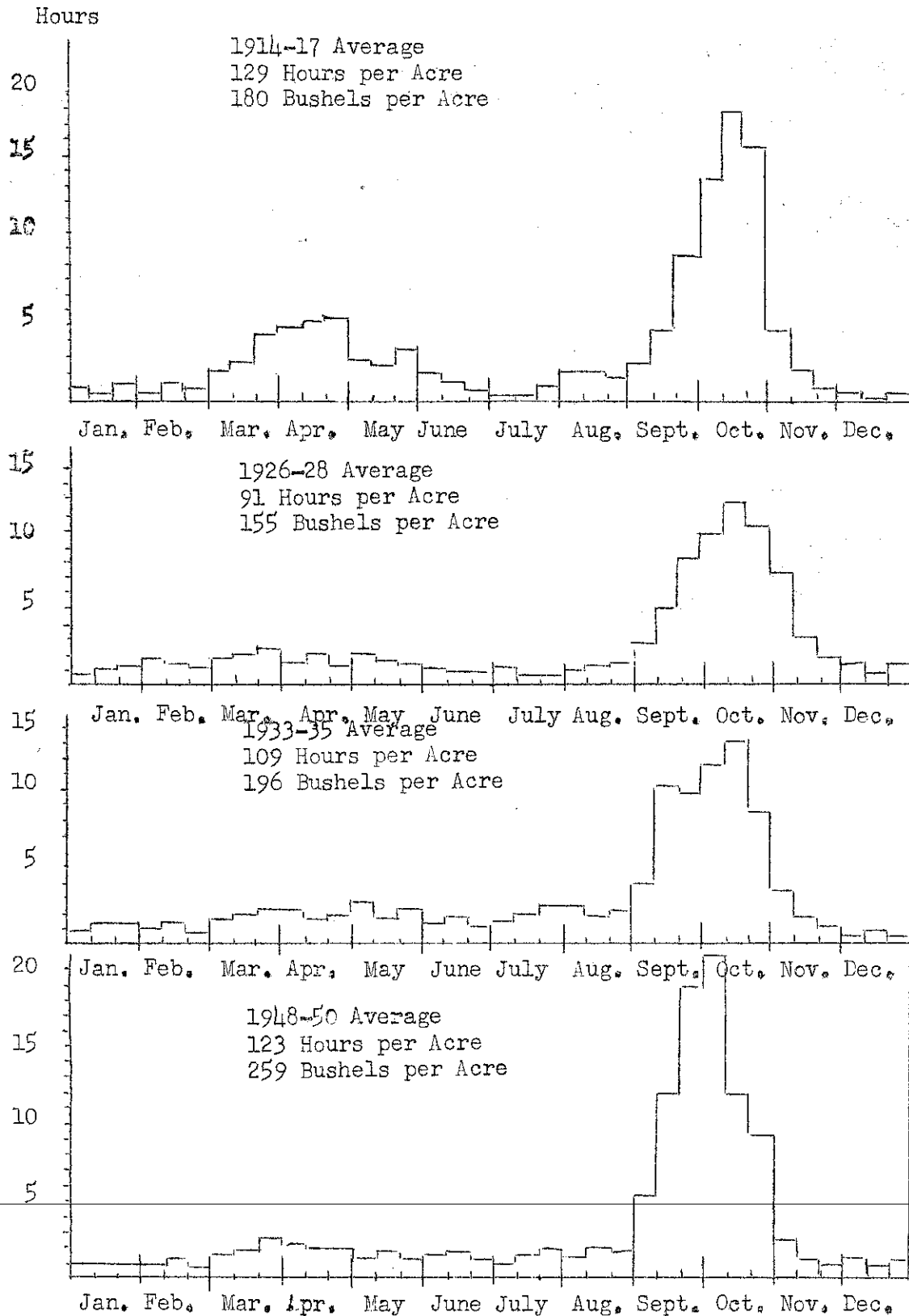
Yield averaged 180 bushels in 1914-17 and 155 bushels in 1926-28. During 1933-35 the yield averaged 196 bushels per acre and 259 bushels were harvested in 1948-50.

There was a 40 per cent decrease in the number of hours spent on apples during December through August from 1914-17 to 1926-28 (Figure 17). This reduction from 55 hours to 33 hours per acre was due mainly to a change in types of spraying equipment.

Harvesting started about the first of September in each period. Peak on the harvest season was reached during the middle of October in 1914-17, 1926-28 and 1933-35 but moved 10 days earlier in 1948-50.

In 1948-50 there were 78 hours per acre -- 63 per cent of all labor on apples during the year -- spent in September and October, the main harvest season. In the last three periods, 1926-28, 1933-35 and 1948-50, the main difference in the amount of labor spent per acre was during the harvest season. Since most apples are harvested by hand the amount of labor needed is closely related to the size of the crop.

FIGURE 17. LABOR DISTRIBUTION PER ACRE OF APPLES  
BY 10-DAY PERIODS  
New York Cost Account Farms



### Pears

The number of hours spent on pears was 55 per cent less and yield per acre was 18 per cent less in 1948-50 than in 1914-17. In 1914-17 pears required 97 hours of labor per acre. In 1933-35 labor used per acre was reduced 48 per cent to 50 hours. Seventy hours were spent per acre in 1938-39 and dropped to 44 hours per acre in 1948-50.

Yields varied from 88 bushels per acre in 1914-17 to 63 bushels in 1933-35. The highest average yield was 93 bushels per acre in 1938-39. The average yield in 1948-50 was 72 bushels.

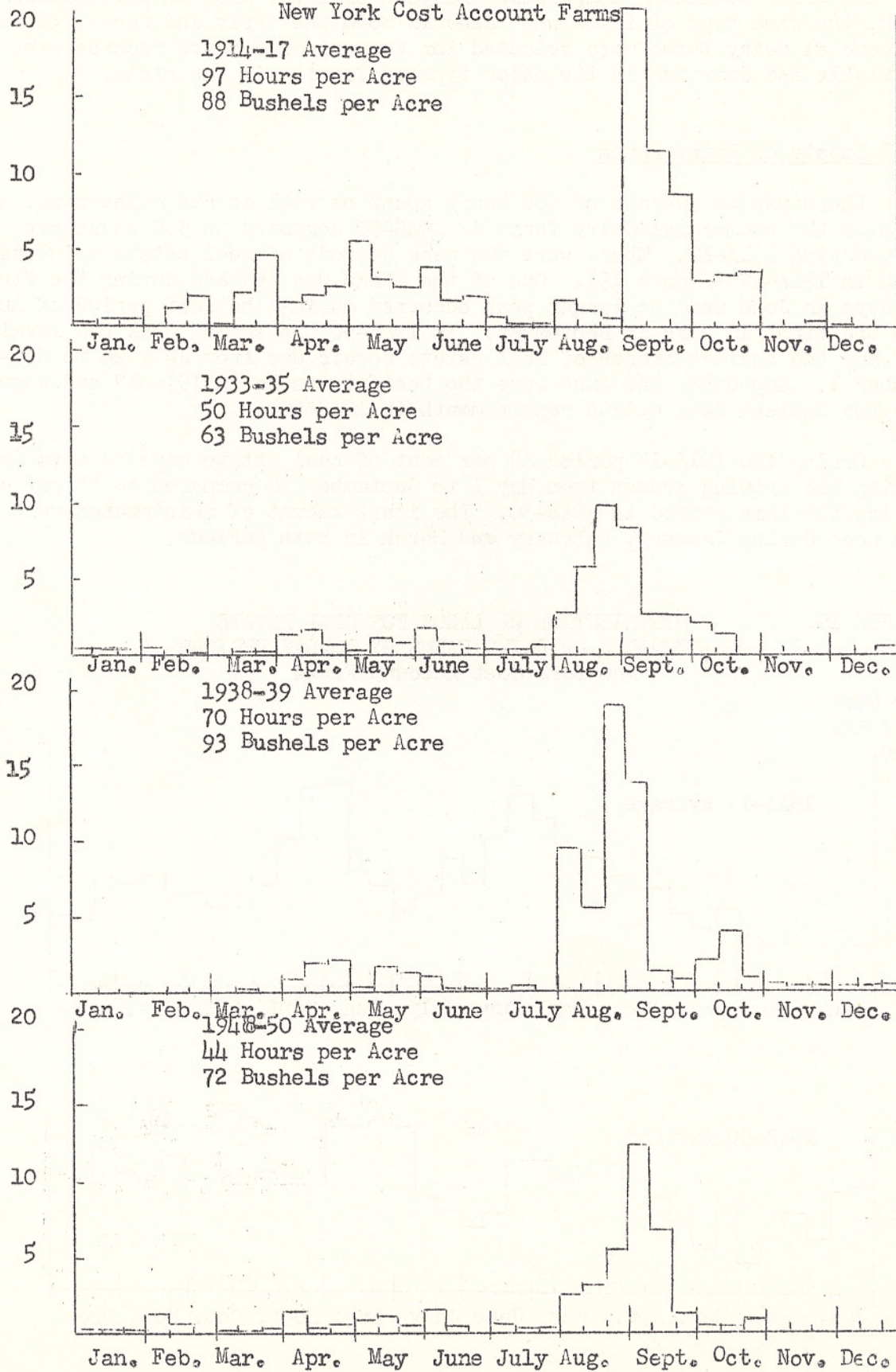
The amount of labor spent per acre from January first to August first decreased from 40 hours in 1914-17 to 12 hours in 1948-50 (Figure 18). This 70 per cent decrease points out the effect of changes that have occurred largely in spraying methods and equipment.

Peak of the harvest season was during the first 10 days in September in 1914-17. It moved up 10 days during 1933-35 and 1938-39 and then dropped back again to the first period of September in 1948-50.

Most of the work on pears is spent in harvesting. In 1948-50 seventy per cent of all labor on pears was spent during the two month harvest season -- August and September.



FIGURE 18. LABOR DISTRIBUTION PER ACRE OF PEARS  
BY 10-DAY PERIODS



DISTRIBUTION OF LABOR ON MAINTENANCE

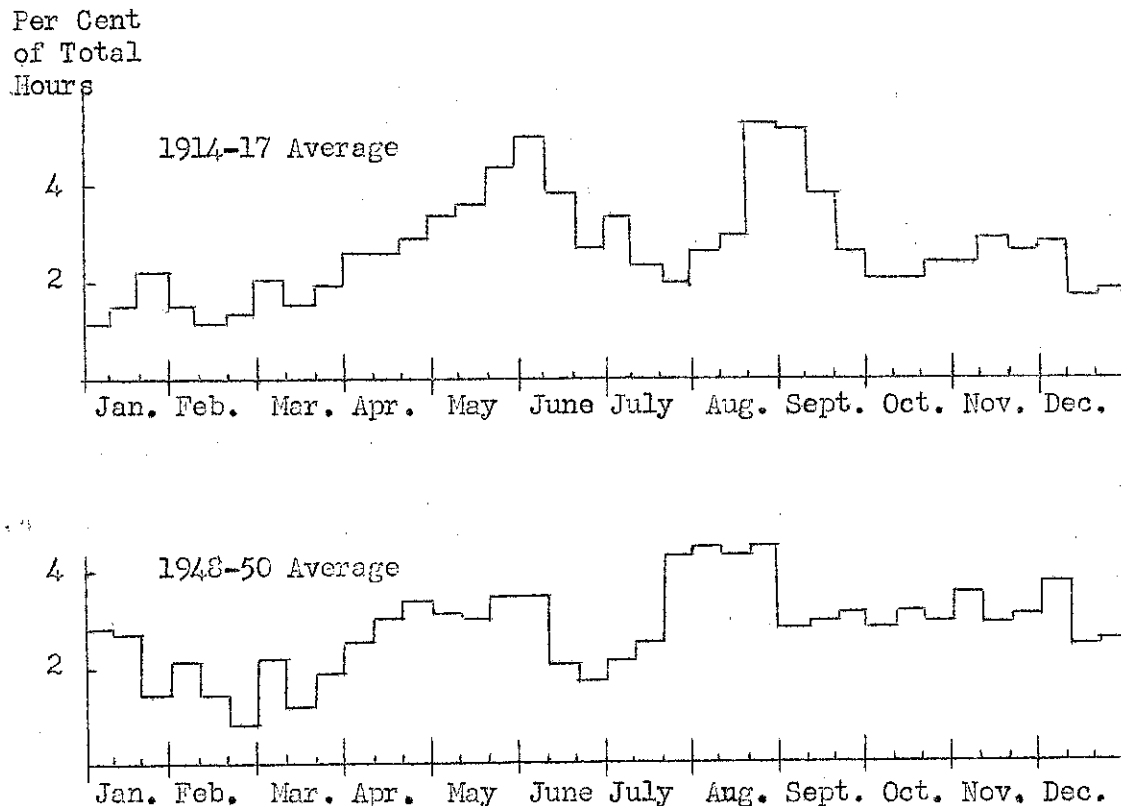
In order to make a comparable analysis of labor used in maintenance work, the same type of farms were used in both the early and recent periods. Commercial dairy farms were selected for comparison because records were available and dairying is the major type of farming in the state.

Real Estate on Dairy Farms

There was an average of 586 hours spent on real estate maintenance per farm on the commercial dairy farms in 1948-50 compared to 550 hours per farm during 1914-17. There were two peak periods of real estate maintenance work in 1914-17 (Figure 19). One of the peaks was reached during the first 10 days in June and the larger peak occurred during the last period of August and the first 10 days in September. In 1948-50 the spring peak had leveled off and the busiest season of real estate repair was from July 20 to September 1. September and June were the busiest months in 1914-17 and August was the busiest real estate repair month in 1948-50.

During the 1914-17 period 48 per cent of real estate repairs were done during the growing season from May 1 to September 30 compared to 55 per cent during the same period in 1948-50. The least amount of maintenance work was done during January, February and March in both periods.

FIGURE 19. DISTRIBUTION OF LABOR FOR REAL ESTATE MAINTENANCE ON DAIRY FARMS BY 10-DAY PERIODS  
New York Cost Account Farms



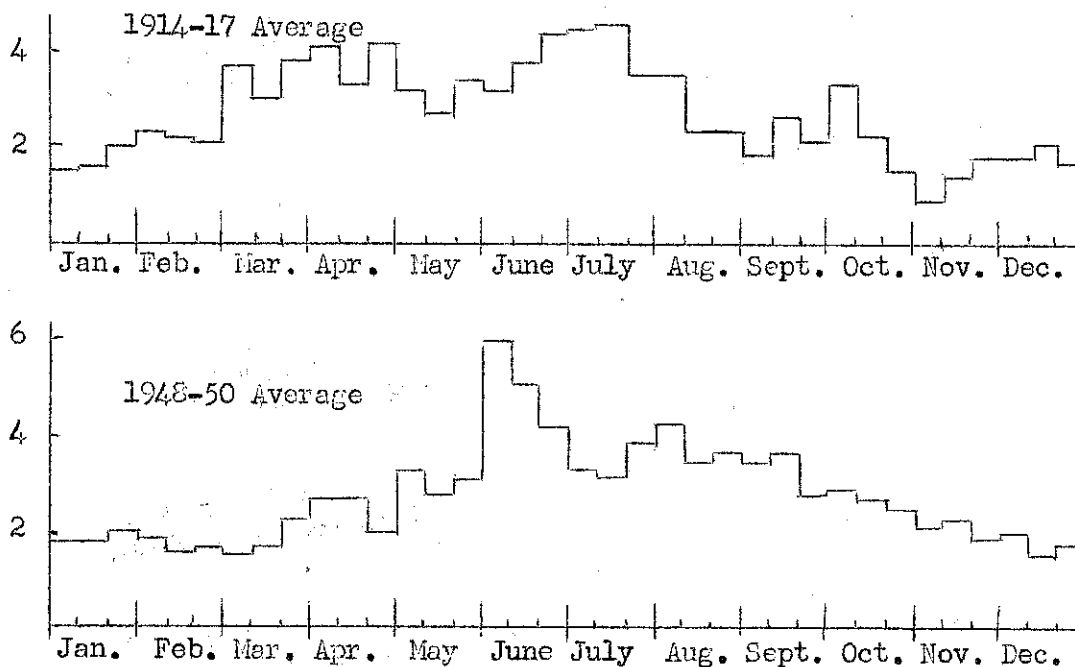
Machinery and Equipment Maintenance of Dairy Farms

Maintaining machinery and equipment required an average of 315 hours per dairy farm in 1948-50 compared to 107 hours in 1914-17. Farms were not mechanized in 1914-17 as they were in 1948-50. Equipment such as tractors, trucks, pick-up balers and milking machines were not included as standard equipment on dairy farms in 1914-17. Along with the many conveniences and saving of labor that modern machinery provided there was also more maintenance work required.

In 1914-17 when horses were the primary source of power and most equipment was hand operated or horse drawn, March, April, July and August were peak periods for machinery and equipment maintenance (Figure 20). More maintenance work was done in July than any other month. The least amount of work was done in December, January and February. About half, 49 per cent, of all maintenance work was done during the growing season from May 1 to September 30.

FIGURE 20. DISTRIBUTION OF LABOR FOR MACHINERY AND EQUIPMENT ON DAIRY FARMS BY 10-DAY PERIODS  
New York Cost Account Farms

Per Cent  
of Total  
Hours



In 1948-50 the bulk of maintenance work had shifted later in the season from the earlier period but the peak labor month had moved earlier from July in 1914-17 to June in 1948-50. Over 15 per cent of the years work was done in June in 1948-50. The total work done during the May through September growing season increased to 56 per cent in 1948-50. The amount of maintenance work done during August and September increased from 15 per cent of the years

al in 1914-17 to 22 per cent in 1948-50. There was 41 per cent less maintenance work done in March and April 1948-50 than there was during the same period in 1914-17.

There are many repair and overhead jobs that a farmer can do on equipment that is used seasonally during the time of year when the equipment is not in use. Maintenance on machinery and equipment that is used constantly must be repaired when a breakdown occurs. There are also many breakdown stresses and strains that a piece of equipment is not subjected to until it is put into use. So the bulk of maintenance work continues to be done during the growing and harvesting season.

#### SUMMARY

Some shifts have occurred during the past 37 years in the time many farm jobs are done, for others there has been little change. Weather is a primary factor in determining when certain jobs are done and although year to year variations in weather have occurred climate has changed little during the past 37 years.

Yields effect the amount of labor required per crop acre or per animal. This is particularly true for crops that are harvested by hand. The amount of labor required per unit of produce has decreased on most major farm enterprises, primarily because of mechanical powered equipment. A study of the distribution of labor on principal farm enterprises shows:

Cows - labor distribution during the year has changed little in the past 37 years. The total time per cow has been reduced 22 per cent and the milk produced has increased 55 per cent from 1914-17 to 1948-50.

Heifers - have about the same pattern of labor distribution in each period. Total hours decreased 43 per cent during the 37 year period.

Hens - with larger and commercialized flocks, labor was more uniformly distributed throughout the year in 1948-50 than during 1916-18 or 1926-28. Labor per bird decreased from 1.45 hours in 1916-18 to 1.28 hours in 1948-50.

Chicks - almost all of the labor on chicks was between April 1 and October 30 in 1916-18 with a peak in May. By 1948-50 poultrymen were starting chicks earlier and there was less seasonality for the enterprise.

Corn For Grain - planting time did not change but fewer hours were required. Most of the winter harvesting work was eliminated by 1948-50. Total labor was reduced 80 per cent even with better yields.

Wheat - was grown and harvested about the same time of year in each period. There was a reduction of 62 per cent in total hours between 1914-17 and 1948-50.

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SUMMARY -con't-

Oats - required 72 per cent less labor in 1948-50 than in 1914 with a reduction each period. The most striking change in oats was the decrease labor required in harvesting.

Hay - harvesting takes less time, 40 per cent, and is earlier than it was 37 years ago. The harvesting peak leveled out and moved 20 days earlier.

Grass silage - has pushed the "hay" harvesting season forward to early June. The peak of grass silage harvesting is about 10 days ahead of the regular haycrop.

Corn silage - planting and harvesting started about the same time during each period but less work was done during July and August in 1948-50 than in any of the earlier periods.

Potatoes - harvesting reached a peak 10 days earlier in 1948-50 than it did in 1914-17. It requires most of the time for the crop. Planting takes less time and has a peak which is 20 days earlier.

Cabbage - the seasons of work have not changed. Peak of the planting season has been during the last 10 days in June and the main harvest season has started about November 1 during the past 37 years. Labor per acre decreased 14 per cent and yield increased 37 per cent from 1914-17 to 1948-50.

Dry beans - planting season peak moved 20 days earlier and peak harvest season moved 30 days later. Work during the growing season has been leveled out and reduced.

Canning factory peas - harvesting season shifted about 10 days earlier from 1914-17 to 1948-50. Spring work showed little change. The job of growing and harvesting was done in less time in the more recent period.

Canning factory tomatoes - planting in all four periods between 1930 and 1950 was done during the last of May and the first 10 days in June. The middle of September was the peak harvest period in 1948-50 and the harvest was over by October 20 in all of the periods. Labor per acre has not been reduced but yields have increased.

Apples - labor during the spraying season was reduced -- especially from 1914-17 to 1926-28. Harvesting started about the first of September in each period. Peak of the harvest season was reached during the middle of October in the first three periods and moved 10 days earlier in 1948-50.

Pears - labor spraying and pruning was reduced 70 per cent between 1914-17 and 1948-50. Most of this decrease was made between 1914-17 and 1933-35. In 1948-50 harvesting during August and September required 70 per cent of all labor on pears.

SUMMARY -conc'd-

The number of hours per farm spent in maintaining real estate on dairy farms was about the same in 1948-50 as it was in 1914-17. September and June were the busiest months in 1914-17 and more real estate maintenance was done during August in 1948-50 than in any other month.

Time spent in maintenance of machinery and equipment on dairy farms increased from an average of 107 hours per farm in 1914-17 to 315 hours in 1948-50. In 1948-50 the bulk of maintenance work was done later in the season than it was in the earlier period but the peak month of maintenance had moved earlier from July in 1914-17 to June in 1948-50. During the 1948-50 period 56 per cent of the total maintenance work on machinery and equipment was done during the growing season from May through September.

LABOR DISTRIBUTION ON LIVESTOCK  
BY MONTHS  
New York Cost Account Farms, 1948-1950

Month	Per cent of total work for the year				
	Dairy cows	Heifers	Hens	Chicks	All livestock
January	10	12	9	3	10
February	9	11	9	7	9
March	10	11	9	11	10
April	9	10	8	15	9
May	8	8	8	14	8
June	7	4	7	12	7
July	6	5	7	11	7
August	7	5	8	9	7
September	7	5	8	7	7
October	8	7	9	6	8
November	9	10	9	3	9
December	<u>10</u>	<u>12</u>	<u>9</u>	<u>2</u>	<u>9</u>
Total	100	100	100	100	100



LABOR DISTRIBUTION ON FIELD CROPS  
BY MONTHS  
New York Cost Account Farms, 1948-1950

Month	Per cent of total work for the year					
	Hay	Grass silage	Corn silage	Oats	Corn for grain	Wheat
January	1				1	
February						
March	1		1	1	2	
April	1		2	28	4	1
May	1		15	22	25	
June	31	72	15	2	20	
July	48	25	5	6	6	23
August	12	1	5	35	1	35
September	3	1	43	4	1	25
October	1	1	13	1	14	14
November			1	1	21	1
December	<u>1</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>5</u>	<u>1</u>
Total	100	100	100	100	100	100



LABOR DISTRIBUTION ON FRUITS AND VEGETABLES  
BY MONTHS

New York Cost Account Farms, 1948-1950

Month	Per cent of total work for the year				
	Apples	Pears	Dry beans	Potatoes	Cabbage
January	2	2	1	3	1
February	3	5		4	
March	5	2	1	2	
April	5	6	2	2	4
May	4	6	12	10	5
June	4	5	17	4	20
July	4	2	13	3	23
August	4	25	3	3	7
September	29	45	12	11	1
October	34	2	30	41	3
November	4		7	12	28
December	<u>2</u>	<u>—</u>	<u>2</u>	<u>5</u>	<u>8</u>
Total	100	100	100	100	100

LABOR DISTRIBUTION ON PROCESSING CROPS, ALL CROPS,  
AND MAINTENANCE WORK BY MONTHS  
New York Cost Account Farms, 1948-1950

Month	Per cent of total work for the year				
	Tomatoes	Peas	All crops	Machinery & Equipment Maintenance	Real Estate Maintenance
January			2	7	8
February			2	6	6
March		1	3	7	6
April	1	25	5	10	9
May	10	8	7	10	9
June	8	26	9	14	8
July	8	40	12	10	9
August	19		11	11	12
September	46		21	8	8
October	8		21	5	7
November			5	5	9
December			2	7	9
Total	100	100	100	100	100