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# FARM BUSINESS NOTES

Prepared by the Divisions of Agricultural Economics and Agricultural Extension  
Paul E. Miller, Director Agricultural Extension

No. 189

UNIVERSITY FARM, ST. PAUL

September, 1938

## Losses From Death and Crippling of Livestock in Marketing by Truck and by Rail at South St. Paul<sup>1</sup>

By A. A. DOWELL and R. J. EGGERT

Many factors influence the extent of losses from death and crippling that occur between the time the livestock is assembled for loading at the farm and the time it enters the packing plant. Chief among these are the type of transportation used, the distance transported, the season of the year, the species, the class within a given species, and the care that is exercised in loading, transporting, weighing, and handling the livestock at the market and between the market and slaughtering plant.

### The Trend in Losses from Death and Crippling up to the Time of Unloading

As shown in Table 1, the trend in the per cent of death losses up to the time of unloading in all rail shipments to South St. Paul during the ten-year period, 1928 to 1937, was sharply downward in shipments of sheep and lambs, slightly downward in shipments of calves and hogs, and remained about constant in shipments of cattle. On the other hand, the trend in the per cent of death losses was sharply upward in truck shipments of sheep and lambs, less sharply but definitely upward in truck shipments of cattle and calves, and slightly upward in truck shipments of hogs.

Table 1. Trend in Livestock Death Losses at South St. Paul up to Time of Unloading, 1928-37\*

Year	Cattle			Calves			Hogs			Sheep and Lambs		
	Truck†	Rail‡	Total§	Truck	Rail	Total	Truck	Rail	Total	Truck	Rail	Total
1928	.034	.031	.032	.072	.356	.285	.071	.111	.106	.025	.197	.181
1929	.033	.030	.030	.066	.330	.242	.062	.167	.149	.081	.175	.166
1930	.032	.039	.038	.072	.394	.248	.075	.149	.130	.148	.152	.151
1931	.031	.029	.030	.069	.326	.173	.083	.123	.106	.176	.155	.159
1932	.038	.022	.028	.082	.271	.146	.099	.113	.106	.221	.140	.157
1933	.041	.024	.032	.104	.246	.143	.118	.112	.116	.220	.129	.150
1934	.042	.049	.047	.132	.210	.169	.096	.113	.100	.229	.109	.138
1935	.058	.034	.046	.145	.314	.183	.099	.120	.102	.295	.098	.158
1936	.045	.029	.037	.194	.307	.226	.117	.111	.116	.372	.079	.173
1937	.062	.029	.047	.169	.254	.186	.103	.088	.101	.356	.106	.210

\* Source: St. Paul Union Stockyards Company records.  
† Per cent of total truck receipts of the different species. For example, a loss of .034 per cent would represent a loss of .34 per 1,000 animals.  
‡ Per cent of total rail receipts of the different species.  
§ Per cent of total truck and rail receipts of the different species.

<sup>1</sup> The data upon which this study was based were supplied by the St. Paul Union Stockyards Company, and the South St. Paul packers.

The trend in the per cent of crippled animals up to the time of unloading in all rail shipments to the market during this ten-year period was definitely downward in shipments of cattle, slightly downward in shipments of sheep and lambs, fairly constant in shipments of hogs and upward in shipments of calves (Table 2). In truck shipments, the trend in the per cent of crippled cattle was sharply downward, while the trend was upward in truck shipments of calves, hogs, and sheep and lambs.

Table 2. Trend in Livestock Crippled Losses at South St. Paul up to the Time of Unloading, 1928-37\*

Year	Cattle			Calves			Hogs			Sheep and Lambs		
	Truck†	Rail‡	Total§	Truck	Rail	Total	Truck	Rail	Total	Truck	Rail	Total
1928	.230	.090	.108	.029	.095	.078	.094	.251	.228	.011	.073	.067
1929	.240	.077	.100	.024	.098	.073	.149	.290	.266	.034	.078	.073
1930	.239	.078	.111	.022	.086	.057	.163	.332	.287	.082	.052	.055
1931	.179	.058	.094	.017	.051	.031	.147	.252	.208	.043	.057	.055
1932	.140	.058	.091	.017	.119	.040	.200	.271	.234	.008	.055	.045
1933	.133	.052	.091	.024	.091	.043	.261	.186	.230	.007	.065	.052
1934	.129	.090	.103	.026	.151	.085	.222	.229	.223	.009	.052	.042
1935	.176	.056	.116	.045	.157	.071	.284	.299	.287	.037	.040	.039
1936	.122	.041	.081	.057	.111	.072	.307	.210	.289	.065	.049	.054
1937	.139	.032	.093	.063	.173	.082	.274	.379	.292	.082	.048	.062

\* Source: St. Paul Union Stockyards Company records.  
† Per cent of total truck receipts of the different species. For example, a loss of .230 per cent would represent a loss of 2.30 per 1,000 animals.  
‡ Per cent of total rail receipts of the different species.  
§ Per cent of total truck and rail receipts of the different species.

During 1936 and 1937, death losses in all shipments to South St. Paul up to the time of unloading were nearly twice as high in truck shipments of cattle as in rail shipments, over three times as high in truck shipments of sheep and lambs as in rail shipments, about the same in both truck and rail shipments of hogs, but considerably higher in rail shipments than in truck shipments of calves. Crippled losses were much higher, during this two-year period, in truck shipments of cattle than in rail shipments, slightly higher in truck shipments of sheep and lambs, about the same in both truck and rail shipments of hogs, but much higher in rail shipments of calves.

Note: Assistance in the preparation of these materials was furnished by the personnel on Works Progress Administration Project No. 4841, Sub-Project 420. Sponsor: University of Minnesota.

### Losses from Death and Crippling up to Unloading and between Unloading and Weighing

About 60 per cent of the death losses that occurred among cattle delivered at South St. Paul during 1936 and 1937 occurred prior to or at the time of unloading and about 40 per cent between the time of unloading and the time of weighing. Two thirds of the losses among calves occurred up to the time of unloading and one third between unloading and weighing. About 82 per cent of the death losses among hogs and sheep and lambs occurred up to the time of unloading during 1936, and 79 per cent of the death losses among hogs and 85 per cent of the death losses among sheep occurred up to unloading in 1937. During this two-year period, over two thirds of the crippled cattle, nearly four fifths of the crippled hogs, between one third and one half of the crippled calves, and between two thirds and three fourths of the crippled sheep and lambs were crippled at the time of unloading, and the remainder were crippled in the yards. Some of the losses from death and crippling that occurred in the yards were possibly the result of injuries suffered earlier. Furthermore, the figures on crippled calves and crippled sheep and lambs for the period between unloading and weighing included some animals that appeared to be diseased or were bought subject to inspection after slaughter.

### Losses from Death and Crippling up to Unloading in Minnesota Shipments by Distance Zones

For a given type of transportation, distance reflects the time required to make the trip from farm to market. Since the factors that are responsible for losses from death and crippling operate over a longer period of time in distant shipments than in nearby shipments, losses would be expected to increase with distance. However, factors other than distance are not constant in shipments to the South St. Paul market. The class, species, type, and condition of livestock vary greatly from region to region throughout the supply area. Furthermore, there are marked differences in the seasonality of the movement to market and in the composition of the shipments from different regions.

Death losses up to the time of unloading in rail shipments of cattle from Minnesota to South St. Paul, during one full week in each month of 1936 and 1937, increased slightly with distance through the 201-mile-and-over zone and increased with distance in truck shipments through the 151-200-mile zone, followed by a decline in shipments from the more distant zone. Death losses in both truck and rail shipments of calves increased with distance through the 151-200-mile zone, and declined considerably in truck shipments and declined slightly in rail shipments from the next zone. Death losses in rail shipments of hogs increased with distance through the 201-mile-and-over zone and increased with distance in truck shipments through the 151-200-mile zone, followed by a slight decline in shipments from the next zone. In truck shipments of sheep and lambs, death losses increased through the 101-150-mile zone and declined steadily thereafter, while the highest losses in rail shipments occurred in those from the 51-100-mile zone. Losses in rail shipments of sheep and lambs were considerably less from the next zone and thereafter varied but little through the 201-mile-and-over zone.

The trend in losses from crippling in both truck and rail shipments from Minnesota to South St. Paul during one full week in each month of 1936 and 1937 varied considerably from the trends in death losses. The proportion of crippled cattle in truck shipments was considerably higher in shipments from the 0-50-mile zone than from any other zone. On the other hand, the proportion of crippled cattle in rail shipments increased with distance up to 150 miles and thereafter declined. The per cent of crippled calves in truck shipments increased for the first 150 miles and declined slightly in shipments from subsequent zones, while the proportion of crippled cattle in rail shipments increased only slightly from the 51-100-mile zone to the 101-150-mile zone and decreased rather sharply in shipments from the two more distant zones. Crippling among hogs shipped by truck increased sharply with distance through the 151-200-mile zone, followed by a pronounced decline in shipments from the next zone. In rail shipments of hogs, the proportion of cripples declined with distance through the 101-150-mile zone, increased sharply in shipments from the next zone, and declined in shipments from the most distant zone. In rail shipments of sheep and lambs, the proportion of crippled animals declined steadily with distance, through the 201-mile-and-over zone. The trend in truck shipments was likewise downward, although the decline was not so uniform as in rail shipments.

While losses from death and crippling can not be entirely eliminated, they can be reduced by exercising greater care in assembling, loading, and transporting the livestock to market and in handling the livestock after arrival.

## Some Effects of an Erosion Control Program on Labor Utilization

By GEORGE A. SALLEE

In the rougher farming areas of Minnesota, much attention has been given recently to erosion control by changes in the cropping system and by the practice of contour strip cropping. There has been considerable question in the minds of farmers and research workers as to the effect of the adoption of such a program on efficiency in the use of labor. Detailed farm records for an average of twenty-three farmers in Winona County, approximately two thirds of whom are cooperating in such a program, are available for the years 1935, 1936, and 1937. These include records for all three years for each of 13 farms which have adopted contour strip cropping. In 1935, these 13 farms were operated in the usual way. By the end of 1937, contour strips were fairly well established on 10 of them and were well under way on the remaining 3. Although the new program is not firmly established on all of these farms, the data furnish a basis for certain tentative conclusions regarding its effects.

One result of the adoption of contour strip cropping is an increase in number of fields with consequent reduction in acreage per field. The average number of fields on these 13 farms increased from 19 in 1935 to 28 in 1937. At the same time, the acreage per field dropped from 10.1 to 6.3 acres. Moreover, as few strips are uniform in width, the proportion of fields that are irregular in shape increased.

An analysis of the effect of size and shape of field on the amount of labor per acre used in harrowing with four-horse teams shows that more labor per acre was used for small fields than for large fields and for irregular than for regular fields. It seems logical to expect that a reduction in size and an increase in irregularity of shape of fields also would reduce labor efficiency in other operations.

Therefore, some decrease in labor efficiency on these farms is to be expected. On the other hand, long, narrow fields can be worked with less time used in turning at the ends than can square fields of the same acreage. From this standpoint, some of the disadvantages arising from a decrease in size and an increase in irregularity of shape may have been offset by an increase in length of field.

Erosion control also involves changes in the kind and acreages of crops grown. During this period, as a result of the adoption of an erosion control program and other conditions, the acreage per farm in crops decreased from 198 to 174, while that in pasture and woods increased from 135 to 154. The acreage in corn remained the same, while that in small grains decreased from 127 to 94 acres and alfalfa hay increased from 17 to 24 acres. The resulting change in feed production, as well as other conditions, was favorable to an increase in livestock production. On these 13 farms, livestock production increased by an average of 2 cows, 1 head of other cattle, 5 sheep, 1,500 pounds of hogs, 300 pounds of turkeys, and 15 hens per farm.

Labor efficiency is affected by each of these changes, as well as by other factors. During this period, the amount of productive work accomplished per man increased from 230 units in 1935 to 265 units in 1937, with no change in the number of hours worked per work day (10.4 hours). Hence, it appears that decreases in labor efficiency resulting from increased labor requirements for individual crop operations have been counterbalanced by increases in efficiency resulting from other causes. From the standpoint of the farm business as a whole, there has been no apparent decline in labor efficiency.

## Cold Storage Locker Development in Minnesota

By ROBERT J. EGGERT

Cold storage lockers, as a local means of storage for perishable farm products, are attracting increased attention. Supposedly starting in 1910, as a side-line enterprise of a creamery in Crete, Nebraska, their growth during the initial stages was very slow. Recent trade estimates indicate that there are now approximately 2,500 plants in the United States with most of the expansion taking place since 1934.

The first cold storage locker installation in Minnesota was made by an independent creamery at Moorhead in July, 1924, when 48 lockers were placed in a low-temperature room and offered for rental to farm patrons. The second plant in this state was not established until May, 1935, when a local meat market proprietor at Waseca installed a section of lockers. Shortly thereafter, two cooperative creameries supplied similar service to their patrons, and in 1936 seven additional plants were constructed

throughout the state. The expansion of these plants in the last two years has been extremely rapid, 55 plants being opened for rental in 1937, and by August 1, 1938, 66 additional plants were either operating or under construction.

The average locker capacity<sup>1</sup> of the cold storage room for all plants by years is as follows: 1935, 428; 1936, 361; 1937, 312; 1938, 242. A downward trend in these figures shows that the later plants have tended to be of smaller capacity. The largest plant has a capacity of 880 lockers, the smallest a capacity of only 50 lockers. Thus, there are a total of 132 locker plants with a total capacity of 37,352 and an average capacity of 283 lockers at the present time.

Table 1. Number and Average Locker Capacity of Locker Plants by Selected Type of Enterprise in Minnesota, 1935-38

Year established	Cooperative		Independent			
	Creamery		Meat Dealers		Separate†	
	No.	Average locker capacity*	No.	Average locker capacity	No.	Average locker capacity
1935.....	2	355	1	300	.....	.....
1936.....	2	434	.....	.....	2	440
1937.....	22	274	12	200	4	532
1938‡.....	13	256	34	215	9	328
Total.....	39	280	47	213	15	398

\* See footnote 1.

† Separate units devoted exclusively to the rental of lockers and related services.

‡ To August 1, 1938.

Forty-six of the plants are cooperative and 86 are of independent ownership. An analysis by years shows that cooperatively owned installations made in 1938 decreased, while independently owned enterprises increased.

One hundred fifteen plants are operated in connection with another business, while 17 are separate units devoted exclusively to the rental of lockers and related services. Thirty-nine of the plants owned cooperatively are operated in connection with a creamery, while five are in connection with cooperative poultry, cheese, and milk plants. Forty-seven of the plants owned independently are operated in connection with a meat market or grocery and meat store, 11 are operated as a side-line to a creamery, and 13 are operated in connection with hatcheries, ice plants, lumber yards, and ice cream enterprises.

Table 1 indicates a downward trend in the number of cooperatively owned creamery side-line locker plants established in 1938, and a sharp increase in the number of independently owned meat dealer locker enterprises. A pronounced decrease is also indicated in the average locker capacity of the separate unit plants constructed in 1938 over those constructed in the preceding year.

Fifty-seven of the 87 counties in the state have one or more locker plants, with greatest concentration being in the southern counties. In four counties, six locker plants have been established and three counties have five plants in operation. Eight towns in Minnesota have two locker plants. Current interest in locker plants may easily lead to installation where there would be inadequate volume or to inadvisable duplicating of services. For this reason, it is important that careful consideration be given to probable demand before deciding upon a plant.

<sup>1</sup> Refers to the number of lockers (15"x20"x30") that are or could be installed in the refrigerated space provided for them.

# Minnesota Farm Prices for August, 1938

By W. C. WAITE and W. B. GARVER

The index number of Minnesota farm prices for the month of August, 1938, was 60. When the average of farm prices of the three Augusts, 1924-25-26, is represented by 100, the indexes for August of each year from 1924 to date are as follows:

August 1924— 95	August 1929—104	August 1934— 72
August 1925—104	August 1930— 81	August 1935— 70
August 1926—100	August 1931— 55	August 1936— 97
August 1927—100	August 1932— 41	August 1937— 87*
August 1928—100	August 1933— 54	August 1938— 60*

\* Preliminary.

The Minnesota farm price index number of 60 for August 15 showed the most precipitate decline for one month in the history of the index, having dropped from 73 for July. The price index of 60 for August is the net result of increases and decreases in the prices of farm products in August 1938 over the average of August 1924, 1925, and 1926, weighted according to their relative importance. Declines were most severe in the grain crops, especially wheat, oats, and rye. Taken collectively, grains were bringing less than one half as much in August 1938 as they were in the base period August. Hogs fell off 70

**Average Farm Prices Used in Computing the Minnesota Farm Price Index, August 15, 1938, with Comparisons**

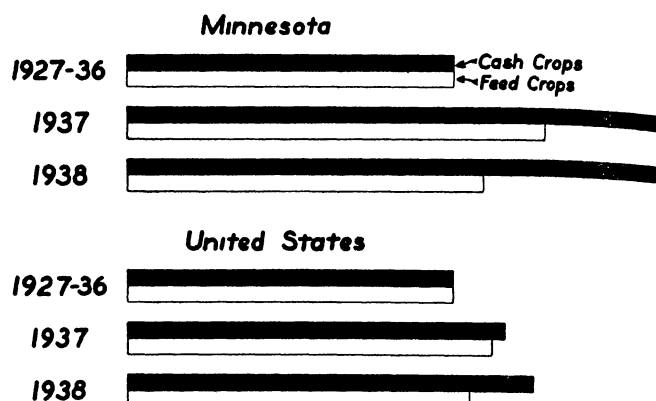
	Aug. 15, 1938	July 15, 1938	Aug. 15, 1937	Average Aug. 1924-25-26		Aug. 15, 1938	July 15, 1938	Aug. 15, 1937	Average Aug. 1924-25-26
Wheat .....	.56	.74	1.14	1.38	Cattle .....	6.70	6.90	8.30	6.08
Corn .....	.40	.45	.97	.94	Calves .....	8.10	7.80	8.70	8.67
Oats .....	.16	.20	.23	.35	Lambs-sheep .....	6.80	7.28	8.78	11.06
Barley .....	.34	.39	.50	.60	Chickens .....	.119	.126	.155	.182
Rye .....	.30	.41	.69	.81	Eggs .....	.175	.169	.175	.26
Flax .....	1.56	1.62	1.84	2.24	Butterfat .....	.26	.26	.33	.41
Potatoes .....	.55	.55	.75	1.17	Hay .....	4.58	5.20	5.68	11.60
Hogs .....	7.70	8.40	11.80	10.58	Milk .....	1.50	1.55	1.75	2.13

cents from July, with marketings running rather heavy. Changes in other livestock prices were largely seasonal in character.

**Indexes and Ratios of Minnesota Agriculture\***

	Aug. 1938	July 1938	Aug. 1937	Average Aug. 1924-26
U. S. farm price index.....	65.2	68.3	87.2	100
Minnesota farm price index.....	60.2	72.9	87.0	100
U. S. purchasing power of farm products .....	81.2	85.0	100.4	100
Minnesota purchasing power of farm products .....	75.0	90.7	100.2	100
Minnesota farmer's share of consumer's food dollar.....		45.0	53.1	56.1
U. S. hog-corn ratio.....	16.1	15.9	11.2	11.4
Minnesota hog-corn ratio.....	19.2	18.7	12.2	12.3
Minnesota egg-grain ratio.....	23.1	18.1	11.0	14.2
Minnesota butterfat-farm-grain ratio .....	42.9	36.3	31.3	32.4

\* Explanations of the computation of these data may be had upon request.



The chart furnishes a comparison of tonnage production of cash and feed grain crops for Minnesota and the United States. For Minnesota, the 1938 tonnage of cash crops is the same as for 1937 and two-thirds larger than the ten-year average, 1927-36. Most of the current year increase was accounted for by spring wheat. For the United States the current volume of production of cash crops is substantially larger than 1937 and the ten-year average. The United States increase includes some winter wheat.

Tonnage of feed crops is smaller this year than last for both Minnesota and the United States although both regions are substantially above the 1927-36 average. For both nation and state the production of oats will be less for this year than for the 1927-36 average. Minnesota will show substantial reduction over last year for both corn and oats. The United States Department of Agriculture reports that even after allowing for a probable 5 per cent increase in January 1 animal numbers the supply of feed per grain-consuming animal will be the largest in 12 years.

UNIVERSITY OF MINNESOTA  
Department of Agriculture  
Agricultural Extension  
University Farm, St. Paul, Minn.

PAUL E. MILLER, Director

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