FARM BUSINESS NOTES

Prepared by the Divisions of Agricultural Economics and Agricultural Extension
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NO. 244 UNIVERSITY FARM, ST. PAUL APRIL 22, 1943

Livestock Truck Efficiency[1]

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University Farm Radio Programs

HOMEMAKERS' HOUR—10:45 a.m.

UNIVERSITY FARM HOUR—12:30 p.m.

THE FRIENDLY ROAD—1:00 p.m.

Station WLB—770 on the dial

Several factors assist in evaluating the efficiency with which trucks are used in hauling livestock. These include, among others, the per cent gross-capacity, per cent net-capacity, and weight of livestock hauled per mile. These relationships are shown in table 1 in which the individual loads are arranged in order from lowest to highest on the basis of per cent net-capacity. The data include six light and six heavy loads of cattle hauled during the week of August 2-8, 1942, by Martin County trucks operating under Minnesota X licenses. Such trucks are permitted to haul for hire within a radius of 35 miles of the point of registration, and hence are engaged chiefly in local rather than long-distance hauling.

The gross-capacity of each truck was calculated according to a formula developed by the Office of Defense Transportation. Under this formula, gross-capacity is determined by size and number of tires, and number of plies per tire. When loaded at the normal carrying capacity of the tires, the truck is said to be loaded at 100 per cent gross-capacity. Normal, or 100 per cent net-capacity, is the difference between this normal or 100 per cent gross-capacity and the weight of the empty truck. In relatively few cases are trucks loaded at exactly 100 per cent capacity. Individual loads may vary slightly or they may vary considerably from this calculated normal.

It will be noted that trucks 7 and 8 happened to have identical loads as well as the same capacities. Commonly there are variations in trucks, loads, or distances. Thus, while trucks 5 and 6 were the same size, the trip made by truck 6 was twice that made by truck 5 so that the weight of livestock hauled per mile was only half as much for truck 6 as for truck 5. In other words, the weight of livestock hauled per mile varies inversely with distance. Trucks 3, 4, 5, and 6 each hauled 1,000 pounds of livestock, but because of variations in distance, the weight of livestock hauled per mile varied from 28 to 167 pounds.

Table 1. Relationship between Per Cent Gross-capacity, Per Cent Net-capacity, and Weight of Livestock Hauled Per Mile on Selected Trips Made by Martin County X Trucks to Pick Up Cattle Only, August 2-8, 1942

Truck number	Number cattle picked-up	Miles round trip	Weight of cattle (pounds)	Per cent ODT Capacity		Weight of livestock hauled per mile (pounds)
				Gross	Net	
			Six light loads:			
1	1	2	600	45.8	6.7	300.0
2	1	28	500	53.4	8.3	17.9
3	1	36	1,000	48.4	11.1	27.8
4	1	12	1,000	51.9	13.3	83.3
5	1	6	1,000	68.5	20.4	166.7
6	1	12	1,000	68.5	20.4	83.3
			Six heavy loads:			
7	10	4	7,000	104.2	107.7	1,750.0
8	10	4	7,000	104.2	107.7	1,750.0
9	14	28	7,500	108.5	115.4	267.8
10	9	11	6,500	110.2	122.6	590.9
11	12	34	7,500	118.6	141.5	220.6
12	8	22	7,740	122.9	158.0	351.8

Measures of Efficiency in Hauling

The weight of livestock hauled per mile is an important measure of efficiency in the case of trucks engaged in local hauling and loaded at less than capacity. Trips made by trucks 2 and 3 were extremely inefficient: truck 2 made a round trip of 28 miles to pick up one animal weighing 500 pounds and hence hauled only 18 pounds livestock per mile, while truck 3 made a round trip of 36 miles to pick up one animal weighing 1,000 pounds and hauled only 28 pounds livestock per mile. The trip made by truck 1 was more efficient than any of the trips made by trucks 2 to 6, inclusive, not because of size of load hauled but because of the relatively short distance covered.

The per cent net-capacity also is an important measure of efficiency in the case of less than capacity loads because it shows the relationship between the load hauled and the capacity of the truck. That is, the per cent net-capacity indicates whether the size of truck used is in keeping with the weight of livestock hauled.

On the other hand, in the case of capacity loads, the per cent gross-capacity is usually the most useful measure of efficiency because it indicates the relationship between the actual tire load and the normal tire capacity. Under

[1] The data upon which this study is based were obtained from truck operators in Martin County, Minnesota, during the week, August 2-8, 1942, by Arthur R. Karr, Agricultural Conservation Agent, Agricultural Extension Service, and Gerald Engelman, Research Assistant, Division of Agricultural Economics. Assistance in the preparation of this material was furnished by the personnel of Work Projects Administration, Official Project No. 265-1-71-236, Subproject No. 508.

such conditions, the weight of livestock hauled per mile is not a satisfactory measure of physical efficiency. For example, truck 11 hauled only 220 pounds livestock per mile while truck 7 hauled 1,750 pounds. Since both trucks were loaded above normal capacity, the trip made by truck 11 was just as efficient as that made by truck 7, providing the longer trip was necessary. If the longer trip involved unnecessary mileage, or reached out into an area that could have been served more efficiently by a trucker in that area, it would be an example of wasteful use of transportation resources even though the truck was fully loaded.

Variations in size and type of trucks together with the usual variations in routes traveled and services rendered on individual trips make it impracticable to use any one efficiency measure for all conditions. In some cases, pounds livestock hauled per mile is most useful; in others, the per cent net-capacity; and in still others, the per cent gross-capacity. In many cases all three factors will be useful in reaching a decision as to relative efficiency in the use of trucks which do not vary greatly in size and which are engaged in rendering somewhat similar service.

Ways to Improve Livestock Truck Efficiency

Much can be done to improve the operating efficiency of trucks engaged in hauling livestock both locally and to distant markets. Some suggestions apply largely or entirely to local hauling, others to the movement to distant markets, while others apply to both. This is indicated by the grouping of the suggestions which follow:

Suggestions which apply largely to local hauling:

1. Route trucks so that capacity loads, or as near capacity loads as is practicable, are picked up on each local assembly trip instead of making individual trips to pick up single animals or small lots of animals. This may involve limiting pickup service in a given community to one or a few days in the week depending upon the amount of livestock to be marketed.

2. Insofar as possible, arrange transportation of breeding or other animals from local markets or assembly points to local farms and from farm to farm in the local community in such a way that other animals can be picked up on the return trip.

3. Use the proper size truck for each particular task. Smaller trucks are required on some local pickup trips than on others, and smaller trucks usually are required for local hauling than for distant hauling.

4. Avoid overlapping trips on the part of truckers in the same community whenever this results in less than capacity loads or unnecessary truck mileage.

5. Avoid overlapping and crosshauling on the part of truckers in nearby communities.

Suggestions which apply largely to long distance hauling:

1. Haul capacity loads from local points to distant market outlets.

2. Eliminate local assembly trips whenever it is practicable to pick up capacity loads at one or more farms en route to distant markets.

3. Transport each class, grade, and weight of livestock over the most direct route to the packing plant or other market which offers the highest net-return to producers. Roundabout movement which entails unnecessary truck mileage should be avoided.

4. Obtain return loads whenever this is practicable.

5. Truckers should eliminate such unnecessary services as transporting customers back to their respective farms and delivering checks and receipts to the owners of the animals hauled.

6. In some cases it may be advisable to divert a higher proportion of the total over-the-road movement from trucks to the railroads. This will depend upon the relative convenience, cost, and effectiveness of the services rendered by each.

Suggestions which apply to both local and long distance hauling:

1. Truck efficiency could be increased considerably by spreading livestock marketings more evenly through the week. This would enable fewer trucks to handle a given volume of business and at the same time it would be advantageous to packing and market interests.

2. It is probable that somewhat greater use could be made of livestock trucks to transport other products during periods when the flow of livestock to market is relatively light.

Changes in Livestock Numbers in 1942

TRUMAN R. NODLAND

The farm records kept by the cooperators in the various Farm Management Services in Minnesota give some information on the amount of livestock on hand at the end of 1942 as compared with the number on hand at the beginning of the year. The data presented in this article were secured from approximately 400 farmers in southern and west central Minnesota.

Largest Increases in Hogs and Poultry

The number of livestock on hand January 1, 1942, the percentage change during the year, and the number of farmers reporting increases, no change, and decreases are presented in table 1. The largest percentage increases occurred in hogs and poultry; there were 16 per cent more old sows and gilts and 12 per cent more laying hens on hand at the end of the year. Market hogs showed even larger increases but there was a decrease of 6 per cent in the number of fall pigs. The net result for both market hogs and fall pigs was an increase of 8.5 per cent. The hog and poultry enterprises may be expanded relatively quickly and, therefore, offer a more immediate return to the farmer.

The farmers included in this study reported a small reduction in the number of milk cows. However, the larger number of heifers and calves on hand at the end of

Table 1. Changes in Livestock Numbers, January 1, 1942, to December 31, 1942

	Average number on hand Jan. 1, 1942	Per cent change during year	No. farmers reporting +	0	−
Dairy Cattle					
Milk cows	16	− 1.4	142	49	148
2-year-old heifers	3	+ 1.8	121	95	123
Yearling heifers	4	+ 8.0	130	86	123
Calves	6	+ 2.5	152	65	122
Beef Cattle					
Cows	13	− 6.3	31	18	26
Heifers	4	+ 9.9	27	22	26
Calves	8	+41.9	43	9	23
Stockers and feeders	28	−10.8	81	9	99
Hogs					
Market hogs	26	+24.8	193	53	116
Fall pigs	30	− 5.7	159	73	130
Gilts	11	+17.8	181	91	90
Old sows	3	+11.8	133	119	110
Sheep					
Ewes	48	+ 4.5	81	15	54
Feeder lambs	287	−78.8	15	0	19
Poultry					
Old hens	54	+ 7.1	119	125	107
Pullets	200	+13.0	190	51	110

the year is an indication that farmers may be planning to bring milk cow numbers back up to the January 1 level. A similar situation is true of beef cows and heifers. On the other hand, there was a large reduction in the number of feeder cattle.

These changes were not always uniform over the area covered. The decrease in fall pigs occurred in the southwestern and west central portions of the state; there were some increases in both the southeastern and south central sections. Most of these farmers increased the number of pigs raised in the fall of 1941 to such an extent that it may be difficult to make further expansions in fall pigs.[1] There was a reduction in the numbers of all dairy cattle in southwestern Minnesota but increases occurred in the southeastern and west central areas. There was a 14 per cent decrease in the numbers of beef cows and a 7 per cent decrease in feeder cattle in the southwestern and west central areas. The other two areas studied showed some increases in the size of the beef breeding herd but the number of feeder cattle was reduced by one fourth. All of the areas showed an increase in laying hens.

[1] See Nodland, Truman R., "How Much Have Livestock Numbers Increased in 1941," *Minn. Farm Business Notes*, No. 230, February, 1942.

Pasture—A Low Cost Feed

C. Herman Welch, Jr.

A study of pasture production and use recently completed on 120 farms in Houston County shows that pasture provides from one third to one half of the feed consumed by cattle. Of this amount approximately 50 per cent came from open permanent pasture. Although two thirds of this pastureland was too rough and hilly to be cultivated, cattle were able to consume nearly as much digestible feed per acre as is produced by small grains grown on more level land. The study also shows that this feed can be produced at low cost and with very little labor.

Clippings from grazed and ungrazed areas of open permanent pastures show that 2,231[1] pounds of pasturage was produced per acre, of which 1,599[1] pounds or 72 per cent was consumed during the grazing season. This consumption is equivalent to 759 pounds of digestible nutrients. Cost of this type of pasture, including land rental at $1.84 per acre, maintenance of pasture fence at $.60 per acre, and labor of driving cows to and from pasture at $.36 per acre, was $2.80 per acre. On the basis of these charges, 100 pounds of digestible nutrients of pasture cost 37 cents. This makes pasture one of the cheapest sources of feed nutrients on the farm. Comparison with other crops raised in the area are given in table 1.

These open permanent pastures consisted principally of Kentucky bluegrass with 11 per cent white clover and 9 per cent weeds. Other studies in the area have shown that from pastures of this type about 60 per cent of the season's growth is made during May and June. Therefore, to balance pasture production and livestock needs it is necessary to supplement permanent pastures during periods of low production. On most farms permanent pastures are supplemented by grazing crop aftermath during the late summer and fall. However, there is a period between the time when permanent pasture begins to dry up and crop aftermath becomes available that cattle are dependent upon the mature dry grasses in the permanent pasture for their grazing. It is during this period that milk production usually drops. On some farms the carrying capacity of permanent pasture was more than doubled and the grazing season lengthened by following a complete pasture renovation program consisting of applications of lime, fertilizer, and seedings of legumes.

A good pasture program provides continuous as well as ample grazing throughout the entire pasture season. It is desirable to extend the grazing season as long as possible and to obtain the largest possible proportion of feed from pasture as it is the cheapest form of nutrients. Careful consideration should be given the coming year to ways of lengthening the grazing season and increasing the proportion of low-cost nutrients obtained from pasture. During the present emergency this is one way of saving labor and at the same time lowering cost of production.

Table 1. Comparative Yields and Costs of Producing Feed Nutrients*

Crop	T.D.N. Per acre	Cost of T.D.N. Per acre	Per 100 lbs.
	pounds	dollars	dollars
Pasture	759	$ 2.80	$ .37
Alfalfa hay	2,226	12.85	.57
Clover-timothy hay	1,667	10.98	.65
Corn, ear, husked	2,273	20.49	.90
Barley	921	14.02	1.52
Oats	843	13.46	1.60

* In computing pasture costs, approximately one and one-quarter hours of labor per acre was used annually for fence maintenance, and one hour in driving the cows to and from pasture. This was charged at the rate of 35c per hour. Other crop-cost data are averages for Winona County, 1935-1940, from Mimeographed Report No. 125, Division of Agricultural Economics, June, 1941, with labor costs adjusted to a rate of 35c per hour.

[1] 15 per cent moisture.

Minnesota Farm Prices For March, 1943

Prepared by R. W. Cox and H. G. Hirsch

The index number of Minnesota farm prices for March, 1943, is 173. This index expresses the average of the increases in farm product prices in March, 1943, over the average of March, 1935-39, weighted according to their relative importance.

Average Farm Prices Used in Computing the Minnesota Farm Price Index, March, 1943, with Comparisons*

	Mar. 15, 1943	Feb. 15, 1943	Mar. 15, 1942		Mar. 15, 1943	Feb. 15, 1943	Mar. 15, 1942
Wheat	$ 1.25	$ 1.21	$ 1.05	Hogs	$14.60	$14.50	$12.50
Corn	.81	.79	.66	Cattle	12.80	12.30	10.10
Oats	.54	.51	.45	Calves	13.90	13.80	11.90
Barley	.74	.70	.68	Lambs-Sheep	13.77	13.30	10.18
Rye	.67	.62	.63	Chickens	.19	.19	.14
Flax	2.88	2.67	2.38	Eggs	.33	.32	.25
Potatoes	1.35	1.10	.90	Butterfat	.53	.52	.38
Hay	7.90	7.10	5.40	Milk	2.60	2.50	2.05
				Wool†	.39	.39	.37

* These are the average prices for Minnesota as reported by the United States Department of Agriculture.

† Not included in the price index number.

The prices of most commodities rose from 1 to 8 per cent over the corresponding February prices. Hay and potato prices increased by 11 and 23 per cent, respectively. Chicken and wool prices remained unchanged. No price declines occurred. Compared with one year ago prices range from 5 to 50 per cent higher. The average increase over March, 1942 prices was 25 per cent.

The increase of the Minnesota farm price index from 163 in February to 173 in March was due to the rise of almost all prices and to the increased weight accorded to potatoes and eggs in the March index. The prices of these two commodities are more than twice their base period prices. Since hog, butterfat, and egg prices advanced less than grain prices, all feed ratios except the beef-corn ratio are slightly narrower than in February.

Indexes and Ratios for Minnesota Agriculture*

	Mar. 15, 1943	Mar. 15, 1942	Mar. 15, 1941	Average Mar. 1935-39
U. S. farm price index	172.7	138.5	97.7	100
Minnesota farm price index	172.6	134.2	92.8	100
Minn. crop price index	164.0	122.7	69.4	100
Minn. livestock price index	179.4	147.2	100.4	100
Minn. livestock product price index	169.0	124.4	96.1	100
U. S. purchasing power of farm products	132.4	117.0	99.3	100
Minn. purchasing power of farm products	132.4	113.3	94.3	100
Minn. farmers' share of consumers' food dollar	61.4†	56.0	44.1	48.2
U. S. hog-corn ratio	15.5	15.7	12.4	13.4
Minnesota hog-corn ratio	18.0	18.9	15.8	16.5
Minnesota beef-corn ratio	15.8	15.3	17.1	12.9
Minnesota egg-grain ratio	18.8	16.9	14.4	13.6
Minnesota butterfat-farm-grain ratio	33.3	28.1	38.3	32.4

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

† For February, 1943.

The Poultry and Egg Situation

The demand for baby chicks this spring is unusually strong in all areas. The output by commercial hatcheries during the present season will represent the highest on record. It is estimated that farmers will raise from 10 to 15 per cent more chickens on farms this year than were raised in 1942.

In March, prices of all classes of poultry were at ceiling levels with demand at most markets exceeding supplies. The government support price for chickens and turkeys will be at not less than 90 per cent of parity, but with the increased demand for poultry resulting from meat rationing, market prices are likely to remain close to the ceiling levels.

During February, there were 15 per cent more layers on farms and the rate of production per bird averaged 3 per cent higher, resulting in a total output of 19 per cent more eggs than in February of last year. Egg production will reach a seasonal peak in April but if drying operations increase to near capacity and the necessary quantities are stored for drying later in the year, supplies for consumers will be about the same as last year.

The United States average farm price of eggs will be supported at not less than 30 cents per dozen in the spring months and at levels in other months so as to obtain at least an average of not less than 34 cents for the year. The farm price of eggs in Minnesota is usually about 2 or 3 cents less than the United States average farm price.

On March 6, the O.P.A. established maximum prices that can be charged retailers for eggs graded according to the new Consumer Grade specifications. At that time, maximum levels were about the same as current levels, but ceiling prices will vary seasonally, increasing from the March-May low to the November peak. In view of the intensified demand for eggs as a result of meat rationing it is likely that the market prices will continue close to the ceiling levels.

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UNIVERSITY FARM, ST. PAUL, MINNESOTA

Cooperative Extension Work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Division and United States Department of Agriculture Cooperating, Paul E. Miller, Director. Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.