

# Seasonal Price Patterns for Livestock in North Dakota

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**L**ivestock market prices may be analyzed in a secular, cyclical, or seasonal time frame. Secular price trends occur over a long period of time. Price cycles last a certain number of years and continue to repeat that pattern over a long period. Seasonal price patterns follow a pattern within a year and conform to that pattern over a number of years. This circular will focus on seasonal price patterns, which may be used to develop yearly livestock marketing plans.



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Seasonal price movements are a direct reflection of seasonality in livestock marketings and demand. Seasonality in marketing is related to biological factors of the species and management practices. For example, many calves and lambs are born in the spring and marketed in the fall when pastures become dormant and winter approaches. Seasonality in demand is related to consumers' seasonal product preferences for meat and buyers' interest in feeder livestock. The interaction of these changing demand and supply conditions causes a distinct seasonal price pattern to livestock prices. Seasonal price patterns were developed using historical price data from the West Fargo Stockyards published by the Livestock Division, USDA, Agricultural Marketing Service.

Increases in frame size and weaning and market weights have occurred in the livestock industry during the past twenty years. Therefore, two seasonal price indices, an early index (from 1975 to 1984) and a later index (from 1985 to 1994) were computed to determine if changes have occurred in seasonal price patterns. The seasonal indices use average

monthly prices computed as a centered 12-month moving average. Monthly averages reduce sharp variations in daily and weekly prices. The average price for each month expressed as a percentage of the moving averages for the same month provides the index.

Interpret monthly indices as the percentage that the monthly price is expected to be of the average yearly price. An index number less than 1.00 suggests prices for that month are "normally" expected to be less than the yearly average, and a number greater than 1.00 suggests expected prices higher than the yearly average. The 1985-1994 indices for market classes of livestock discussed are shown in Table 1.

Seasonal indices can be used to calculate a simple price forecast. Once an average monthly price is known, that price times the ratio of the index of the desired forecast month to the known monthly price index will give the forecast price. For example, assume the monthly average price for 240 pound market hogs is \$45 per hundred-weight in February and a forecast is wanted for May.

**Table 1. Indices of Seasonal Prices for Selected Classes of Livestock, ND, 1985-1994.**

Class of livestock	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Market Steers, 1100-1300 lbs.	1.010	1.019	1.019	1.037	1.026	.996	.974	.972	.963	.972	.995	1.006
Feeder Steers, 500-600 lbs.	.996	1.000	1.013	1.021	1.011	1.012	.996	.985	1.006	.991	.991	.983
Feeder Steers, 700-800 lbs.	1.009	1.003	.989	.988	.990	.992	.990	1.008	1.020	1.008	.995	.994
Utility Cows	.962	1.017	1.030	1.029	1.046	1.021	1.043	1.050	1.002	.957	.913	.938
Bulls, 1500-2,000 lbs.	.983	1.027	1.039	1.022	1.022	1.012	1.021	1.023	1.002	.975	.931	.939
Market Hogs, 220-240 lbs.	.953	.985	.955	.952	1.040	1.093	1.099	1.078	1.002	.999	.922	.936
Feeder Pigs, 40-50 lbs.	.818	1.091	1.112	1.222	1.180	1.012	.932	.931	.915	.916	.862	.882
Market Lambs, 90-115 lbs.	.996	1.009	1.040	.987	1.104	1.049	1.022	.957	.942	.938	.913	.987
Feeder Lambs, 60-90 lbs.	1.020	1.041	1.049	1.026	1.066	1.014	.950	.932	.947	.951	.954	1.027

Source: Computed from West Fargo average monthly livestock prices.

The equation to use is:

$$\text{February average monthly price} \times \frac{\text{May Index}}{\text{February index}} = \text{May Forecast}$$

Therefore:

$$\$45 \times \frac{1.04}{.985} = \$47.51$$

The closer the forecast month is to the known price month, the more accurate the forecast is likely to be. Furthermore, when each subsequent monthly price becomes known, a new set of price forecasts can be computed.

It should be noted that supply and demand conditions in a particular year may differ substantially from the average period

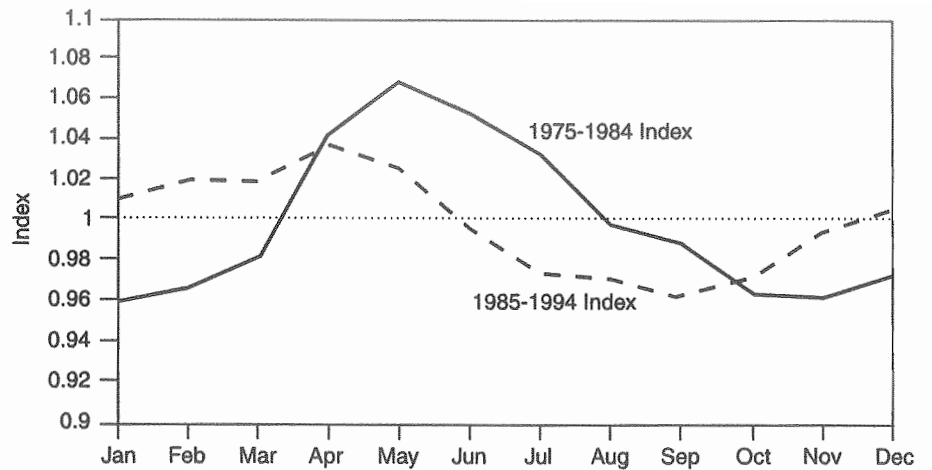
on which the indices were based. Therefore, it is important to consider current supply and demand factors when making forecasts. For example, extremely dry conditions may cause feeder calves and cull cows to be marketed earlier than the "normal" late fall period. Seasonal lows in prices in August or September could then be expected.

# Market Steers

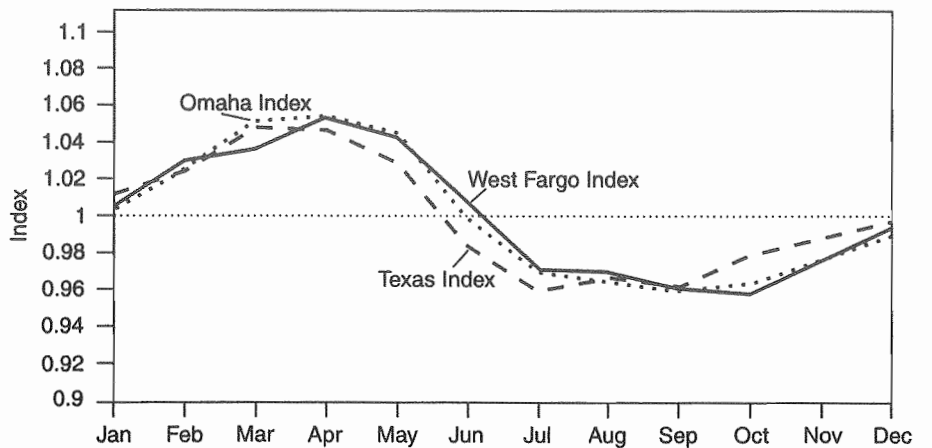
In the 1975-84 index, prices for 1100-1300 pound market steers started low early in the year and rose sharply to a peak in May and steadily declined to a seasonal low in October, before beginning an upward trend to the end of the year. The 1985-94 index started higher than the 1975-94 index in January and peaked in April before dropping sharply into July where it continued at low levels through the summer months. In October, the index rebounded steadily to the end of the year. In the 1985-94 index, seasonal highs in the spring of the year were not as high as in the earlier index (Figure 1).

The earlier seasonal price high and low in the 1985-94 index may be a result of improved genetics in the cattle industry. Heavier weight calves are weaned in the fall and therefore market steers reach market weight earlier. As marketings increase in spring through summer, prices fall.

A comparison of market steer seasonal price indices for the Southern Plains (Texas), Corn Belt (Omaha), and West Fargo was made to determine if seasonal price patterns differ by geographic region (Figure 2). The three seasonal patterns for



**Figure 1. Seasonal Price Patterns, 1975-1984 and 1985-1994 Incices, 1100-1300 lb. Market Steers, West Fargo.**



**Figure 2. Seasonal Price Patterns, Market Steers, West Fargo, Omaha, Texas, 1988-1994.**

Source: *Livestock, Dairy, and Poultry Situation and Outlook*, Various issues. *Livestock, Meat, and Wool Market News*. Various issues.

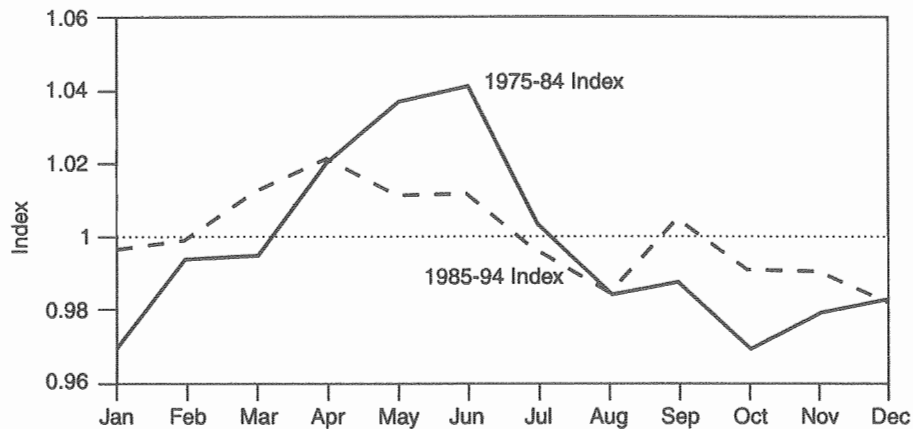
1988-1994 were quite consistent with only minor differences occurring. Seasonal price patterns are similar throughout the United States, but absolute price differences may occur among markets as distance from areas of consumption increases.

# Feeder Steers

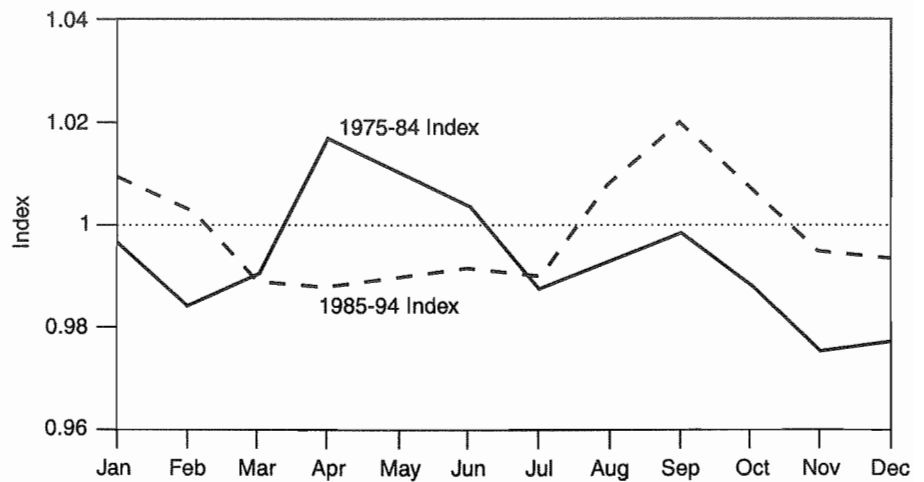
The seasonal price patterns for 500-600 pound steers was chosen because cattle in this weight range are indicative of typical fall calf weaning weights. Only minor changes from the 1975-84 seasonal prices were exhibited. Prices for 500-600 pound feeder steers are higher in the spring with a peak in April because few lightweight feeder cattle are sold and cattle to graze through the summer months are in greater demand (Figure 3). Prices decreased in the fall when calves are weaned and marketed at the end of the grazing season.

The seasonal price pattern for 700-800 pound feeder steers was examined because this market class represents cattle backgrounded throughout the winter and marketed in the spring. The 1985-94 index changed during the first six months of the year compared to the 1975-84 index (Figure 4). In the earlier time period, prices peaked in April and tended to decline to a seasonal low in November. In the 1985-94 index, 700-800 pound feeder steers exhibited declining prices into the spring, reaching a seasonal low in April. Prices were low in April because this is the peak marketing period for yearling 700-800 pound steers. Prices during the last six months of the year were higher in the 1985-1994 index, reaching a seasonal high in

September when fewer 700-800 pound steers were marketed. The index dropped after September as pasture season ended and both heavier feeder cattle and new-crop calves were marketed.



**Figure 3. Seasonal Price Patterns, 1975-1984 and 1985-1994, Feeder Steers, 500-600 lb., West Fargo.**

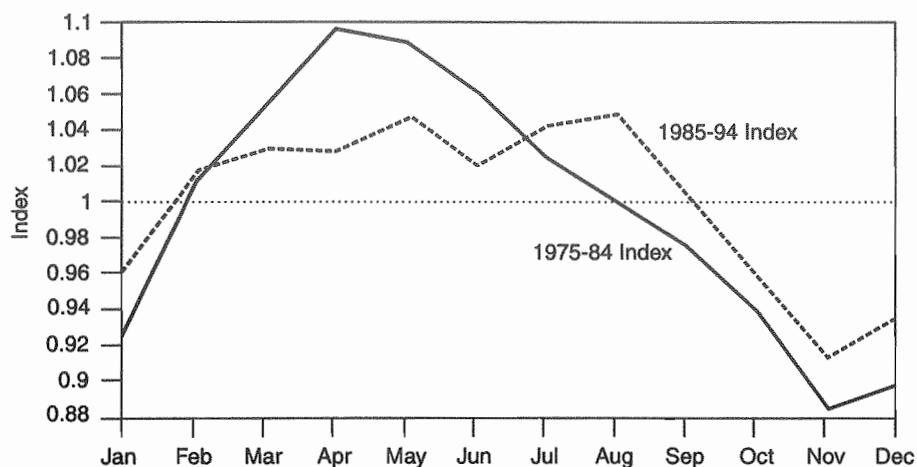


**Figure 4. Seasonal Price Patterns, 1975-1984 and 1985-1994 Indices, Feeder Steers, 700-800 lb., West Fargo.**

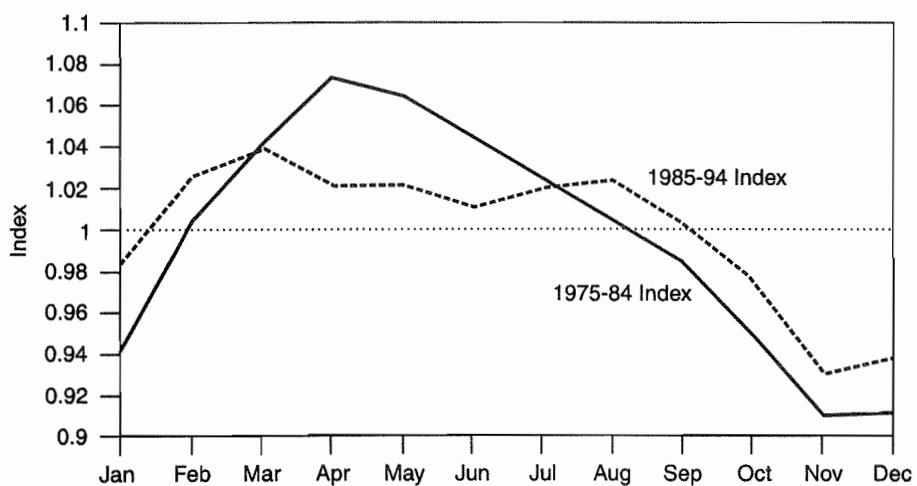
## Cows and Bulls

Seasonal price patterns for cull cows and bulls are similar (Figures 5 and 6). Prices tend to increase the first part of the year and then decline to a seasonal low in November. The seasonal high in prices occurred in April for the 1975-84 index, but in 1985-94 cows peaked in August and bulls in March. Both cow and bull prices were above average in February through August with

only small percentage differences between peak months and other months. Very little culling of cows and bulls occurs in spring and summer months (except during periods of drought) and demand for hamburger for outdoor barbecuing is high. The seasonal low occurs in November as excess breeding stock is culled when cattle come off summer pasture and seasonal production of competing meats is high.



**Figure 5. Seasonal Price Patterns, 1975-1984 and 1985-1994, Utility Cows, West Fargo.**



**Figure 6. Seasonal Price Patterns, 1975-1984 and 1985-1994 Indices, Bulls, 1500-2100 lbs., West Fargo.**

## Hogs and Pigs

Hog prices follow a distinctive pattern that directly reflect variations in marketings of hogs. Farrowings, although distributed throughout the year, tend to be concentrated in spring and fall months, leading to a concentration of marketings and seasonal lows in prices in April and November. Fewer hogs are marketed in the summer months when season highs in prices occur.

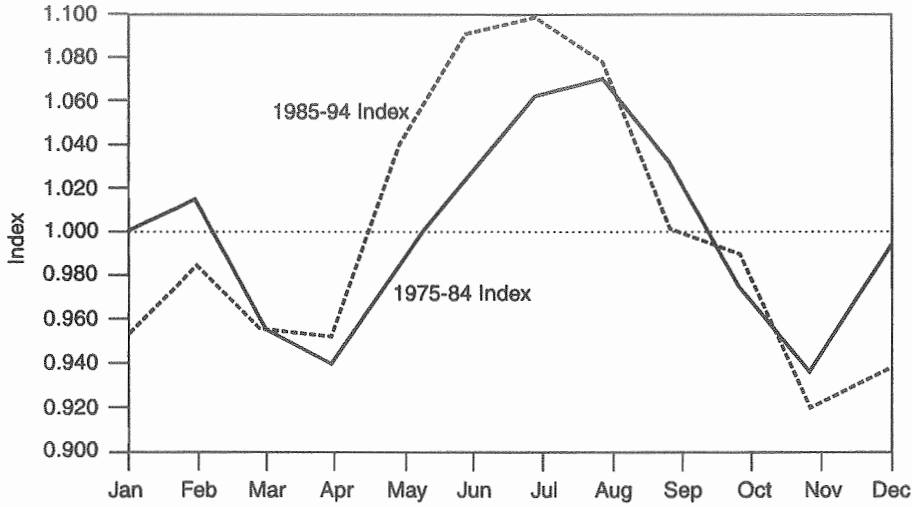
Long-term trends toward year-round farrowings were expected to flatten seasonal price patterns. However, the contrary is evident when comparing the 1975-84 index to the 1985-94 index. The seasonal patterns are similar, but the extremes in the indices are more pronounced in the 1985-94 index (Figure 7).

Demand for feeder pigs is derived from expected market hog prices and the cost of gain. Peak prices for feeder pigs occurred in the spring, with anticipation of higher prices for market hogs in the summer (Figure 8). Prices declined into the summer months with expectations of lower fall prices for market hogs and reached seasonal lows in October and November in anticipation of seasonally low prices for market hogs in the spring. Very little change in indices of seasonal price patterns for feeder pigs occurred.

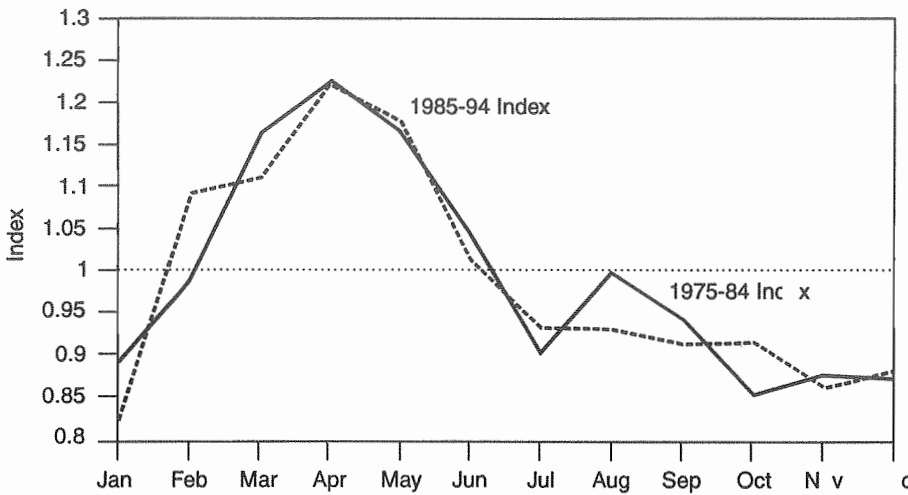
# Lambs

Very little difference between the 1975-84 and the 1985-94 indices occurred for market lambs. Lamb prices generally increase from fall lows to reach a seasonal price high in May. The peak demand for lamb in the spring occurs because of religious holidays and due to "spring lambs" replacing "old crop" lambs on the market. After spring, demand for lamb declines and too few lambs are marketed during the summer months to attract sufficient buying activity. Prices declined to lows in November when many lambs are marketed as sheep are removed from summer pastures. The price decline in April for the 1985-94 index probably occurred because the demand for lambs temporarily declines immediately prior to religious holidays when meat would not reach retail outlets in time to be sold.

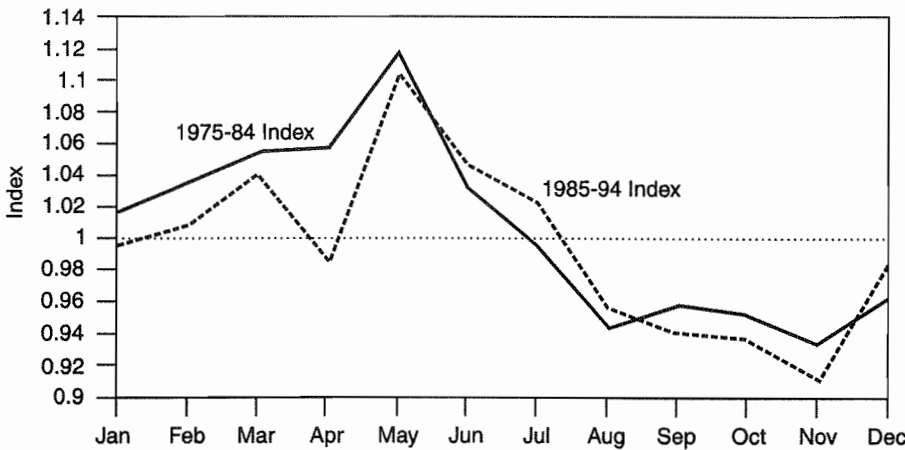
Seasonal price patterns for 60-90 pound feeder lambs have changed slightly in the early months (Figure 10). Feeder lamb prices peaked in March and dropped to a seasonal low in August in the 1975-84 index. In the 1985-94 index, prices increased to a high in May and dropped to a fall low in August.



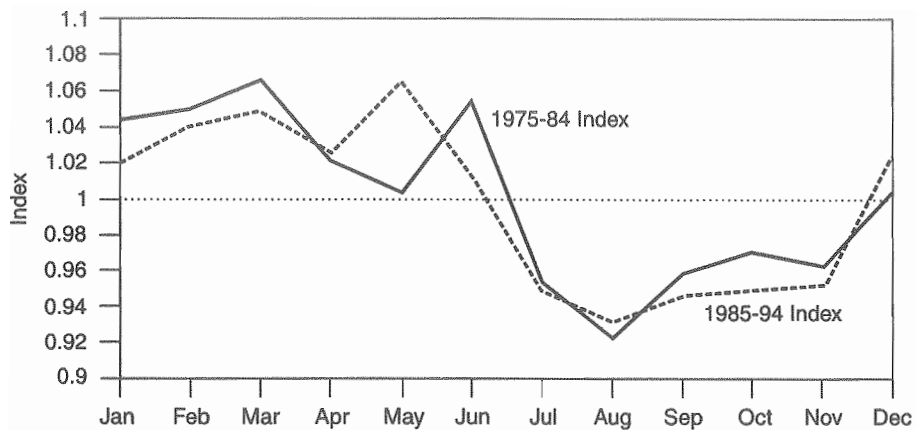
**Figure 7. Seasonal Price Patterns, 1975-1984 and 1985-1994, Market Hogs, 220-240 lbs., West Fargo.**



**Figure 8. Seasonal Price Patterns, 1975-1984 and 1985-1994 Indices, Feeder Pigs, 40-50 lbs., West Fargo.**



**Figure 9. Seasonal Price Patterns, 1975-1984 and 1985-1994 Indices, Market Lambs, West Fargo.**



**Figure 10. Seasonal Price Patterns, 1975-1984 and 1985-1994 Indices, Feeder Lambs, 60-90 lbs., West Fargo.**

## Summary

Understanding and using seasonal price patterns is one of many important marketing tools that can be used to develop marketing plans. Since seasonal price patterns for livestock primarily reflect seasonality in marketings, adjustments in production and marketing programs may result in higher prices for individual market classes of

livestock. For example, calves may be backgrounded instead of selling at weaning, or sows may be bred to farrow on a different schedule to take advantage of seasonally higher prices. Risk management strategies such as forward contracting, futures, and options during a favorable price period can limit the risk of adverse price movements.

## References

*Livestock, Dairy, and Poultry Situation and Outlook*. Various issues. U.S. Department of Agriculture. Washington, D.C.: U.S. Government Printing Office

North Dakota Agricultural Statistics Service. *North Dakota Agricultural Statistics 1994*. North Dakota State University, Fargo, and United States Department of Agriculture, Washington, DC.

United States Department of Agriculture, Agricultural Marketing Service, *Livestock Market News*. West Fargo, ND.

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