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Estimating And Using Probabilities in Farm And Ranch Decisions

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Market Report	Yr Ago	4 Wks Ago	7/24/98
Livestock and Products,			
Average Prices for Week Ending			
Slaughter Steers, Ch. 204, 1100-1300 lb			
Omaha, cwt.	$64.50	$62.00	$
Feeder Steers, Med. Frame, 600-650 lb			
Dodge City, KS, cwt.	85.21	*	72.38
Carcass Price, Ch. 1-3, 550-700 lb			
Cent. US, Equiv. Index Value, cwt.	96.13	94.85	
Hogs, US 1-2, 220-230 lb			
Omaha, cwt.	59.65	41.25	
Feeder Pigs, US 1-2, 40-45 lb			
Omaha, hd.	*	*	
Vacuum Packed Pork Loins, Wholesale,			
13-19 lb, 1/4" Trim, Cent. US, cwt.	122.70	107.10	
Slaughter Lambs, Ch. & Pr., 115-125 lb			
Sioux Falls, SD, cwt.	85.56	*	81.75
Carcass Lambs, Ch. & Pr., 1-4, 55-65 lb			
FOB Midwest, cwt.	160.00	170.00	
Crops,			
Cash Truck Prices for Date Shown			
Wheat, No. 1, H.W.			
Omaha, bu.	3.70	3.10	
Corn, No. 2, Yellow			
Omaha, bu.	2.37	2.30	
Soybeans, No. 1, Yellow			
Chicago, bu.	7.57	6.52	
Grain Sorghum, No. 2, Yellow			
Kansas City, cwt.	4.09	4.20	
Oats, No. 2, Heavy			
Omaha, bu.	*	*	
Hay,			
First Day of Week Pile Prices			
Alfalfa, Sm. Square, RFV 150 or better			
Platte Valley, ton.	*	125.00	
Alfalfa, Lg. Round, Good			
Northeast Nebraska, ton.	85.00	*	
Prairie, Sm. Square, Good			
Northeast Nebraska, ton.	100.00	82.50	

* No market.

A **probability** is a number that measures the likelihood or chance that a particular event will occur. This number, in terms of fractions or percentages, must be between zero (0) and one (1). Zero means there is no chance that the event will happen, and one means it is certain to happen. In between are all the possible probabilities that it will or will not happen. The **sum** of the probabilities of all the possible events that can occur in a given situation must add up to one.

Three Types of Probabilities

Deduction Probabilities

This approach calls for logical or deductive assignment of probabilities based on set statistical relationships. Most "games of chance" or gambling fall into this category. For example, the flip of a normal coin with a head and a tail has a known probability of 50 percent or ½ of the time that a head will result. Similarly, the odds of rolling a three using a normal, six-sided, single die is 16.7 percent or 1/6, since there are six possible outcomes.

For deductive possibilities, it is not really necessary to use a frequency of occurrence approach to estimate probability. It is important to distinguish between true deductive probabilities and other probabilities such as the likelihood of rain or the odds on a given team winning the Super Bowl. True deductive probabilities are absolute, and there should be no argument about the stated odds. Unfortunately, most of the phenomena which must be considered in farm and ranch decision-making are not subject to such logical deduction.

Empirical Probabilities

This type of probability is based on the observed frequency of occurrence. Many of the phenomena associated with nature are measured in this manner; the probability of a given rainfall, temperature or flood can be estimated based on how often it has happened in the past. For example, rainfall records for a given area might show that over the past twenty years there have been four spring planting periods when total rainfall was 1½ inches or less. This translates into 4/20 (four times in twenty years) or a 20 percent probability of getting 1½ inches or less of rainfall in this particular area.

Subjective Probabilities

The third concept of probability is called subjective probability. Subjective probability measures the decision-maker's strength of conviction about the chance of occurrence of a particular future event.

In estimating these probabilities, it is assumed that the rational decision-maker examines his own experience and the data available, and consults whomever he can as time and money allow.

In assigning subjective probabilities, some situations will have much more uncertainty than others. Thus, a decision-maker's conviction in assigning probabilities is also tempered by the underlying risk he feels. However, a major benefit of subjective probabilities is that it presents a systematic framework for evaluating uncertainty, especially if no other alternative exists. Subjective probabilities allow the decision-maker to summarize
everything he knows about the occurrence of a future event or situation. The probabilities summarize this information in convenient and easy-to-work-with numbers.

Future Livestock Market Price Probabilities

I believe there is better than a 50 percent chance that cash fed and feeder cattle prices will average higher in the second half of 1998 than in the first half. Cash hog prices have been depressed recently, in fact cash hog prices may turn out to be the lowest for the month of July since July 1972. The chances of cash hog prices averaging higher for the second half of 1998 appear to be less than 50 percent.

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