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# Market Journal Toolbox

## Risk Management Needs Ever Increasing for Agricultural Producers

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*Back when I was starting out in the business, fed cattle prices were always between \$20-22/cwt. We just didn't have to worry much about price risk back then.*

*~ Anonymous Seasoned Cattle Feeder*

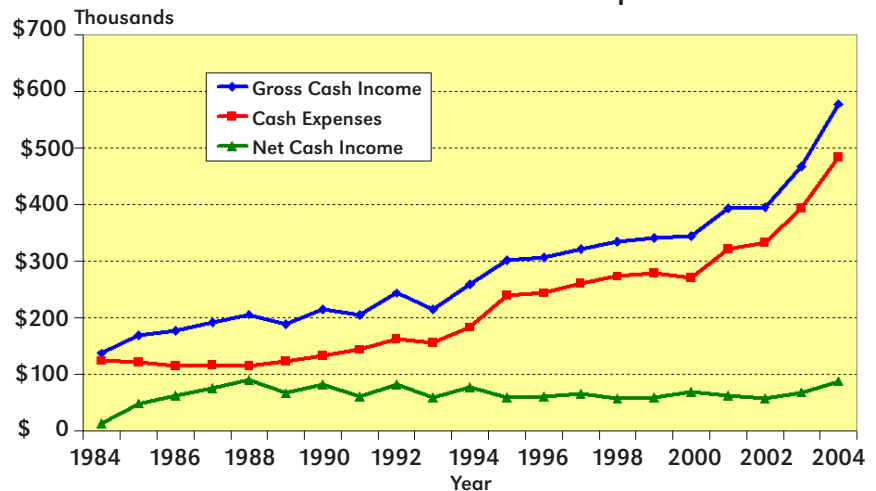
Today's agricultural business environment has changed significantly for grain and livestock producers. The quote above suggests that while producers may have historically been most concerned about production risks such as weather, pests, and other natural perils, many of the risks now facing their operations relate to management and marketing decisions. Many producers report struggling to make marketing decisions and use risk management tools that are available. It is well documented that producer use of traditional risk management tools has remained low (Schroeder, et al.; Asplund, Forster, and Stout; Goodwin and Schroeder; Musser, Patrick, and Eckman). For example, nearly all grain and livestock producers use cash markets to price at least a portion of their commodity sales (Goodwin and Schroeder; Schroeder, et al.).

Producers often rely on cash market sales without the use of forward contracting, futures hedging, and other risk management tools for several reasons. Some producers indicate that the use of hedges lowers their net price or increases price variability on average. Others view hedging as a risky price enhancement mechanism that is reliant on being able to successfully forecast futures prices. Selling crops or livestock that have not yet been raised, paying margin calls, and dealing with brokers all appear to be risk-inducing activities for some farmers and ranchers. Many producers indicate their use of forward contracting and hedging is limited most by their understanding of the market institutions, contracts, and logistics of these risk management techniques.

Interestingly, Schroeder et al. found that over 70% of producers cited risk reduction as their primary marketing goal. However, less than 20% used forward contracts, futures hedging, or options hedging to lower their risk. Significant economic literature exists that shows that practices like futures hedging reduce variability of prices (Berck; Bond and Thompson; Kahl; McKinnon; Schroeder and Hayenga; Zulauf et al.). These studies also confirmed the traditionally expected negative correlation between risk and return, citing that hedging also results in lower prices on average. Perhaps producers inherently know this and historically have been willing to take on price risk by not hedging in order to receive higher returns. However, there are several reasons why producers may seek to lower their price risk exposure at the expense of returns in the future and, therefore, need additional understanding of how to apply new risk management practices to their operation.

While gross cash farm income has increased over the last 20 years, cash expenses have risen steadily as well (see Figure 1). These data, from Nebraska Farm Business,

**Nebraska Farm Income & Expense**

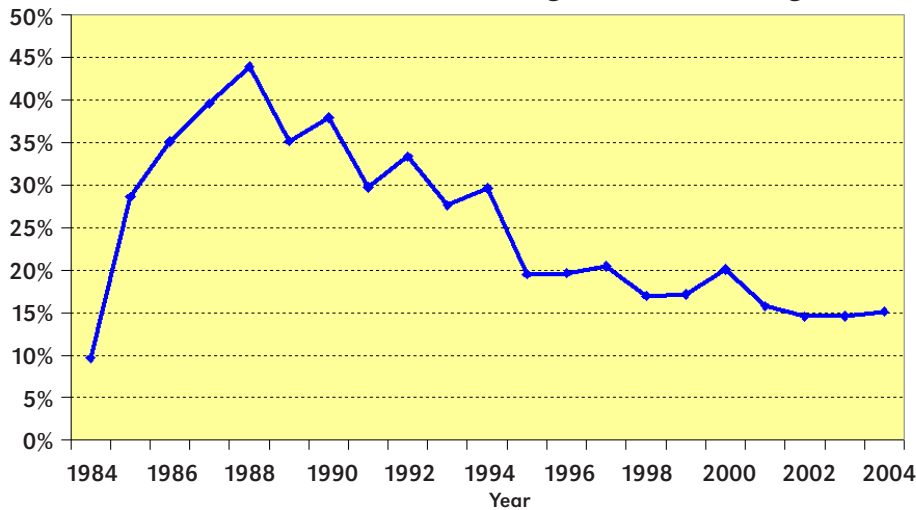


Source: Nebraska Farm Business, Inc.

**Figure 1.**



## Nebraska Cash Profit Margin From Farming



Source: Nebraska Farm Business, Inc.

Figure 2.

Inc., shows that net cash farm income has not increased from 1984 to 2004. This is concerning, however, in light of family living expenses more than doubling over this time period. In fact, the cash profit margin, or percentage of gross farm income that is available for principle payments, family living expenses, and growth, has declined substantially since its high in 1988 (Figure 2). As profit margins grow increasingly tight, less room for income variability exists, and farm management and marketing decisions need to be precisely focused on generating a certain level of revenue.

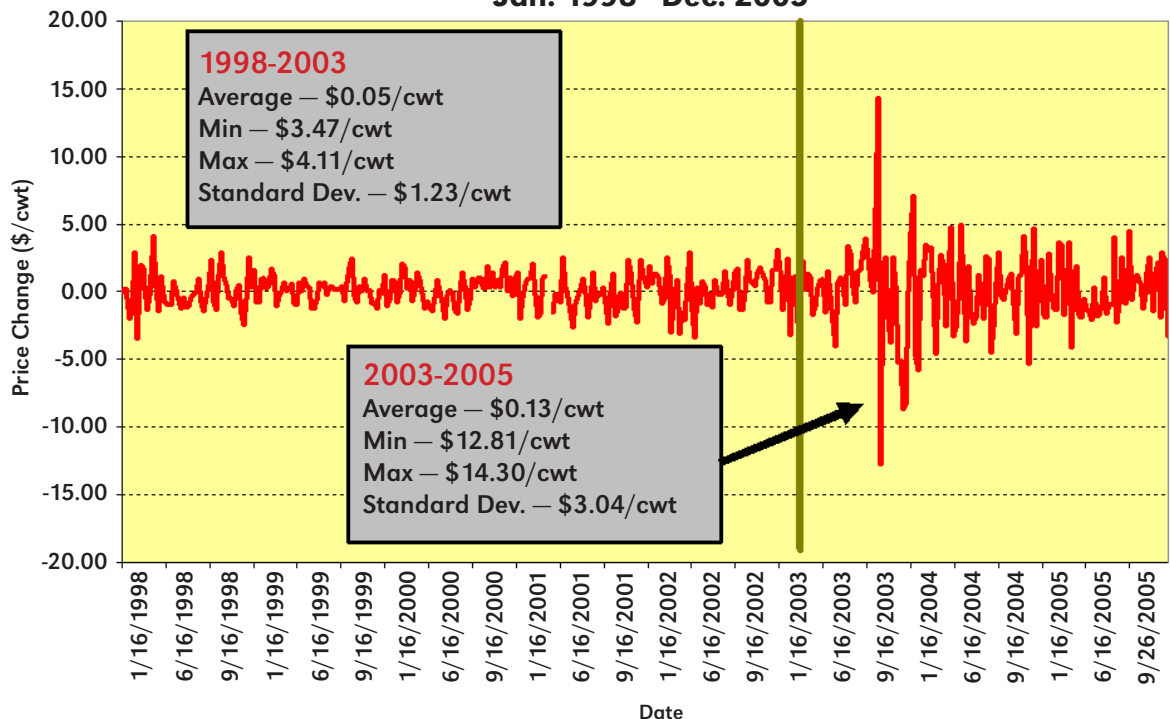
Not only have profit margins shrunk over the years, but many commodity prices have become more variable over time due to a number of domestic and international supply and demand factors. The response of fed cattle prices to multiple animal health concerns and trade disruptions in recent years provide a good example. Figure 3 illustrates the weekly average price change in Nebraska fed steer prices from 1998 to 2005. Summary statistics are also reported before and

after 2003 when several animal health “scares” related to bovine spongiform encephalopathy (BSE) and foreign trade bans arose that affected cattle prices. While average weekly price changes were similar before and after 2003, the range between the minimum and maximum price changes certainly increased, suggesting larger price moves have been occurring in recent years. Even more telling, the standard deviation of the weekly price change (which is a risk measure of the variability of the prices around the mean) more than doubled after 2003, indicating that fed cattle prices have become significantly more variable in recent years.

Table 1 shows a similar measure for several commodities based on futures prices. The coefficient of variation (standard deviation divided by the mean) is simply a unitless measure of risk. In other words, a higher number indicates that prices are more variable, or harder to predict. Compared to 1990-2000, the coefficient of variation increased for soybeans, live cattle, and feeder cattle for the 2001-2005 time period. While the risk measure for corn, wheat, and lean hogs decreased in the latter time period on the table, volatility of corn and wheat has increased in 2006.

The additional variability in agricultural commodity prices is also reflected in recent changes in the futures

## Nebraska Fed Steer Weekly Price Changes, Jan. 1998 - Dec. 2005



Source: University of Nebraska-Lincoln

Figure 3.

**Table 1. Coefficients of Variation (%) For Nearby Futures Contract Prices**

	1990-2000	2001-2005
Corn	21.69	12.90
Soybeans	15.66	23.60
Wheat (KC)	21.77	12.60
Live Cattle	8.11	11.77
Feeder Cattle	11.53	14.00
Lean Hog	18.59	17.27

market. Daily price limits have been expanded in recent years. For example, the daily price limit on corn and soybeans was raised from \$0.12/bu and \$0.30/bu to \$0.20/bu and \$0.50/bu, respectively. The price limit on live cattle and feeder cattle futures contracts increased from \$1.50/cwt to \$3.00/cwt. These changes were made to allow the market to fluctuate enough for hedgers and speculators to enter and exit the market in faster moving markets. Similarly, the number of contracts a single trader is allowed to have in the futures market has increased substantially to enable traders to lay off or accept (as hedgers and speculators, respectively) more risk in the futures market. For example, the position limit for a single trader in the corn and soybean futures market has increased by 266% and 133% from 1994 to 2006.

One result of these changes to the futures market has been increased investment interest from nontraditional sources. Mainly, these are index fund traders investing retirement account dollars in indexes like the Goldman Sachs Index Fund. These types of funds then trade a mixed portfolio of futures contracts, including agricultural commodity futures. Index funds are often intended to be used as a hedge against inflation; therefore, index funds typically take a long position in the futures markets. Given the substantial increases in index fund investment in agricultural and energy markets over the past couple of years, this substantial buying has the effect of raising prices – at least for a period of time. Because futures contracts expire, eventually index funds will roll out of an expiring futures contract and into a more deferred contract. This rolling period can result in selling pressure driving down prices in the nearby contract and buying support in the deferred contract. Because of their potentially large moves, the index funds appear to have introduced additional volatility into the market. While the additional variability can provide good pricing opportunities for farmers and ranchers, it underscores the importance of additional risk management.

Most farm and ranch operations likely do not favorably view the prospect of giving up some price opportunity. However, as the agricultural environment continues to become more challenging, many will need to make the difficult decision to give up some return in exchange for lower risk just to insure that they remain in business. Therefore, it is important for producers to learn to use basic risk management techniques and routinely apply them on their operations. More important, the introduction of newer risk management products (e.g., insurance contracts, new generation cash grain contracts) offer innovative solutions to producers' emerging risk management needs. Further, understanding how to combine the myriad of risk management tools now available is increasingly important and can even offer some strategies where the traditional risk-return tradeoff decision is not quite so difficult to make.

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