



# Money Management: The Key to Successful Trading

Presented by David Stendahl of TradeSignals

## **TRADING DISCLAIMER:**

The information contained in this document is compiled for the convenience of the reader and is furnished without responsibility for accuracy and is accepted by the reader on the condition that errors or omissions shall not be made the basis for any claim, demand or cause for action. The document contains examples designed to foster better understanding of futures and options transactions. Readers are advised, however, that brokerage fees and commissions are not included in the examples and that margin levels are subject to change. Contact a broker for fee and commission information and current margin requirements. Trading at the subsidiary exchanges of the New York Board of Trade is governed by specific rules and regulations as set forth in the rules of such exchange. These rules are subject to change. The information and data in this document was obtained from sources believed to be reliable, but we do not guarantee its accuracy. Neither the information, nor any opinion expressed herein, constitutes a solicitation of the purchase or sale of any futures or options contract.



# Money Management: The Key to Successful Trading

Presented by David Stendahl of TradeSignals

There is more to the concept of money management than simply using a protective stop loss in your day-to-day trading. Money management is a technique traders implement to alter their contract position size to maximize trading opportunity during good times, and minimize their exposure during difficult times. Traders can typically describe the methods they use to initiate and liquidate trades. However, when forced to describe their strategy for contract size exposure few traders have a concrete answer. Some traders make vague references to experts that recommended risking one or two percent of portfolio equity on any trade. Others rely on intuition to determine when to increase position size.

Experienced traders learn very quickly, that although it's important to have an effective trading methodology, it is equally important to develop a methodology to determine how much capital to risk. A trader that risks too much increases their chance that they will not survive long enough to realize the long run benefits of a valid trading strategy. Risking too little creates the possibility that a trading methodology may not realize its' full potential. Therefore, while a positive expectation may be a minimal requirement to trade successfully, the way in which you are able to exploit that positive expectation will largely determine your success as a trader.

A lack of sound money management fundamentals is perhaps the greatest challenge facing traders. Just as there are no 'Holy Grail' trading systems, there are really no 'black box' formulas for money management. Trading systems often require different approaches to money management. In addition, we must always consider the trader's ability to implement a money management strategy

given their tolerance for risk and other psychological factors. For example, several strategies that emphasize optimizing the amount of capital to invest in a trade to achieve maximum returns often deliver substantial drawdowns. Few traders are comfortable suffering through a drawdown of fifty, sixty, or seventy percent, which is not unheard of with some aggressive strategies. Therefore, it is essential to match the theoretical drawdown of applied money management strategies with the trader's ability to tolerate risk.



Its also important to consider how a trader's capitalization may affect their ability to execute a money management strategy. Even in cases where it might be preferable from a system performance perspective to utilize a strategy that tends to add to positions as the price moves against the trader, an undercapitalized trader may be unable to do this during an equity drawdown. In this situation the trader would be unable to derive the potential benefits of the strategy.

In summary, apart from the historical performance of a given trading methodology, there are two

important variables that must be taken into account as we apply money management strategies: the psychological preferences of the trader, and their level of capitalization. If either of these two factors do not support the money management strategy employed, then it is unlikely the trader will be able to use the strategy effectively. Though seemingly insignificant, this point cannot be overemphasized because many strategies are developed over large histories of data (in many cases 10 or 20 years). Therefore, the trader needs to have the confidence to remain with the strategy even if positive results do not come immediately.

It should be noted that all traders are using some form of money management. Some unfortunately are not conscious of what type of strategy or method they are using. Other trader's use thought out and time tested methodologies to determine how much capital to commit to trades that are consistent with their expectations of risk. With any luck you will find yourself among the latter group.



## Maximum Favorable Excursion

Let's take a closer look at the Maximum Favorable Excursion (MFE) money management strategy that will be introduced at the NYBOT 'Live on the Web' seminar. This article will serve as a step-by-step guide on implementing this strategy. As an example, a trading system developed by TradeSignals will be used to demonstrate the true benefits of Maximum Favorable Excursion based on trading Cotton at the New York Board of Trade (NYBOT).

Maximum Favorable Excursion is an analytical process that allows traders to distinguish between average trades and those that offer blockbuster profit potential. The advantage of MFE is its ability to recognize above average performance **during** a trade and therefore give traders an opportunity to enhance performance with the MFE scaling strategy. MFE was originally introduced to traders by John Sweeney to measure the distinctive characteristics of highly profitable trades. Once evaluated these high profit trades can be fully exploited using the MFE risk management trading strategy.

## Systematically trade cotton with TradeSignals.

TradeSignals long-term system generates specific buy and sell signals for all the major markets including cotton traded at the New York Board of Trade (NYBOT). Exhibit 1 shows the system trading cotton based on TradeSignals web based charting platform. The blue bars represent long positions while the red bars represent short positions.

TradeSignals recent short trade in cotton generated a profit of \$8,025 per contract. When we apply the MFE strategy adding to the short position at the 4% level, the short made an additional \$6,860 per contract, netting a total profit of \$14,875 for the trade.

Exhibit 1



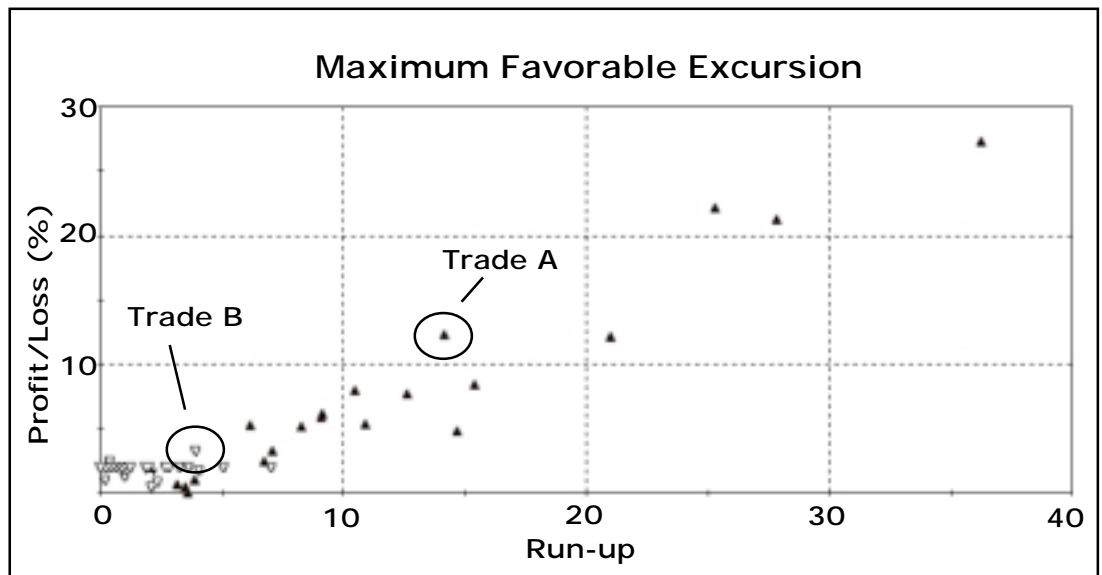
The MFE money management strategy allows traders to add to positions based on the trading profile of a system to increase profit potential while minimizing risk exposure. The beauty of this strategy is that it works with all systems whether they are mechanized, discretionary, long, short, intraday or end-of-day. The system must however have a specific trading profile to take full advantage of this risk management strategy. Since every trading methodology is different it will take a thorough performance evaluation to determine if a system is suitable for the MFE strategy.

To better understand how to use this powerful MFE graph let's take a closer look at two separate trades. Trade A was a winning trade that had a run-up of 14.17% and closed with a profit of 12.25%. This was a very efficient trade because it maximized its full profit potential. Trade B, on the other hand was a losing trade that did not fare as well. At one point during the trade it was up 3.93%, however the position reversed course to close with a 3.29% loss. Not only did Trade B lose money but to make matters worse it was extremely inefficient having been up a fair amount, only to give back all its profit and then some.

## MFE Trading Profile

Let's take a look at TradeSignals long-term system applied to the cotton market and evaluate its performance using a Maximum Favorable Excursion. MFE begins by measuring an individual trades' profit potential or run-up in relation to its closed profit/loss. To assist in our analysis we will use a Maximum Favorable Excursion by percentage graphic provided by Portfolio Evaluator, from RINA Systems, Inc. (see Exhibit 2). The vertical axis represents the closed profit or loss for each individual trade. The horizontal axis represents the amount of unrealized profit or run-up experienced by the trade. To make the MFE analysis easier to interpret both winning and losing trades are plotted on the same graph. The up arrows represent winning trades, while the down arrows represent losing trades.

Exhibit 2



## MFE Risk Management Application

The objective of the MFE strategy is to add to positions during trades that offer greater than normal profit potential. Once we have a system that correctly matches the MFE trading profile, we must determine the point at which to add to positions. The final step in the MFE analytical process is to test and re-evaluate the system to ensure that the risk reward characteristics remain in tact after applying the strategy.

To better explain MFE from a risk management perspective, consider the concept of support and resistance when applied to price charts. If the pricing action of a futures contract penetrates and remains above a specific resistance level that level becomes support for the contract. Although there

**"A lack of sound money management is perhaps the greatest challenge facing serious traders today."**

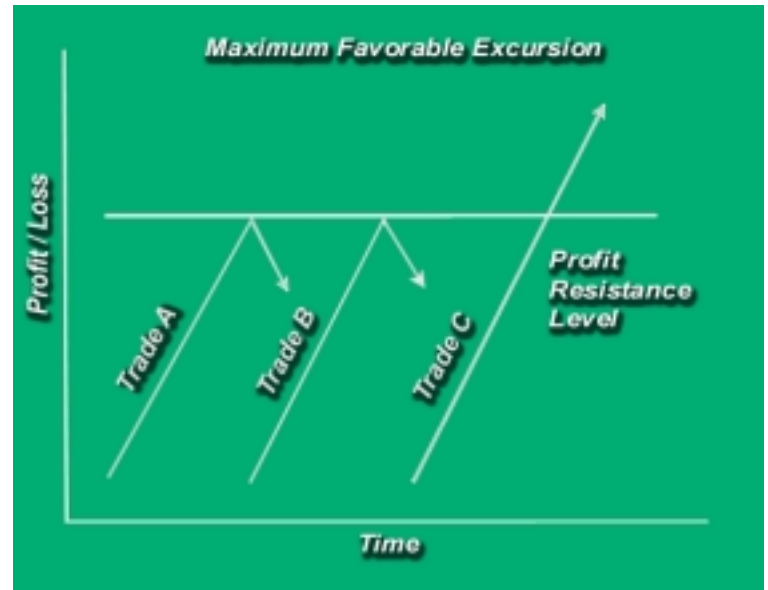
are no guarantees, these support levels typically hold the contract for a period of time before new market conditions take control.

This same concept of support and resistance can be applied to the trading action of a futures contract during the life of the trade. Once an open profit has penetrated a specific percentage level the trade typically remains above the support level for the duration of the trade (see Exhibit 3). The goal of the MFE money management strategy is to add to positions at a specific support level to improve the systems total performance.

The question to ask is how much unrealized profit or run-up does a trade have to make before it starts to kick into high gear? This question is easy to answer if we examine the systems MFE trading profile.

Notice in Exhibit 4 that the greater the run-up the less likely the trade has of becoming a losing trade. The object is to find the support area that benefits the majority of trades while maximizing the systems net profit in relation to risk reward calculations. The TradeSignals Long-term Cotton system appears to have a logical support area between 4% and 6% run-up. In other words a trade must make at least 4% during the trade before we add more contracts. This support area signifies that the system has found its trading

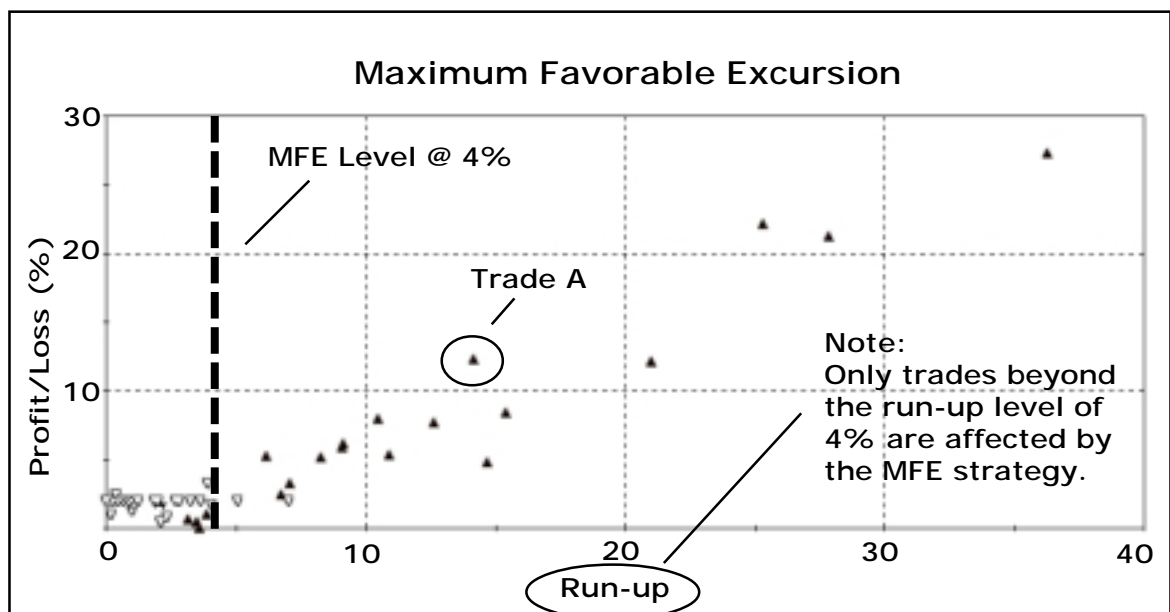
Exhibit 3



niche for those trades that typically generate blockbuster profits.

Let's take a look at a real trade to fully appreciate the significance of the MFE money management strategy. In Exhibit 4, Trade A was up 14.16% during the trade and closed out with a profit of 12.24%. If we use the 4% MFE level to add to positions then Trade A1 would net 8.24% (Trade A1 = Trade A profit of 12.24% minus the 4% MFE delay). The total position for Trade A plus Trade A1 would net 20.48% with little effect to any risk calculation.

Exhibit 4



Each system typically has two or three different support levels. These different levels allow traders to adjust the trading characteristics of the system, making it more or less aggressive. In the case of the TradeSignals Cotton system, adding positions at 3% would make it more aggressive than adding at 5% or higher. The rationalization is simple – the stronger the momentum behind the trade the more likely it is to turn into a stellar performer. These trades have to prove themselves worthy to justify adding to the open position. If you add to the positions too soon you increase your risk exposure. If you add to positions too late the trade may not justify itself. The Maximum Favorable Excursion graphic will certainly point you in the correct direction, but a thorough testing is required to fully appreciate the full ramifications from a risk reward perspective.

## MFE Money Management Testing

Theories and specialty graphs will only go so far in our evaluations, let's crunch some numbers and critique the systems performance using a variety of MFE risk management support levels. The MFE tables add 1 additional contract to the original system once a predetermined MFE support level has been penetrated. Applying the MFE risk management strategy to the Cotton trading system certainly has a major effect on the net profit figure, but we also want to center on the risk calculations to value the true MFE effects.

Notice for example that in Table 1 the system's Net Profit increased by 56.94% but at a cost to the risk calculation 'Percent Equity Drawdown' which increased by 32.35%. An aggressive trader may be willing to take on more risk for greater profit potential but a more conservative trader may not. Table 2 also shows an increase to Net Profit at 66.11%, but again with an increase to Percent Equity Drawdown at 34.60%. More money with a slight increase to risk. Finally Table 3 shows the smallest Net Profit increase of 50.68% and the largest increase to Percent Equity Drawdown of 36.91%. The MFE setup on Table 2 offers the greatest Net Profit increase relative to Percent Equity Drawdown.

Table 1

### MFE Money Management Strategy @ 3% Adding 1 Contract

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$62,858.00	56.94%
<b>Annual Rate of Return*</b>	15.09%	18.92%	25.38%
<b>Percent Profitable</b>	44.68%	49.32%	10.38%
<b>Profit Factor</b>	2.93	2.64	-9.90%
<b>RINA Index</b>	107.09	173.06	61.60%
<b>Return Retracement Ratio</b>	1.77	1.55	-12.43%
<b>Average Trade</b>	\$852.19	\$861.08	1.04%
<b>Average Drawdown</b>	\$637.17	\$782.75	22.85%
<b>% Equity Drawdown</b>	14.25%	18.86%	32.35%

Table 2

### MFE Money Management Strategy @ 4% Adding 1 Contract

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$66,531.00	66.11%
<b>Annual Rate of Return*</b>	15.09%	19.43%	28.76%
<b>Percent Profitable</b>	44.68%	53.03%	18.69%
<b>Profit Factor</b>	2.93	3.31	12.97%
<b>RINA Index</b>	107.09	200.75	87.46%
<b>Return Retracement Ratio</b>	1.77	2.06	16.38%
<b>Average Trade</b>	\$852.19	\$1,008.05	18.29%
<b>Average Drawdown</b>	\$637.17	\$714.22	12.09%
<b>% Equity Drawdown</b>	14.25%	19.18%	34.60%

Table 3

### MFE Money Management Strategy @ 5% Adding 1 Contract

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$60,350.00	50.68%
<b>Annual Rate of Return*</b>	15.09%	18.56%	23.00%
<b>Percent Profitable</b>	44.68%	49.23%	10.18%
<b>Profit Factor</b>	2.93	3.06	4.44%
<b>RINA Index</b>	107.09	186.75	74.39%
<b>Return Retracement Ratio</b>	1.77	1.65	-6.78%
<b>Average Trade</b>	\$852.19	\$928.47	8.95%
<b>Average Drawdown</b>	\$637.17	\$696.45	9.30%
<b>% Equity Drawdown</b>	14.25%	19.51%	36.91%

\*Annual Rate of Return based on Initial Capital set at \$10,000.

Refer to the Trading Disclaimer for more information about hypothetical results.

## Trading Multiple Contracts with MFE

To complete our analysis, additional contracts will be added to the TradeSignals Cotton system at the 4% MFE level. Tables 4 - 6 show a variety of contract sizes that improve trading performance. Traders must be willing to evaluate the performance of each level to best match trading expectations with the risk profile of the system. To assess the true value of the money management strategy its best to review a variety of risk reward calculations.

Each table shows an improvement to Net Profit while simultaneously increasing our risk measure Percent Equity Drawdown. It's the risk rewards calculations however that give us a better understanding of the true performance of the system. Formulas like Profit Factor, RINA Index and Return Retracement Ratio tell the real story. See formula descriptions on page 7 for more information. In almost all cases the risk reward calculations improved, indicating that the factors to determine which MFE contract size to use was solely determined by the risk profile of the trader. The conservative trader would select the results on Table 1 (i.e. trade a single MFE contract) while the more aggressive trader would select either Table 2 or 3 (i.e. trading two or three MFE contracts). No matter which MFE parameters are chosen overall performance increased dramatically.

Simply reviewing the increase to the systems Annual Rate of Return suggests just how powerful the effect MFE can have on a trading system with increases of 28.76%, 49.57% and 65.94% respectfully.

## Conclusion

The MFE analytical process comes in three stages. Stage one uses the Maximum Favorable Excursion graphic to evaluate the trading profile of the system. This stage will help to eliminate systems that trade very inefficiently and show no sense of stability. Stage two centers on appropriate MFE support level. The goal here is to allow the system to dictate levels to add to positions rather than at the discretion of the trader. The final stage involves testing specific support levels to determine the best match for the trading system. Maximum Favorable Excursion is a powerful evaluation tool and money management strategy that traders should incorporate into their daily trading.

Table 4

### MFE Money Management Strategy @ 4% Adding 1 Contract

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$66,531.00	66.11%
<b>Annual Rate of Return*</b>	15.09%	19.43%	28.76%
<b>Percent Profitable</b>	44.68%	53.03%	18.69%
<b>Profit Factor</b>	2.93	3.31	12.97%
<b>RINA Index</b>	107.09	200.75	87.46%
<b>Return Retracement Ratio</b>	1.77	2.06	16.38%
<b>Average Trade</b>	\$852.19	\$1,008.05	18.29%
<b>Average Drawdown</b>	\$637.17	\$714.22	12.09%
<b>% Equity Drawdown</b>	14.25%	19.18%	34.60%

Table 5

### MFE Money Management Strategy @ 4% Adding 2 Contracts

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$93,009.00	132.22%
<b>Annual Rate of Return*</b>	15.09%	22.57%	49.57%
<b>Percent Profitable</b>	44.68%	53.03%	18.69%
<b>Profit Factor</b>	2.93	3.52	20.14%
<b>RINA Index</b>	107.09	145.25	35.63%
<b>Return Retracement Ratio</b>	1.77	2.07	16.95%
<b>Average Trade</b>	\$852.19	\$1,409.23	65.37%
<b>Average Drawdown</b>	\$637.17	\$974.71	52.97%
<b>% Equity Drawdown</b>	14.25%	23.68%	66.18%

Table 6

### MFE Money Management Strategy @ 4% Adding 3 Contracts

	Original	Adjusted	Difference
<b>Net Profit</b>	\$40,052.00	\$119,487.00	198.33%
<b>Annual Rate of Return*</b>	15.09%	25.04%	65.94%
<b>Percent Profitable</b>	44.68%	53.03%	18.69%
<b>Profit Factor</b>	2.93	3.65	24.57%
<b>RINA Index</b>	107.09	105.22	-1.75%
<b>Return Retracement Ratio</b>	1.77	1.98	11.86%
<b>Average Trade</b>	\$852.19	\$1,810.41	112.44%
<b>Average Drawdown</b>	\$637.17	\$1,235.19	93.86%
<b>% Equity Drawdown</b>	14.25%	27.38%	92.14%

\*Annual Rate of Return based on Initial Capital set at \$10,000.

Refer to the Trading Disclaimer for more information about hypothetical results.

## Select Performance Formulas

Let's define the performance formulas used in the evaluation of TradeSignals' long-term cotton system.

◆ **Percent Profitable** = The number of winning trades divided by the total number of trades. This calculation is often quoted by traders as an important evaluation tool. In reality it has little meaning. For better indication of performance traders should focus on risk reward calculations like Profit Factor, RINA Index and Return Retracement Ratio.

◆ **Profit Factor** = A risk reward formula that divides Gross Profit by Gross Loss. It represents how much money is made for every dollar lost.

◆ **RINA Index** = The RINA Index is our final risk measure that we will review. This index represents the reward to risk ratio per one unit of time. The RINA Index is calculated by taking the Selected Net Profit divided by Average Drawdown which is then divided by the Percent Time in the Market. The larger the RINA Index the better the trading performance.

◆ **Return Retracement Ratio (RRR)** = This risk reward calculation is an alternative to the Sharpe Ratio that was introduced by Jack Schwager. Unlike the Sharpe Ratio, RRR distinguishes between upside and downside return variability. The higher the ratio the greater the return in relation to risk.

◆ **Average Drawdown** = The average maximum open loss (whether realized or unrealized) for all trades.

*For more information concerning the evaluation of a trading system, please refer to David Stendahl's book entitled **Profit Strategies** and his video entitled **The Systematic Trader**.*

## Trading Disclaimer:

Past performance is not necessarily indicative of future results and there is a risk of loss trading futures. Hypothetical performance results have inherent limitations.

## Web Seminar -- July 24 & 25, 2001.

The goal of the Live on the Web seminar is to explain the process by which traders can evaluate and ultimately improve the performance of trading systems with money management strategies. These improvements must be based on an individuals risk tolerance and trading psychology.

Money management does not exist in a vacuum. This means that it is essential that your money management strategy be integrated into an overall approach to system design and development. Therefore, before presenting the Maximum Favorable Excursion money management strategy David Stendahl will focus on some elementary issues concerning system evaluation. To provide you with an adequate foundation to apply money management David will take you through the necessary stages of development that precede the application of money management.

Although the focus of the seminar is on money management, it is important to realize that you must know as much as possible about your system to justify applying specific money management strategies. This implies that we fully evaluate a systems' design and performance prior to applying any form of money management. Once the evaluation is complete we can apply appropriate money management strategies with a high degree of confidence that our systems performance results will be improved in accordance with our risk tolerance.

## Seminar & Contact Information:

The Live on the Web two part seminar presented by David Stendahl of TradeSignals will take place on July 24th and 25th at 3pm EST on the internet at [www.nybot.com](http://www.nybot.com).

**New York Board of Trade:** (800) 433-4347  
[www.nybot.com](http://www.nybot.com)

**TradeSignals:** (800) 219-6908  
[www.tradesignals.com](http://www.tradesignals.com)

**Infinity Brokerage:** (888) 868-0253  
[www.infinitybrokerage.com](http://www.infinitybrokerage.com)