



FARMERS' USE OF FORWARD CONTRACTS AND FUTURES MARKETS

ALLEN B. PAUL, RICHARD G. HEIFNER,
AND JOHN W. HELMUTH

U.S. DEPARTMENT OF AGRICULTURE
ECONOMIC RESEARCH SERVICE
AGRICULTURAL ECONOMIC REPORT NO. 320

FARMERS' USE OF FORWARD CONTRACTS AND FUTURES MARKETS. By Allen B. Paul, Richard G. Heifner, and John W. Helmuth, National Economic Analysis Division, Economic Research Service, Agricultural Economic Report No. 320.

ABSTRACT

The study describes and evaluates the different types of forward contracting arrangements available to farmers. The advantages and problems in using cash forward contracts and futures contracts in the farm business are examined. Factors to be considered in deciding whether and how to contract are reviewed.

Keywords: Forward contracts, futures trading, deferred pricing, formula pricing, cattle feeding, price risk, price instability, farm price.

PREFACE

The highly unstable commodity prices of recent years have created an increased interest by farmers in forward selling. Traditionally, most farmers wait until their crops and livestock have been produced and are ready to be delivered before selling. But continued commercialization of agriculture has created fundamental changes in farming, and the best market practices may not always be the traditional ones. Continued specialization in farming, the increasing size of farm operations, and the further application of capital-intensive technologies make it likely that more farmers will want to reexamine the full range of available buying and selling opportunities. In this setting, whether or not to contract forward is something a farmer must decide for his own situation.

This report is an introduction to the subject. It describes different types of forward contracting, the factors a farmer should consider in deciding upon it, and the major pitfalls involved. Further information may be obtained from various governmental, university, and private sources, especially as they apply to particular commodities and farming conditions. Reference to such sources is given at the end of the report.

CONTENTS

SUMMARY.....	Page iii
GLOSSARY.....	iv
INTRODUCTION.....	1
Methods of Forward Contracting.....	1
Farmers' Use of Forward Contracts.....	2
WHY CONTRACT AHEAD?.....	2
Fixing Returns on an Enterprise.....	2
Assuring Outlets.....	3
Profiting From Anticipated Price Changes.....	4
SOME DANGERS IN CONTRACTING FORWARD.....	4
FUTURES TRADING MACHINERY.....	5
Development of Futures Trading.....	5
Standard Contract Terms.....	6
Standard Trading Procedures.....	6
Security of Contract.....	6
Regulation of Futures Trading.....	7
Commodities in which Futures are Traded.....	7
PROBLEMS IN USING FUTURES MARKETS.....	7
Selection of Contract.....	7
Delivery on the Futures.....	12
Margin Deposits.....	12
Lumpiness of Futures Contracts.....	13
Basis Risk.....	13
CASH FORWARD SELLING.....	15
Advantages and Problems.....	15
Ties to Futures Trading.....	16
DEFERRED PRICING.....	17
Advantages.....	17
Fixing Prices.....	17
Delayed Pricing.....	18
Problems.....	18
MAKING FORWARD CONTRACTING DECISIONS.....	19
Identifying the Options Available.....	19
Estimating Production Costs.....	19
Determining Prospective Returns.....	20
Adjusting for Output Risk.....	20
Adjusting for Basis Risk and Lumpiness.....	20
Evaluating the Risk that the Buyer will Default.....	21
Speculating to Profit on an Anticipated Price Change.....	21
An Illustration.....	22
SOURCES OF INFORMATION.....	23
U.S. Department of Agriculture.....	23
Cooperative Federal-State Extension Service.....	23
Brokerage Firms.....	24
Commodity Exchanges.....	24
Commodity Futures Trading Commission.....	24
General Literature.....	24

SUMMARY

The highly unstable farm prices of recent years have increased farmer interest in forward selling, especially by those who buy inputs in substantial amounts. By fixing returns at the time resources are committed to production, forward selling enables farmers to reduce their exposure to price risk. It enables them to assure outlets for highly specialized or perishable products. And for farmers who wish to accept the risks, it provides opportunities to profit from anticipated price changes.

There are dangers in forward selling. One of the most serious is that a crop failure might force a farmer to buy his way out of a forward contract at a loss. Consequently, when output risks are substantial, as they frequently are in farming, forward sales should be limited to some portion and not all of the expected output.

Methods of forward contracting include cash contracts with differing degrees of standardization and safety, and futures contracts with highly standardized terms and rules of trading.

Futures contracts permit widespread and low cost access of buyers to sellers and great integrity of contract. But the standardized terms often do not fit individual requirements. This means that futures contracts are seldom fulfilled by delivery; instead they are offset by equal and opposite transactions. The result is a "basis risk"—the degree to which the price one must pay for an offsetting futures does not exhibit the expected relation with the price one can get locally. Moreover, the quantity of a commodity called for on a single futures contract may be too large to fit the grower's needs. Finally, the farmer must be prepared to meet "margin calls," should the price increase appreciably, which may mean that he needs to make special arrangements with his banker.

With cash forward contracting, basis risk is avoided and contract terms can be tailored closely to the needs of individual farmers. But there may be fewer buyers ready to make offers and their credit-worthiness requires careful evaluation. However, where the buyer sells futures against his forward cash purchases from farmers—as commonly is done—the futures trading system lends integrity to the cash contract.

The farmer who wishes to assure an outlet for a specialty or perishable commodity, but does not wish to fix the price until later, may

sell under a deferred pricing arrangement. Such contracts provide a formula for determining the price relative to a specified base price quotation. The main problem is to find a suitable base, namely one that is close to the commodity specifications on the contract and one that reflects competitive valuations.

In making any forward contracting decisions, a farmer must first look at the purpose. If it is to reduce exposure to price risk or establish outlets, the contract should be entered at the time when financial commitments for inputs are made. When the object is to profit on an expected price change, the forward selling decision usually will be prompted by some important news event.

Regardless of the enterprise, whether it is crop production, livestock feeding, or commodity storage, good management requires forward contracting decisions to be integrated with the producer's overall decision process. The suggested steps are:

1. Identify the options available for production and contracting.
2. Estimate production costs.
3. Estimate prospective returns based on forward prices and anticipated price levels.
4. Evaluate output risk.
5. Evaluate basis risk if futures contracts are involved.
6. Evaluate credit-risk of the buyer if cash forward contracts are involved; arrange for financing of possible margin calls if futures contracts are involved.
7. Contract for inputs and outputs and carry out the production plan.
8. Adjust forward sales and purchases to take advantage of new information about price prospects, if and when appropriate, during the production process.

Many sources of information are available to farmers in determining when to sell, how to sell, and how much to sell. These include the reports of the U.S. Department of Agriculture, the State experiment stations, the Cooperative Federal-State Extension Service, brokerage firms, commodity exchanges, and the Commodity Futures Trading Commission.

GLOSSARY

Basis—The difference between the price for a futures contract and the price for the same or similar commodity for spot delivery at a particular location.

Basis risk—Chance or random variation in the basis.

Cash forward contract—A forward contract other than a futures contract.

Commodity Futures Trading Commission—The Federal agency empowered to regulate futures trading as authorized by the Commodity Futures Trading Act of 1974.

Deferred pricing—Forward contracting in which price is to be determined by a formula after the contract is entered.

Delayed pricing—Deferred pricing in which the price is determined after transfer of title has occurred.

Forward buying and selling—Forward contracting in which the price is set at the time the contract is entered.

Forward contract—An agreement between two parties to deliver and make payment for a designated commodity or service at a designated future date.

Futures contract—A forward contract traded under the bylaws of an organized commodity exchange. The delivery terms and methods of trading are highly standardized.

Lumpiness—Tendency for standardized contracts to be too large for convenient use by individual farmers or marketers.

Maturing future—A futures contract during or immediately before the period when the seller can elect to make delivery.

Open position—A forward contract held by an individual that has not been terminated by delivery or by cancellation with an offsetting transaction.

FARMERS' USE OF FORWARD CONTRACTS AND FUTURES MARKETS

by Allen B. Paul, Richard G. Heifner, and John W. Helmuth *

INTRODUCTION

How might a farmer pin down a price for his output before making a large investment in the necessary inputs? How can he determine whether a price offer is adequate? Should he sell forward if crop prospects are uncertain? If, indeed, judicious forward selling would stabilize farmer returns, would it also lower the level of average returns? Are there means of entering into forward commitments that are reasonably serviceable? What are the problems and pitfalls?

Where a farmer has the desire and financial capability to maintain a speculative position while producing a commodity, is forward contracting of no interest to him, or can he use such contracts to exercise his judgment on when it is best to sell? If it is necessary or desirable to assure outlets for highly specialized or perishable products, can contracting be used to pin down the various terms of delivery, leaving price to be determined later?

These are the questions that are of most concern to farmers in making their individual buying and selling decisions. There are many kinds of forward contracting arrangements and many kinds of farming situations. This report discusses the principles of forward contracting. It is intended as a general introduction to what might be workable and desirable in different situations and what would not.

Methods of Forward Contracting

Forward contracting methods range from highly standardized machinery called "futures trading" to simple verbal understandings between buyers and sellers. Futures trading involves buying and selling standard contracts on an organized commodity exchange. Forward commitments executed outside an exchange are called "cash forward contracts" and often in-

clude both standard and special agreements that fit particular needs of the buyer and seller.

What are the differences between these two ways of entering into advance commitments? Because cash forward contracts are very diverse, it is hard to answer this question without specifying the terms. However, there is a marked distinction between cash forward contracts as a class and futures contracts as a class.

For futures contracts, the highly organized methods of trading together with extreme standardization of terms results in (a) widespread and low cost access of buyers to sellers and (b) great integrity of the contract. These significant advantages are the main reason for the large expansion of futures trading when markets are free of domination by government or private interests. However, the advantages are purchased at a price: because of their standard terms, futures contracts seldom exactly describe the product that the seller wishes to deliver or the buyer wishes to acquire. Consequently, such contracts usually are liquidated by entering into offsetting futures commitments rather than by making delivery, and this poses a definite risk.

The risk is that the price a seller must pay for an offsetting futures contract may not exhibit the expected relation with the price he can get for his product in the local market. This "basis risk" often results in a higher or lower return than was expected. Moreover, the quantity of a product called for in a futures contract may be too large for many farmers.

Therefore, a seller should weigh the advantages of easy access to buyers through futures against the disadvantages of a basis risk and lumpiness, and then weigh these alongside opportunities for cash forward contracting, which has its own set of problems. Could a farmer really use futures trading to advantage? Or should he leave this practice to merchants and processors who, in turn, offer him a cash contract?

*National Economic Analysis Division, Economic Research Service.

Farmers' Use of Forward Contracts

Although direct participation in organized futures trading by farmers is relatively limited, some large producers of wheat, corn, soybeans, potatoes, cotton, and livestock do use futures contracts. Cash forward contracting is often a normal way of doing business for farmers producing perishable commodities, especially vegetables for processing, broilers, and eggs.

For other products, cash contracting in large volume is done sporadically. From time to time, surges of demand arising from the outbreak of war, or from other upsets such as extensive drought, international monetary devaluations, or state market interferences, have sent buyers scurrying about to line up supplies. Attractive forward purchase offers have been made for wheat, corn, soybeans, cotton, and feeder animals, and large quantities have been bought in this way. Farmer response to such abnormal demands can be phenomenal, as in 1973, when forward purchase agreements were made on 40 percent of the U.S. cotton acreage before the

planting season. By harvest time, 75 percent of the acreage was contracted.

When there is no surge in demand that raises prices, farmers generally seem reluctant to enter into binding agreements to deliver non-perishable crops. Yet, a significant amount of forward contracting has occurred during such periods, especially in the highly commercial areas of production. In 1971 and 1972, the cotton acreage contracted before harvest was 43 and 36 percent, respectively, of U.S. acreage. In 1972, Illinois grain elevators bought under contract 12 percent of the corn and 22 percent of the soybeans they purchased from the 1972 crop. These years reflected fairly normal supply and demand conditions.

It seems likely that as long as market prices are largely free to fluctuate in response to individual buying and selling decisions, more farmers who invest substantial capital in their operations will want to consider whether forward contracting offers them an acceptable means for meeting the risks involved in such operations.

WHY CONTRACT AHEAD?

Farmers may consider contracting forward on numerous occasions, but particularly when inputs are purchased, when a production enterprise reaches a stage where output becomes more certain, or when a change in the forward price level is anticipated. In the first two cases, forward contracting enables the farmer to reduce his exposure to risk by fixing his returns, assuring himself an outlet, or both. In the last case, he seeks profit through speculation on an anticipated price change.

With forward contracting, the timing of pricing decisions can be independent of the timing of physical operations. For example, a crop producer can use forward contracting opportunities to sell his annual output over a wide interval of time—from 6 to 8 months before planting, throughout the growing season, or many months after harvest. Figure 1 illustrates forward selling opportunities in relation to the planning, production, and storage phases of annual crops. With appropriate modifications the same type of diagram may apply to other enterprises. For perishable crops and livestock products, there are no storage phases. There are no annual planning and planting cycles for perennial crops, but forward contracting is possible throughout the dormant and growing periods.

Fixing Returns on an Enterprise

Obviously, forward selling, through futures or cash contracting, is a means of dealing with the price risks inherent in agricultural production. For output that is well assured, forward selling at the time inputs are purchased reduces the likelihood that a price drop would diminish a farmer's income or net worth, or jeopardize his ability to repay his creditors. Indeed, creditors may encourage or require him to forward sell part of his expected output.

Opportunities to purchase inputs and sell outputs for annual crops 6 or 8 months before planting time give the producer considerable latitude to fix returns at the most opportune time. He can then devote his energies to other matters without worrying about price uncertainties. However, by waiting until near planting time, he retains greater flexibility to change crops or adjust cultural practices in light of the latest price developments.

Forward contracts either call for delivery of a farm commodity or a farming service. Where output is fairly predictable, as for livestock production and irrigated crops, the two can be relatively similar in economic results for the farmer. That is to say, a forward sale of the expected output at a fixed price would result

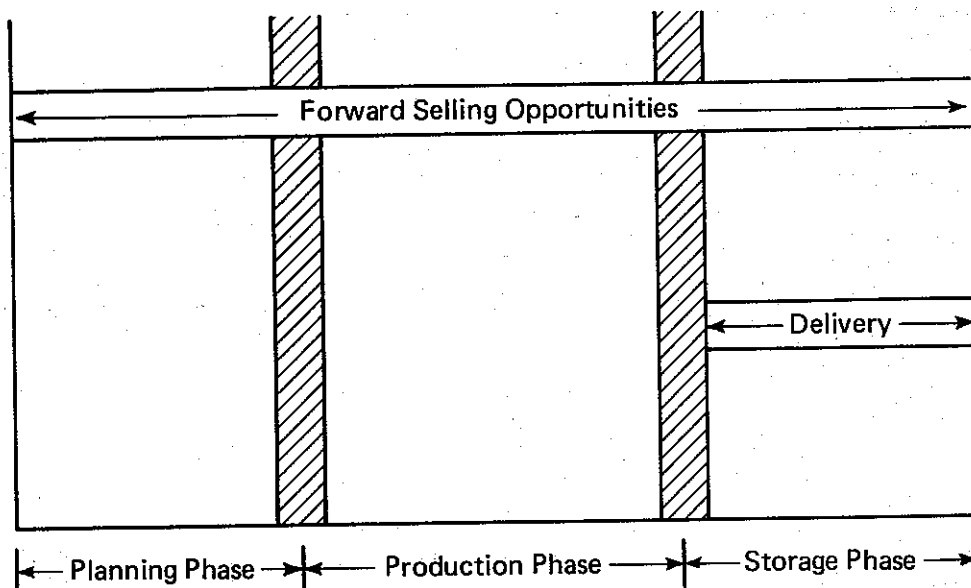


Figure 1. — Forward Selling Opportunities During the Planning, Production, and Storage Phases of Annual Crop Production.

in a fixed return for the bundle of farming services that are employed in the production of the crop or the livestock. This is also what dictat sale of the farming services under contract amounts to. However, because many yields are not so predictable, the outcome of the two methods could be quite different.

Sales of farming services—for example, growing a crop, raising poultry, feeding livestock—for an agreed return have come into prominence with the advent of modern farming methods and heavy capital requirements. Some agreements gear the payments to yield levels, commodity prices, and other performance factors.

When used as a guide to determine what and how much to produce, forward markets facilitate improved production decisions. A farmer may sell forward to increase average returns over the long run as well as reduce risks. For example, a Corn Belt farmer with land that can be used for growing either corn or soybeans must decide which crop to grow. He might compare the futures prices for December corn and for November soybeans as they exist at or before planting time. This price relationship could be used in conjunction with estimates of production costs and expected yields to determine how the land should be allocated between the two crops. Once this decision is made, the farmer can assure a minimum level of returns for each crop by buying inputs and simultaneously forward selling a safe share of the normal out-

put. Similarly, a cattle feeder can use the live cattle futures price to help determine whether or not to put cattle in his feedlot. The important feature in each case is that the production decision is based upon the forward price, and that the prices for inputs and outputs are largely fixed by cash or forward purchases and forward sales.

Assuring Outlets

Another important reason for farmers to enter forward contracts is to assure outlets for their products. This is particularly true for producers of highly specialized or perishable products that have few alternative outlets. To this end, the contract need not fix the price. But it must specify quantity, grade, and place and time of delivery.

Forward contracts range from those that are quite firm in what is to be delivered to those that allow leeway. Some contracts allow for substitution of qualities at stipulated price differentials while others do not. Some contracts allow a farmer to deliver less than he had agreed to, if his crop falls short through no fault of his own.

Farmers faced with uncertain yield prospects have two choices of forward sales agreements. Either they can agree to deliver a fixed quantity of a commodity that is a safe quantity from the standpoint of yield prospects, or they can agree to deliver the output of a specified acre-

age, whatever this happens to be. The farmer may prefer the latter arrangement. But a buyer may be unwilling to enter into such an agreement because it exposes him to certain risks. Yet some buyers have little choice and must enter into acreage agreements or else grow their own supplies. This is especially true for perishable crops that are processed.

In forward contracting, the price can be specified at the time of the agreement or it can be determined later, based on a specified price quotation. The latter arrangement is called deferred pricing. The pricing base may be either a futures price quotation or a cash price quotation. Deferred pricing based on cash quotations at the time of delivery is common in the egg, butter, and cheese trades. Such contracts not only give the producer an assured outlet, but they also guarantee the buyer a source of supply.

A special type of deferred pricing is where the price is left to be determined after delivery is made and the title has passed to the buyer. This "delayed pricing" recently has arisen in grain marketing, where it enables farmers to speculate on a price rise while the elevator takes title to the grain and ships it on to users.

Although contracting with deferred pricing is helpful for orderly disposal of output, it does

little to insulate a farmer's returns from subsequent changes in price levels.

Profiting From Anticipated Price Changes

A farmer with an opportunity to sell at more than one point in time would want to sell when the price is highest. Thus, a farmer might want to commit part of his expected output to a forward sale if he sees a higher price at planting time than he expects at harvest. He must, of course, recognize that he might be wrong. The price at harvesttime might turn out to be higher than the contract price, and he would have foregone a larger profit. But to commit resources to crop or livestock production without taking advantage of forward selling opportunities is also speculation. In such decisions, success rests upon one's ability to predict price changes. As a speculator, one is, in effect, matching his own forecasting ability against the market. He is saying, "I think I know more about the direction that prices are going to move than do other traders."

The farmer who buys, sells, or commits resources to production, based upon anticipated price changes, places himself in a league with professional traders and speculators. His success will depend on his ability to predict price changes more accurately than other traders.

SOME DANGERS IN CONTRACTING FORWARD

Gains from fixing the price for crops or livestock at the time the production commitments are made appear to argue strongly for contracting ahead, except when one wishes to speculate on a price increase. Why, then, are forward contracting and futures trading not more widely used by farmers?

Forward selling has its pitfalls. While it reduces a farmer's vulnerability to price risk, it may introduce or exacerbate other types of risks. These include output risk, basis risk in futures trading, and the risk of default by the opposite party in cash forward selling.

Output risk arises from the vagaries of weather, disease, or other unexpected events. For example, some farmers sold forward corn and soybeans from the 1974 crop during the growing season, but they came to regret that action when they had to make up for weather-reduced production at harvest by buying compensating quantities at the high harvesttime prices. In most cases where output or yield risk is present, the complete crop should not be sold forward before the output is assured. The

amount a farmer should sell forward depends upon how closely his own output is tied to total U.S. output, and on the nature of demand (see p. 20 for a more detailed discussion of this point).

If a farmer's crop failure were part of a general crop failure, he likely would have to buy the compensating quantity of the commodity at a higher price than he would receive under his forward sales commitment and deliver it against that sales commitment. This is the loss he would sustain from having sold forward. But if his crop failure was an isolated case, the market price would not rise on this count. Therefore, he might purchase the commodity at about the same price as he had sold his intended crop for. The result would be no loss to himself from having sold forward.

Another problem is that the available forward contracts, either cash or futures, may not precisely fit the producer's needs. Futures contracts, as noted previously, are highly standardized, generally calling for delivery of one or more specific grades at only one or a few loca-

tions. Of course, a hedger normally does not plan to make delivery; he plans to buy back the futures contract when he sells on the cash market. But if the futures contract calls for a commodity with a substantially different grade than the commodity the hedger sells on the cash market, or if the delivery locations are different, the prices on the two markets may not be closely tied together, and the hedger is subjected to price relationship risk, or "basis risk." In general, the basis risk increases with distance from the par delivery point and with departures in quality from the par delivery grade.

Still another possible pitfall in contracting ahead is the failure of the other party to live up to the contract. This is a minimal problem in futures trading, where effective arrangements have been developed to assure that every contract is met. In cash forward contracting, however, there are less effective arrangements to assure performance should the buyer go out of business, or for some reason fail to meet his obligations under the contract.

FUTURES TRADING MACHINERY

Because futures trading is a highly organized method of forward buying and selling, it invites wide participation. Anyone may enter into contracts and later offset them with opposite contracts. This may create an impression of unreality—that is an impression of dealing in "paper" rather than in commodities and, therefore, of no fundamental importance to the system of growing, storing, processing, and distributing commodities.

But modern businesses regularly deal in promises. These promises are committed to writing. An important development in modern economies is that business promises become salable to third parties. This is true in the realm of finance, where the "paper markets" have come to be accepted as necessary and desirable for the efficient functioning of governmental agencies, corporations, cooperatives, and unincorporated businesses alike. But because such markets are highly developed and dependent on specialized trading machinery, they are subject to abuses. Hence, they are closely regulated.

The following description is intended to cut through the mystique that futures trading has acquired because of its highly sophisticated organization.

Development of Futures Trading

Early in the development of markets, businesses primarily engaged in wholesale buying

Beyond the output risk, the basis risk, and the risk of default by the opposite party, there are, of course, the usual hazards of imprudent use of any instrument of the free market. In particular, because futures trading facilitates entry into forward commitments with relatively little funds as a pledge of security, it can result in overspeculation on the part of a farmer. A farmer may buy futures, instead of selling futures against his commitment to grow crops or livestock. If prices were to decline, he would sustain losses on both his cash and futures positions. The extent that futures trading should be faulted for this is limited to any shortcomings of behavior of responsible futures brokers in servicing customer accounts. The futures institution is capable of much benefit if not misused. In this respect, its performance is not much different from a modern automobile in the hands of the user.

and selling of the major agricultural commodities found it in their interest to band together into formal associations for the purpose of better servicing their daily needs. Thus, associations known as organized commodity exchanges were formed in the main terminal centers. These associations were and are run by committees of the membership and by elected officers. A certificate of membership (known as a "seat") has a value commensurate with the expected value of the services provided to members. Because the total number of seats is limited under the bylaws of the association, a would-be member must purchase a seat from a retiring member.

The bylaws of an exchange govern the trading behavior of its members. Standards are set for fair dealing, recognized grades, weights and inspections, assembly for trading, means of arbitration, and so on. Violators are subject to punishment or loss of membership.

About a century ago, trading in commodities for deferred delivery became a common occurrence—starting first in wheat, corn, oats, rye, and pork products. Later, such trading included cotton, coffee, sugar, eggs, butter, cocoa, soybeans, soybean oil and meal, potatoes, and pork bellies. Recently, live animals, frozen concentrated orange juice, and iced broilers have been regularly traded on commodity futures markets. The exchanges have adopted specific bylaws to govern such trading. This body of rules

is the hallmark of what is universally called futures trading.

Standard Contract Terms

The terms of futures contracts are highly standardized with respect to quantity, grade, and location, time, and method of delivery. The only matter to be decided at the time of transaction is price. This greatly simplifies the task of getting interested parties together on a trade and thereby broadens and expedites participation.

For example, corn contracts traded on the Chicago Board of Trade call for the delivery of 5,000 bushels of No. 2 Yellow corn in approved warehouses in Chicago, Toledo, or St. Louis in March, May, July, September, or December. At average U.S. yields, one contract is equal to the output of about 50 acres. The five separate corn contracts are stipulated by the month the seller agrees to give the buyer a valid warehouse receipt. However, alternative grades to No. 2 Yellow may be delivered at the discretion of the seller at stipulated premiums or discounts. Futures contracts for all other commodities have similar standardization of terms.

Standard Trading Procedures

If someone wishes to buy or sell a futures contract, he can do this very readily, but only through a brokerage firm that is a registered commission merchant. A local brokerage firm is usually represented on the various commodity exchanges through officers or employees who are exchange members. Otherwise, trades are placed through other brokers who hold memberships. Trading on the floor of the exchange is conducted by floor traders who trade for their own account and by floor brokers who execute buy and sell orders for customers. They stand in a "pit" or around a "ring," entering and accepting bids and offers by open outcry and hand signal at a speed that appears to the onlooker as frantic.

Futures trading is further standardized by the time of day that contracts can be traded, the minimum interval that the price may move for any one transaction, and the total amount the price may move during each day. For example, a Chicago Board of Trade wheat futures contract can be entered only between 9:30 a.m. and 1:15 p.m., Chicago time, Monday through Friday, excluding holidays, at price intervals of one-fourth of a cent per bushel, and (currently) at no more than 20 cents per bushel over or under the previous session's closing price.

When the delivery month arrives, contracts that have not been previously offset usually may be liquidated by delivery on any day at the

seller's option, in which case prescribed procedures must be followed. All positions not liquidated on the final day of trading must be settled by delivery or be penalized for default. The broker usually will provide the customer with all the necessary information on how to make or take delivery if the customer wishes to do so.

Security of Contract

The integrity of futures contracts is secured by margin deposits that serve as escrow funds. Anyone buying or selling futures must deposit a certain sum with his brokerage firm, which keeps the money in trust. The trader must make additional payments, called variation margins, if prices move against his position, or he can withdraw funds if prices move in favor of his position. This system of margins is buttressed by the broker's right to liquidate the position of any customer who fails to meet calls for additional margin needed to cover adverse price moves.

Just as customers must deposit margin funds with the brokerage firms, the brokerage firms must deposit margins with the exchange's clearinghouse. The clearinghouse, an association of exchange members, is responsible for the integrity of each contract. It requires margin deposits of its members sufficient to back the contracts held by each. How does this financial requirement become translated into a guarantee that all futures commitments will be honored? To ensure unquestioned performance, the clearinghouse becomes legal party to each and every contract, and in this sense, becomes the buyer to every seller and the seller to every buyer.

During the trading day, for example, a wheat contract might be sold to a grain elevator, flour miller, speculator, or almost any buyer except the clearinghouse. Yet at the end of the day, all wheat contracts made during the day are submitted to the clearinghouse. At this time, the clearinghouse becomes the opposite party to both sides of every transaction. The original buyer is associated with the clearinghouse as the seller; and the seller is associated with the clearinghouse as the buyer.

This clearing arrangement makes it possible for offsetting transactions to liquidate futures positions. If a seller wants to buy back a wheat futures contract, he need not contact the original buyer. Rather, he simply would buy a wheat contract on the exchange. Upon settlement of the price difference by a certified check, this purchase would offset the trader's original sale and remove him from the market. An opposite party to every contract exists but is unknown to each buyer and seller. In short, futures trading is a relatively safe system of

trading from the standpoint of contract integrity and is efficient from the standpoint of re-tracting.

Regulation of Futures Trading

Each commodity exchange regulates trading to assure an efficient and equitable market. Policing efforts are generally directed toward activities that are willfully designed to disrupt or distort the equilibrium of the market; activities that attempt to corner or squeeze a market; or activities that spread false or inaccurate market information.

Complementary to industry self-regulation, the Government also regulates commodity futures trading through the Commodity Futures Trading Commission.¹ The Commission has jurisdiction over all transactions involving futures contracts. It has broad powers that include licensing; specifying recordkeeping requirements; specifying changes in delivery terms for contracts; conducting regular investigations of markets; specifying appropriate professional standards for persons licensed; defining "bona fide" hedging transactions or positions; approving the bylaws, rules, regulations, and resolu-

¹ The first Federal law dealing with commodity futures was enacted in 1921 and was declared unconstitutional. It was modified by Congress in 1922 into the Grain Futures Act. In 1936, the Act was strengthened and extended to cover many commodities other than grain. The 1936 Act was amended over the years and finally evolved into the Commodity Futures Trading Commission Act of 1974 covering all futures transactions in the United States.

tions of futures exchanges; monitoring the financial stability of firms dealing in futures; monitoring the protection of customer funds; and limiting the size of positions taken by any one trader or group of traders.

Regulation helps maintain futures trading as a reputable industry. However, abuses do occur. The abuse probably of most concern is price manipulation, one form of which is the "squeeze." A squeeze occurs when an individual or group controls a substantial portion of the open positions in a maturing future as well as a substantial portion of the deliverable supplies and uses the combined position to alter the price. Large squeezes—known as corners—were fairly common in the years before the turn of the century. Exchanges soon learned that if they were to survive, they had to do away with corners and squeezes and thus prohibited them. But the temptation remains. In today's markets the likelihood of a substantial squeeze is small but it exists; it is most likely to occur when a contract is near expiration. Thus, it usually is wise to offset one's position well before the last day of trading.

Commodities in which Futures are Traded

Table 1 lists the domestic agricultural commodities in which futures are now traded. The list changes over time as commodities are dropped because of lack of interest or other reasons² and as other commodities are added.

² Specifically, onion futures were banned by Congress in 1958.

PROBLEMS IN USING FUTURES MARKETS

A farmer considering selling futures contracts should be fully aware of what he may be getting into. While futures markets are among the most advanced and sophisticated of exchange mechanisms, they are not suited to everyone's needs and they easily can be misused.

Selection of Contract

If a farmer wants to hedge his crop by selling futures, which contract should he select? For wheat, there are seven different contracts traded on four different commodity exchanges. For corn, soybeans, cattle, and other commodities, the choice is narrower. A determination of the contract best suited to one's needs should

take into account the type and grade of the commodity produced, the location of delivery points, and the level of trading activity in the various futures markets. Generally, the futures contract should be sold with a par delivery grade closest to that of the commodity being held and with the par delivery point closest to the cash market where the commodity will be sold.³ But sometimes the volume of trading in the contract nearest in grade and location may be so small that the forward sale is best made in a more active futures contract. For example,

³ See *Hedging Potential in Grain Storage and Livestock Feeding*, by Richard G. Heifner, Econ. Res. Serv., U.S. Dept. of Agr., Agr. Econ. Rpt. 238, 1973.

Table 1—Commonly traded futures contracts

Commodity	Name of exchange and trading hours (New York time, Monday through Friday)	Delivery grade (Par)	Delivery points ²	Contract size	Active delivery month
Broilers (iced)	Chicago Board of Trade 10:15 am-2:05 pm	USDA Grade A	Any processing plant in continental U.S.	28,000 lbs.	Jan., Mar., May, July, Sept., Nov.
Cattle (feeder)	Chicago Mercantile Exchange change 10:05 am-1:40 pm	Mixed feeder steers; choice or better and good	Omaha, Sioux City, and other cities	42,000 lbs.	Mar., Apr., May, Aug., Sept., Oct., Nov.
Cattle (midwestern live)	Chicago Mercantile Exchange change 10:05 am-1:45 pm	Choice live steers	Omaha, Sioux City, Peoria, Joliet, & Guyman, Okla.	40,000 lbs.	Feb., Apr., June, Aug., Oct., Dec.
Cattle (western live)	Pacific Commodity Exchange change 10:05 am-2:30 pm	Choice live steers	California or Arizona feedlots	50,000 lbs.	Feb., Apr., June, Aug., Oct., Dec.
Corn	Chicago Board of Trade 10:30 am-2:15 pm	No. 2 yellow	Chicago, Toledo, or St. Louis	5,000 bu.	Mar., May, July, Sept., Dec.
Corn	Mid-America Commodity Exchange 10:30 am-2:30 pm	No. 2 yellow	Chicago, Toledo, or St. Louis	1,000 bu.	Mar., May, July, Sept., Dec.
Cotton	N.Y. Cotton Exchange 10:30 am-3:00 pm	No. 2 US upland	New Orleans and other cities	50,000 lbs.	Oct., Dec., Mar., May, July
Eggs (fresh shell)	Chicago Mercantile Exchange change 10:20 am-2:00 pm	US extras, 90% Grade A large white	Approved egg packing plants, continental U.S.	22,500 doz.	All months
Hogs (live)	Chicago Mercantile Exchange change 10:15 am-1:55 pm	USDA Grade Nos. 1, 2, 3, 4 (barrows & gilts)	Peoria and other cities	30,000 lbs.	Feb., Apr., June, July, Aug., Oct., Dec.
Hogs (live)	Mid-America Commodity Exchange 10:15 am-1:55 pm	USDA grade Nos. 1, 2, 3, 4 (barrows & gilts)	Peoria and other cities	15,000 lbs.	Feb., Apr., June, July, Aug., Oct., Dec.
Milo (yellow grain sorghum)	Chicago Mercantile Exchange change 10:30 am-2:15 pm	No. 2 yellow grain sorghum	Approved elevators in West Texas	400,000 lbs.	Mar., May, July, Sept., Dec.
Oats	Chicago Board of Trade 10:30 am-2:15 pm	No. 2 heavy white or No. 1 white	Chicago or Minneapolis	5,000 bu.	Mar., May, July, Sept., Dec.
Oats	Mid-America Commodity Exchange 10:30 am-2:30 pm	No. 2 heavy white or No. 1 white	Chicago or Minneapolis	1,000 bu.	Mar., May, July, Sept., Dec.
Orange juice (frozen concentrate)	New York Cotton Exchange change 10:15 am-2:45 pm	US Grade A	Licensed warehouses in Florida	15,000 lbs.	Jan., Mar., May, July, Sept., Nov.

Footnotes at end of table.

Continued

Table 1—Commonly traded futures contracts—Continued

Commodity	Name of exchange and trading hours (New York time, Monday through Friday)	Delivery grade (Par)	Delivery points	Contract size	Active delivery month
Pork bellies (frozen)	Chicago Mercantile Exchange 10:10 am-2:00 pm	Standard Grade bellies, 12 to 14 lbs.	Approved warehouses in Chicago	36,000 lbs.	Feb., Mar., May, July, Aug.
Potatoes (Idaho)	Chicago Mercantile Exchange 10:00 am-1:50 pm	Idaho Russet Burbank, US No. 1, size A	Pocatello, Idaho, or Nampa, Idaho	50,000 lbs.	Mar., Apr., May, Nov., Jan.
Potatoes (Maine)	New York Mercantile Exchange 10:00 am-1:30 pm	US No. 1 size A, Maine grown Katahdin, etc.	Buyers' option, various eastern cities	50,000 lbs.	Nov., Mar., Apr., May
Soybeans	Chicago Board of Trade 10:30 am-2:15 pm	No. 2 yellow	Chicago switching district	5,000 bu.	Jan., Mar., May, July, Aug., Sept., Nov.
Soybeans	Mid-America Commodity Exchange 10:30 am-2:30 pm	No. 2 yellow	Chicago switching district	1,000 bu.	Jan., Mar., May, July, Aug., Sept., Nov.
Soybean meal	Chicago Board of Trade 10:30 am-2:15 pm	Protein—min. 44% fat—min. 5% fiber—max. 7% moisture—max. 12%	f.o.b., Decatur, Ill.	100 tons	Jan., Mar., May, July, Aug., Sept., Oct., Dec.
Soybean oil	Chicago Board of Trade 10:30 am-2:15 pm	Expeller pressed, degummed, or solvent extracted	Basis, Decatur, Ill.	60,000 lbs.	Jan., Mar., May, July, Aug., Sept., Oct., Dec.
Sugar	New York Coffee and Sugar Exchange 10:00 am-3:00 pm	No. 11 Raw bulk	Country of origin, f.o.b.	112,000 lbs.	Jan., Mar., May, July, Sept., Oct.
Wheat	Chicago Board of Trade 10:30 am-2:15 pm	No. 2 soft red	Chicago and Toledo	5,000 bu.	Mar., May, July, Sept., Dec.
Wheat	Mid-America Commodity Exchange 10:30 am-2:30 pm	No. 2 soft red	Chicago and Toledo	1,000 bu.	Mar., May, July, Sept., Dec.
Wheat	Minneapolis Grain Exchange 10:30 am-2:15 pm	Northern spring wheat, 13.5% protein	Minn., St. Paul, or Duluth—Superior	5,000 bu.	Mar., May, July, Sept., Dec.
Wheat	Kansas City Board of Trade 10:30 am-2:15 pm	No. 2 hard winter wheat	Kansas City switching district	5,000 bu.	Mar., May, July, Sept., Dec.
Wool (grease/crossbred)	Wool Associates of the N.Y. Cotton Exchange 10:30 am-2:30 pm	64S, 2% 54S, quality graded	Boston and other cities	6,000 lbs.	Mar., May, July, Oct., Dec.

Footnotes at end of table.

Continued

Table 1—Commonly traded futures contracts—Continued

Commodity	Prices quoted; Minimum price variation equals \$/contract	Maximum daily price fluctuation	Crop year	Level of trading activity
Broilers (iced)	\$/cwt. 2.5¢/cwt.= \$7.00	\$2/cwt.	None	Medium
Cattle (feeder)	\$/cwt. 2.5¢/cwt.= \$10.50	\$.015/lb.	None	Low
Cattle (midwestern live)	\$/cwt. 2.5¢/cwt.= \$10.00	\$.015/lb.	None	High
Cattle (western live)	\$/cwt. 2¢/cwt.= \$10.00	\$.015/lb.	None	Low
Corn (Board of Trade)	\$/bu. ¼¢= \$12.50	\$.10/bu.	Oct. 1 to Sept. 30	High
Corn (Mid-America)	\$/bu. ¼¢= \$1.25	\$.10/bu.	Oct. 1 to Sept. 30	Medium
Cotton	¢/lb. 1/100¢/lb.= \$5.00	\$.02/lb.	Aug. 1 to July 31	Medium
Eggs (fresh shell)	¢/doz. 5/100¢/doz.= \$11.25	\$.02/doz.	None	Medium
Hogs (live)	\$/cwt. 2.5¢/cwt.= \$7.50	\$.015/lb.	None	High
Hogs (Mid-America)	\$/cwt. 2.5¢/cwt.= \$3.75	\$.015/lb.	None	Low
Milo (yellow grain sorghum)	\$/cwt. ¼¢= \$10.00	\$.15/cwt.	Oct. 1 to Sept. 30	Low
Oats (Board of Trade)	\$/bu. ¼¢= \$12.50	\$.06/bu.	July 1 to June 30	Medium
Oats (Mid-America)	\$/bu. ¼¢= \$1.25	\$.06/bu.	July 1 to June 30	Low
Orange juice (frozen concentrate)	¢/lb. 5/100¢/lb.= \$7.50	\$.03/lb.	Dec. 1 to Nov. 30	Medium
Pork bellies (frozen)	\$/cwt. 2.5¢/cwt.= \$9.00	\$0.15/lb.	Nov. 1 to Oct. 31	Medium
Potatoes (Idaho)	\$/cwt. 1¢/cwt.= \$5.00	\$.50/cwt.	Oct. thru May	Low
Potatoes (Maine)	\$/cwt. 1¢/cwt.= \$5.00	\$.50/cwt.	July thru June	Medium

Footnotes at end of table.

Continued

Table 1—Commonly traded futures contracts—Continued

Commodity	Prices quoted; Minimum price variation equals \$/contract	Maximum daily price fluctuation	Crop year	Level of trading activity ¹
Soybeans (Board of Trade)	\$/bu. $\frac{1}{4}\text{¢}=\$12.50$	\$.20/bu.	Sept. 1 to Aug. 30	High
Soybeans (Mid-America)	\$/bu. $\frac{1}{8}\text{¢}=\$1.25$	\$.20/bu.	Sept. 1 to Aug. 30	Medium
Soybean meal	\$/ton $10\text{¢/ton}=\$10.00$	\$10/ton	Oct. 1 to Sept. 30	Medium
Soybean oil	¢/lb. $1/100\text{¢}=\$6.00$	\$.01/lb.	Oct. 1 to Sept. 30	High
Sugar	¢/lb. $1/100\text{¢}=\$11.20$	\$.01/lb.	Oct. 1 to Sept. 30	High
Wheat (Board of Trade)	\$/bu. $\frac{1}{4}\text{¢}=\$12.50$	\$.20/bu.	July 1 to June 30	High
Wheat (Mid-America)	\$/bu. $\frac{1}{8}\text{¢}=\$1.25$	\$.20/bu.	July 1 to June 30	Medium
Wheat (Minneapolis)	\$/bu. $\frac{1}{4}\text{¢}=\$12.50$	\$.20/bu.	July 1 to June 30	Medium
Wheat (Kansas City)	\$/bu. $\frac{1}{4}\text{¢}=\$12.50$	\$.25/bu.	July 1 to June 30	Medium
Wool (grease/crossbred)	¢/lb. $1/10\text{¢/lb.}=\$6.00$	\$.10/lb.	Apr. 1 to Mar. 30	Low

¹ Most contracts have alternative delivery grades at premiums or discounts to the par grade. Contact the appropriate exchange or your broker for detailed information.

² Some contracts specify alternative delivery at adjusted prices. Contact the appropriate exchange or your broker for detailed information.

³ These are subject to change. The limits given for the Chicago Board of Trade increase after successive days of limit moves.

⁴ These trading activity designations are subject to change. They are intended to give some feel for the amount of futures trading in each commodity—an important consideration when deciding whether or not to trade. The more active a market, the easier it is to have an order filled at a market price close to the latest quotation. Wherever activity is low, one must be careful to avoid adverse price movements as a result of one's trade caused by nothing more than a lack of buyers or sellers.

the first to consider for soft red winter wheat is the Chicago Board of Trade's soft wheat contract; for hard red winter wheat, the Kansas City Board of Trade's hard winter wheat contract; for hard spring wheat, the Minneapolis Grain Exchange's hard spring wheat contract.

Once the choice of market has been settled, which delivery month should be selected? Two examples are of interest.

First, consider the farmer who decides to sell part of his expected corn production on the futures market at planting time in May. He has a choice of the July, September, and December corn futures contracts of the current year and the March and, perhaps, May contracts of the following year. His choice would depend on when he plans to market the corn. If he plans to sell at harvest, the basic answer would be to sell the December contract and then buy an offsetting December contract in the fall, when he sells his corn locally.

Or, suppose that a farmer decides after harvest to store his corn crop and hedge it in futures. In this case, he normally would sell the contract that calls for delivery just after the planned storage interval is up. For example, if in November the intent is to store until April, then he normally would sell the May futures.

Delivery on the Futures

Should delivery be made on a futures contract, or should the contract be liquidated by an offsetting purchase? As noted before, liquidation by offset is greatly facilitated by the exchange clearinghouse. In fact, about 98 percent of all futures contracts are liquidated by offset; only 2 percent are settled by delivery.

If a farmer liquidates his futures commitments by delivery he incurs certain costs. For example, if he has sold the December corn contract in May and wishes to deliver after the harvest, he would have to ship the corn to one of several elevators in Chicago, Toledo, or St. Louis, designated for delivery. He would pay for the transportation and for inspection charges to verify that his corn meets the delivery grade. Once the corn is in position in the switching district, the farmer would have his broker submit to the clearinghouse a notice of intent to deliver on the day of the farmer's choosing between the last business day of November and the next to the last business day of December. The clearinghouse would pass this notice to the buyer of longest record. The farmer would receive payment based on the price at which he had sold the contract in May.

Delivery against contracts is infrequent because it is rarely worth the cost of transportation and inspection to move the commodity to

the delivery point. It usually is less costly to sell locally and buy an offsetting futures contract.

Margin Deposits

A margin deposit is the money each trader is required to put up to ensure fulfillment of obligations under the contract. If a trader sells futures, his obligation is to either offset the contract before delivery with a futures purchase and make good any loss, or deliver against the contract. If the trader buys futures, he must either accept delivery and pay for the commodity by certified check, or sell a like contract before the delivery date, taking any profit or loss such a transaction might incur.

Margin deposits consist of both original and variation margins. The original margin usually is 5 to 10 percent of the contract price. If the price of the contract subsequently moves against the trader, then it may become necessary to put up additional margin. This added sum is the variation margin. Thus, if a farmer had sold a corn contract for \$10,000 (\$2.00 per bushel for 5,000 bushels) and originally posted \$1,000 in margin, and then the price of corn on such contracts rose to \$2.05, he would be short \$250 in his margin account. His broker would ask him to put up another \$250. However, if the price had moved down to \$1.95, he would have a surplus of \$250 in the margin account, which he could withdraw. In this case, the buyer of the futures contract would have to put up \$250.

Banks who make crop loans to farmers may give better terms if the farmer has sold a share of his crop forward, simply because proceeds have been assured to repay the loan. However, a margining problem could arise if there were a large adverse price movement. A recent dramatic example illustrates this point. A farmer who in mid-May of 1973 expected to harvest at least 5,000 bushels of soybeans and had sold a soybean futures contract for November delivery at \$4.75 per bushel, seemed to have an attractive price at that time. However, November futures prices climbed to about \$9.25 per bushel in early September. Not only would the farmer have foregone benefits from this unforeseen rise, but he would have been required to post about \$22,500 in variation margin on his short position in futures (5,000 bushels times \$4.50). Financing of the \$22,500 could have been relatively easy, assuming the farmer's banker considered the growing crop, with its increased value, to be good collateral. Presumably, the banker would finance the \$22,500 margin call.

But bank policy on funding margin calls varies. This could become a problem during years

of wide price swings, and it would be well for the farmer to make sure his bank fully understands that large variation margin deposits may be necessary to maintain a futures position and for the banker to agree beforehand to increase the loan to the farmer to cover additional margin calls. If the bank does not agree to finance the margin calls, the farmer must have his own reserves to cover them, or risk having his futures position liquidated.

Premature liquidation would place the farmer in a speculative position with his growing crop. If the price, at the time of futures liquidation, does not hold up until the harvest, when his soybeans are ready for sale, he would not fully recover the loss sustained on the futures account. After reaching about \$9.25 per bushel in early September 1973, the November soybean futures receded to about \$6.25 later in the month. Thus, the farmer would have gained \$1.50 per bushel over the original contract price (\$6.25 minus \$4.75), but he could have sustained an even larger loss on his futures account, depending on when his position was liquidated during the course of the rise in the price of November futures from the middle of May.

A farmer who is forced to liquidate futures because of inadequate margin funds could, conceivably, replace his futures sale by entering into a cash forward sale with a local buyer at the current level of prices. Thus, he might improve his outcome. But, one might ask, why didn't the farmer enter a cash forward contract instead of futures in the first place? The considerations will be discussed in the section on cash forward selling.

Lumpiness of Futures Contracts

Most grain futures are traded in 5,000-bushel lots. Cotton contracts require 100 bales. Potato contracts require 50,000 pounds of fresh potatoes. Fed cattle contracts call for 40,000 pounds of live steers, and hog contracts call for 30,000 pounds of live butcher hogs. In the light of such fixed quantities, how many farmers can use futures?

Many cattle feeders could use the cattle futures contract because 40,000 pounds is equivalent to only 37 head, at average weights for Choice fed steers. The hog contract calls for delivery of about 140 head of average weight butcher hogs. Although there are many small producers who could not fulfill a single hog contract for one delivery date, there are a substantial number of hog feeders who market enough hogs at one time to fulfill one or more contracts. Yet even for these, the contract may be somewhat "lumpy" if sales must be made in multiples of 140 head.

For most farmers, the soybean futures con-

tract is lumpier than the corn futures. Five thousand bushels of soybeans are equivalent to 167 acres with a 30-bushel-per-acre yield, whereas 5,000 bushels of corn are equivalent to 50 acres with a 100-bushel-per-acre yield. While the size of farming operations has increased substantially in the last two decades, about two-thirds of the soybean production still is harvested from acreages that are too small for one soybean futures contract. But for corn, only one-fifth of the production is from acreages that are too small for one corn contract.

But this is not the whole story. The output of a farm may be divided between a landlord and tenant, with both making selling decisions. Moreover, a safe share of output to sell forward against a growing crop may be considerably less than the expected average yield. Hence, the minimum size farming operation suitable for direct use of futures contracts may be two or four times the soybean and corn acreages stated above. This means that a relatively modest percentage of soybean and corn farmers would find the futures contract quantities suitable, although the absolute number might be substantial.

There are two recourses for the smaller producer. He might consider selling contracts on the Mid-America Exchange, which specializes in offering small-lot contracts—that is, 1,000-bushel lots for wheat, corn, oats, and soybeans, and 15,000-pound lots for live hogs. Or, he might search for an elevator or other cash buyer who would buy forward in suitable lot-sizes.

Selling to cash forward buyers might be possible where small-lot futures contracts are not available, or are unattractive. Cotton merchants, potato processors, egg dealers, and meatpackers, among others, often are interested in entering into such agreements. The potentials and pitfalls of cash forward contracting are the subjects of the sections on cash forward selling and deferred pricing.

Basis Risk

Finally, a serious problem may arise because of the uncertain relationship between futures price movements and cash price movements. The farmer who sells forward on the futures market normally buys an offsetting futures contract when he sells his own product locally. He can be hurt financially if the futures price is higher than expected relative to the local cash price when he sells his product and buys the futures. Clearly, knowledge of what to expect in terms of cash-future price relationships is essential for effective use of the futures market.

The term "basis" is widely used in grain, cotton, and some other commodity trading to

refer to cash-future price relationships. Basis can be defined as the difference between a specific cash price and a specific futures price. Unless designated otherwise, basis usually means the difference between the near futures price and the cash price for spot delivery at the par delivery point. But the term is also applied to other situations. For instance, if cash corn in Omaha were selling for \$2.60 per bushel in mid-October, and the December corn futures at Chicago were selling for \$2.75, we could say that the Omaha basis was "15¢ under," meaning that the Omaha cash price was 15¢ under the futures. Obviously, care must be exercised in using and interpreting the term "basis" to be sure that there is no confusion about which specific cash and futures prices are involved.

During the storage season for commodities such as grains, the basis tends to follow predictable patterns. For example, the difference between the July corn futures price and the cash price tends to be widest at harvest and tends to narrow progressively over the storage season. This pattern, illustrated in figure 2, reflects storage costs that are gradually built into the cash price.

In actual markets, this progressive narrowing of the basis over the storage interval is partly hidden by the fluctuations in cash and futures prices. This is illustrated in figure 3, which shows the basis for March wheat at Kansas City from June 1974 to March 1975. In this case, the basis was 19 cents under on June 13; it fluctuated from 32 cents under to 10 cents over and ended at 5 cents over on March 13.

Commodities such as live cattle and live hogs do not exhibit the distinct basis patterns observed for grains during the storage season. The cash price for such commodities may approach the futures price from either above or below as the futures matures, depending upon the expected supply and demand in the final period relative to the earlier periods.

In general, the cash price at the par delivery point is the one most closely tied to the futures price. Uncertainty about the basis increases with distance from the par delivery point and as quality differs from the par delivery grade. Thus, for example, the corn grower in North Carolina can expect greater basis risk in hedging on the Chicago futures than can the corn grower in Illinois.

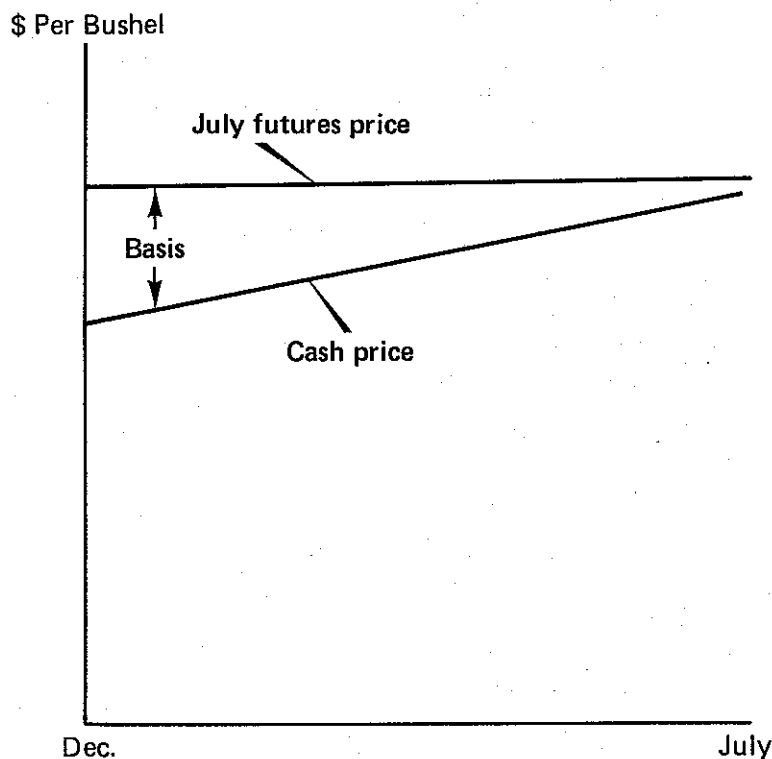


Figure 2. — Expected Narrowing of the Basis Over the Storage Season.

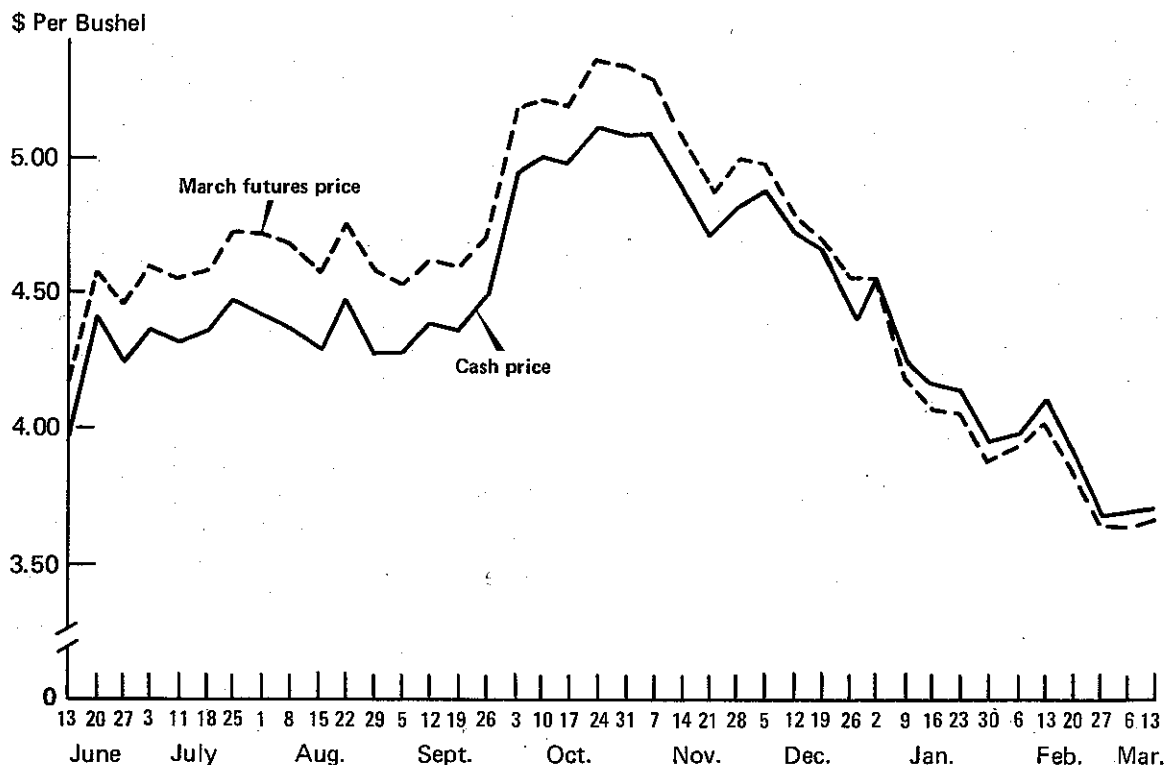


Figure 3. — Relationship Between the Prices of Cash Wheat at Kansas City and the Kansas City March Futures, June 13, 1974, to March 13, 1975.

CASH FORWARD SELLING

In general, farmers who sell forward tend to do so in cash dealings rather than in futures. Why? For many commodities, futures trading is not available or, if available, is not very active. And even for commodities having active futures trading, the problems discussed above—the risk of adverse basis changes, the call for additional margin deposits, the lumpiness of the contracts—can make futures less attractive to farmers than cash forward contracts. Of course, many farmers are unfamiliar with futures trading, which itself is a major deterrent to its wider use.

Advantages and Problems

The advantages of cash forward selling over hedging in futures are fairly clear. As with futures, the price level is fixed in advance of delivery, but unlike hedging in futures, there is no further adjustment of the farmer's return as a result of subsequent basis changes. Moreover, the cash contract can be tailored more

closely to meet a farmer's needs with respect to quantity, quality, and place and time of delivery, as well as other terms.

On the buying side, many merchants and processors like to assure themselves of commodity supplies having the qualities, locations, and delivery times most suitable to their individual needs. Hence, they offer firm price inducements to farmers to meet such specifications. Buyers who are in the best position to make firm price offers are those who allocate a relatively small share of their operating costs to the commodity in question, have relatively large financial reserves, are able to pass the cost of fixed-price purchases onto their customers, or are able to hedge such forward purchase commitments with sales in futures markets.

Buyers that have exacting commodity requirements, particularly vegetable shippers and processors, often do more than write tight delivery specifications. In many instances, they

provide seed, oversee the growing, and do the harvesting. Such firms usually have a strong market position and adequate finances to cope with adverse market developments. This has not always been the case, however. Historically, many vegetable shippers and canners were undercapitalized and the only way they could survive—and many did not—was to write agreements with farmers that deducted the packing and processing costs from the proceeds of fresh or canned goods sales and then give the residual return, if any, to the grower.

In many lines of business, buyers who have exacting commodity requirements find it sufficient to specify the terms that are important to them without overseeing farm production—for example, firms engaged in grain exporting, cotton milling, and meatpacking. To induce farmers or intermediaries to supply them with what they want, in the exact place, form, and time they want it, such firms enter into cash forward purchases.

This situation poses some credibility problems. The hazards of nonperformance in cash forward dealings are real. A large decline in price may make it difficult for a forward buyer to fully honor his commitments and at the same time keep his solvency. Thus, knowledge of the buyer's credit-worthiness is an indispensable prerequisite to intelligent forward contracting by farmers.

From the buyer's vantage point, the same problem exists, namely, a sharp rise in prices may lead some farmers to short their deliveries. In particular, where acreage rather than volume contracts are entered, it may induce some farmers to under- or over-deliver on their contracts, according to whether prices have risen or fallen since the agreement was entered. While firm quantity contracts get around this difficulty, the financial ability to honor them is still a factor for both sides.

A solution might be for the forward agreement to require an escrow fund from both parties. But in practice this may be impractical; the farmer, who finds the market price rising above the price of his forward sale, would question the reason for anyone keeping his money. A mechanism to adjust the amount of escrow to the state of the market—as provided in futures trading—may be possible. But it would require careful study of each situation.

Another set of problems posed by cash forward selling is the large amount of time and effort that may be required to find the best deal. Good information on market conditions may be hard to get, especially in the sparser producing areas. Once a contract is entered and conditions change, the possibilities of recontracting—withdrawing or transferring the contract to a third party—are likely to be small.

Ties to Futures Trading

The problems of adequate contract security and good market information are partially solved by a system in which the merchant or processor who agrees to a forward purchase from the farmer offsets this with a futures sale. The farmer can gage the merit of the buyer's offer by reading his daily newspaper for the latest futures price quotations, which simplifies the task of shopping for a better offer. And the financial integrity of the contract is strengthened because any subsequent price decline would not hurt the buyer's position. He would be able to pay the farmer the full contract price even though the value of the farmer's crop had deteriorated badly by the time of delivery. His loss on the purchase from the farmer would be covered by the gain on his futures position.

In many areas, a farmer can get a local buyer to give him a firm bid for his prospective output on any business day the farmer elects. This has long been the case for cotton farmers in their dealings with local buyers. It has been quite common in grain farming. And today, many cattle and hog producers can get forward bids from packers or livestock dealers almost any day they want them.

In most cases, the ability to quote a firm bid to the farmer for forward delivery is predicated on the existence of an active futures market. The local buyer gets daily bids for forward delivery to merchants, terminal elevators, or processors who use futures markets. Or the local buyer looks directly to futures. Thus, when the farmer accepts a forward price offer, the buyer normally would hedge his commitments to farmers by selling forward to a buyer at the next level, or he would sell futures. In effect, the local buyer of the farmer's crop acts as a hedging intermediary for the farmer.

For example, almost from the beginning of futures trading in live cattle and hogs a decade ago, some enterprising packers and livestock dealers offered forward contracts for delivery in almost any month that the farmer might elect to deliver. The buyer quotes a firm price per hundredweight, based on the closing price of the futures delivery month that most nearly coincides with the month that the farmer would want to deliver his animals. The quoted price not only takes into account the price of futures, but also a differential reflecting the buyer's valuation of particular kinds of animals and delivery locations relative to those specified in the futures contract. Contracts might call for final payment to be determined after the animals are slaughtered, and for it to be geared to a schedule of grades and dressing percentages. Or, they might call for payment on live

animals, with stipulations as to weight ranges, discounts for quality, and shrinkage allowances.

If a farmer has sufficient product to sell, conceivably he might do better to sell futures contracts directly. But then he would accept a basis

risk in return for avoiding a price discount. In this case, he would want to be sure that either he or his banker could meet calls for margin deposits if the market price should rise before the crop is available for delivery.

DEFERRED PRICING

Farmers may wish to assure outlets for their products without fixing the price at the time the production commitment is undertaken. Perhaps they anticipate more favorable prices in the future or there are no firm forward price offers. Or at harvest they may want to make deliveries but delay fixing the price until later. To accommodate such interests, there are mechanisms whereby the buyer and seller may enter into agreements covering other terms of trade but postponing the setting of price.

Advantages

Assured outlets are especially important for perishable and semiperishable commodities such as shell eggs, fresh vegetables, and slaughter livestock. These commodities must move promptly into processing or consumption channels, and there is little time, once the product is produced, for the farmer to seek out buyers. Even sellers of grain and other storable crops might not have access to local handling, drying, and warehousing services when the harvest movement is heavy, unless they have an agreement with a local elevator to provide such services. Also, producers of specialty crops for which there are few buyers may require advance agreements in order to move such crops into marketing channels at harvest.

Both buyer and seller can operate more efficiently and profitably if they can agree to a schedule of deliveries, types and qualities of product, weighing and inspection procedures, and plan of payment. In short, farmers who wish to speculate on the price level or have to because of a lack of forward purchase offers, can often enter into forward selling arrangements in which all terms except price are determined in advance.

Fixing Prices

Agreements that defer pricing of the commodity always provide methods for fixing the price at a later date. Such agreements commonly specify (1) a particular base price quotation to be used, and (2) a differential for the farmer's product relative to that of the base commodity.

In many cases, the base price quotation is the cash quotation for spot delivery of the commodity at a central location as regularly provided by a private or Government price-reporting service. Such spot prices are used when prices are to be fixed on the day the product is received by the buyer. It is the common way of doing business in the egg, butter, and cheese markets.

Or, the base price can be a commodity exchange quotation for futures delivery of the commodity. In this case, the interval in which price may be fixed is much greater, ranging from the day the agreement is entered to the time the futures contract ceases to be traded, which could occur after the farmer has delivered his product.

Commonly, the buyer—normally a merchant or processor—agrees to give the farmer a stipulated price differential relative to the price for a given futures contract on any day between the date of the agreement and the date trading in the futures contract stops. For example, an agreement made in March based on December futures could give the farmer 8 months to fix his price. If on June 1, the farmer decides that the December futures price is not likely to improve much, he may tell the buyer of his wish to fix the price. The farmer's return would be the price for December futures, as of June 1, plus or minus the differential originally agreed to.

Or, the farmer could hold off pricing his crop for some months. It could be delayed even after the crop had been delivered, as long as it were fixed before the termination of trading in the December futures. The farmer's return would be computed as above.

From the buyer's standpoint, such agreements may be attractive because a source of supply is assured at a known differential relative to the price of futures. If the buyer wishes to pin down his cost at the time of the agreement, he could purchase futures contracts for the same commodity. Later, when the farmer elects to fix the price, the buyer would offset the futures purchase with a futures sale. Alternatively, if the buyer wishes to limit his exposure to price changes, he could wait until the

farmer fixed the price and then sell corresponding futures contracts and later, when the commodity was sold or used by him, he would offset the futures sale with a futures purchase. The act of "fixing the price" is almost the same as entering into a forward sale from the farmer's standpoint, and a forward purchase from the buyer's standpoint, and should be regarded as such.

Delayed Pricing

A farmer who wishes to deliver and transfer title of his crop, but postpone setting the price, engages in the practice called "delayed pricing." It has recently become prominent when, during the heavy harvest movement, limited on-farm and country elevator storage space has made it necessary to move grain and other crops to other locations, such as grain terminals, processors, and export points.

For example, suppose a farmer who has not entered into an advance agreement to sell his crop thinks that local offers are below expectations and, yet, he cannot hold his crop. He could deliver the crop to an elevator and enter into an agreement to accept the elevator's posted price on any subsequent day the farmer decides to sell, and to pay the elevator a specified storage charge in the interval.

On entering such agreements, a farmer is speculating on favorable changes in the basis—the difference between the elevator's posted price and the futures price—as well as on the general price level. If the farmer wished only to speculate on changes in the general price level, he could sell his grain at the posted price on the day of delivery and then buy a similar amount of grain futures contracts, assuming the quantity and quality could be reasonably matched and costs of engaging in futures trading were acceptable. While normally there is an improvement in the basis following the harvest period lows, there are also storage charges that the farmer must pay the elevator in the interim, and these would need to enter the farmer's calculations.

In brief, delayed pricing is one of several ways to extend the farmer's range of selling opportunities if he has taken no action up to harvesttime to sell his crop.

Problems

From the farmer's standpoint, an important

problem posed by deferred pricing is the selection of a reliable market price quotation on which to tie his price. The price quote should reflect as closely as possible: (1) the type of commodity that the farmer will deliver and (2) competitive values throughout the market area rather than artificial values.

If the price is for a greatly different quality or type of product than the farmer plans to deliver, the problem of specifying a fair price differential is difficult to overcome. But workable arrangements often are possible, using quotations for broadly representative grades and locations. The problem is common to both cash price quotations and futures price quotations.

Concerns over unrepresentative or manipulated price quotations have arisen periodically. When these receive attention by the industry or Government, concerted efforts are made to safeguard and improve the price quotations. For example, with the decline of large livestock terminals and the rise of direct selling of cattle and hogs, the U.S. Department of Agriculture (USDA) developed a systematic reporting of prices for direct sales in the chief feeding areas, and continued to report prices for sales at active terminal markets.

In the case of delayed pricing, there may be a special problem. For farmers who have agreed to accept the elevator's posted price on a day of their choosing after delivery to the elevator, the competitiveness of the posted price may be at issue. The problem could occur if the number of outstanding contracts had become so large in relation to the buyer's remaining buying opportunities to lead him to post lower than competitive prices during the remaining time in which the outstanding contracts are to be fixed.

Problems concerning security of contracts also arise when the price remains to be fixed after the farmer's crop has been delivered to the elevator and title has passed. His assurance of getting paid rests on securing a valid claim against the buyer and on the financial strength of the buyer. If the buyer sells the commodity before the farmer has fixed the price, the buyer presumably will have purchased an equivalent in futures contracts. This raises questions of sound practice on the part of the buyer in his efforts to meet all of his financial commitments.

MAKING FORWARD CONTRACTING DECISIONS

What are the steps in making decisions about forward contracting? Obviously, there is no single approach that always leads to the best decision, and different individuals may find that different approaches suit their needs. The choice depends upon the purpose of selling forward—whether it is to fix returns on an enterprise, to establish outlets, to speculate on an anticipated price movement, or some combination of these.

Regardless of the enterprise, whether it is crop production, livestock feeding, or commodity storage, good management requires that forward contracting decisions be integrated with other operating decisions. The following steps are suggested:

1. Identify the options available for production and contracting.
2. Estimate production costs.
3. Estimate prospective returns based upon forward prices and anticipated price levels.
4. Evaluate output risk.
5. Evaluate basis risk and arrange for financing possible margin calls, if futures transactions are involved.
6. Evaluate risk that the buyer will default, if cash forward contracts are involved.
7. Contract for inputs and outputs, and carry out the production plan.
8. Adjust forward sales and purchases to take advantage of new information about price prospects, if and when appropriate during the production process.

Identifying the Options Available

The first step is to identify the options that are available. In the case of the crop farmer, for example, it may be possible to grow more than one crop on the land available, lease the land to someone else, or even leave the land idle. Similarly, the livestock feeder can place livestock on feed or leave his feedlot empty. Moreover, different levels of cultural practices, fertilizer application, pest control, feeding rates, and so forth, may be possible.

Also, the selling or contracting alternatives must be identified. This involves determining what cash forward contracting and futures trading opportunities are available and comparing these with prospects for selling after the

product is produced. If outlets are plentiful, as they often are for grain and livestock production, fixing the returns usually is the major reason for contracting forward. The futures market may provide the best forward sale where lumpiness of the futures contract or margin funds are not problems. If, on the other hand, outlets are limited, as frequently occurs in producing vegetables for processing, or lumpiness of futures or margin funds are problems, cash forward contracts which guarantee outlets may be needed. Some cash forward contracts may fix the price as well as establish outlets, while others leave price to be determined later by formula.

Estimating Production Costs

Knowledge of production costs is essential in evaluating the various options for production and contracting, and for determining which option to select. The distinction between fixed costs and variable costs is important. Fixed costs are sunk costs—costs which cannot be avoided by not producing. Variable costs are costs tied directly to production—costs for feed or fertilizer, for instance. The farmer's objective, of course, is to make returns exceed total costs, both fixed and variable. When it is impossible to recover total costs, losses can be minimized by continuing production only if returns exceed variable costs. For example, there is no point in feeding cattle if the expected price for the finished cattle is less than the costs of the feeder cattle and the feed.

Certain items which are fixed costs for one farmer may be variable costs for another. Examples are depreciation, interest, insurance, and taxes on a feedlot. For a feedlot owner who does not do custom feeding, these cost components are fixed and must be met regardless of whether the feedlot is used. However, these items may or may not be part of variable costs for a feeder who hires the custom feeding of his cattle, depending on the charges for such services—which are influenced by how much idle capacity exists at commercial feedlots.

An example of cattle feeding costs for a Texas High Plains feedlot owner is provided in table 2; the fixed cost is \$12.55 per head and variable cost is \$373.23. The fed steer must be sold for more than \$385.78 to cover total costs and secure a profit on the feeding operation. But the feedlot owner would be better off to feed steers, sell them for \$380 per head, and more than cover his variable costs, rather than leave his feedlot empty.

Table 2—Examples of cost estimation for feeding cattle in the Texas Panhandle, beginning December 1974¹

Item	Cost per head
	Dollars
Fixed costs, including depreciation and interest on feedlot equipment and land.....	12.55
Variable costs:	
Feeder, 600 lbs.....	176.28
Feed	162.69
Labor and management.....	8.28
Transportation and commission.....	4.98
Interest on cattle and feed.....	8.81
Veterinary services and death loss.....	4.77
Miscellaneous	7.42
Total variable costs.....	373.23
Total costs.....	385.78

¹ Based on estimates provided in *Livestock and Meat Situation*, U.S. Dept. of Agr., Econ. Res. Serv., Aug. 1975, p. 15.

Determining Prospective Returns

The next step in the decision process is to estimate prospective returns based upon current prices quoted in the market for forward delivery. Suppose a Texas High Plains cattle feeder is considering putting 600-pound steers on feed in April to be sold in September. Suppose he can buy the feeders at \$30.00 per hundredweight, and the live cattle futures for October delivery is quoted at \$40.00 per hundredweight. From past experience, he expects the price for Choice slaughter steers, 900 to 1,100 pounds, in Texas, during September, to be about a dollar below the October future, so his expected price based on the futures is \$39.00. He plans to sell 1,050-pound steers with 4-percent shrinkage, giving an expected return of \$393 per animal. Estimating his total costs at \$390 per head, he finds he can lock in a profit of about \$3.00 per head by selling the futures. Obviously, the result would be different for other time periods.

If, instead of selling the futures, the feeder can sell a cash contract at a fixed price for September delivery, he may be spared the need to calculate the cash-future price difference. The cash contract price is the price he will get, subject to adjustments due to grade. But he may want to examine the futures quotation and adjust it by the normal cash-future price difference to determine if the packer is offering a competitive price.

Computations for other farm enterprises would be similar to the one for cattle.

Adjusting for Output Risk

In selling a crop before harvest, a farmer must consider output risk. The quantity that should be sold forward is less when output un-

certainty is high and when variations in the producer's output closely follow output variations throughout the country.

In crop production, output risk may include not only the possibility of low yields, but also poor quality—for example, high-moisture corn, weak-fiber cotton, or undersized potatoes. Crop yield and quality risks, being largely the result of weather, tend to be areawide in scope. Each producer finds his neighbors, and often producers many miles away, affected by the same weather patterns. Consequently, a bad crop year for one individual tends to be a year of bad crops and high prices marketwide. And if a producer has sold short, he may find at harvest that he does not have enough of the commodity to fulfill his short sale. In this case, he would have to purchase some quantity at higher harvesttime prices (due to the poor harvest) to make up his shortfall. Thus, a dry land wheat producer in the Great Plains must proceed cautiously with forward sales until the crop is assured, while an irrigated wheat producer might find it desirable to sell most of his crop well before harvest.

Information on crop prospects becomes more firm as the growing season progresses from one stage to another. Success at each stage—planting, germination of seed, vegetative growth, fruiting, filling of the head, ear or boll, ripening, and harvest—improves the prospects of a good crop. Hence, as illustrated in figure 4, there usually are several opportunities for selling a share of the expected output as the season progresses.

In livestock production, output risks take the form of disease and death loss. In contrast to crop yield failure, livestock disease is most often an individual farmer's problem, and individual losses have little effect on market prices. Consequently, the livestock producer who has sold short, and then loses livestock because of disease or death, is less likely to have to pay an unusually high price to make up for his shortfall. Therefore, the Texas cattle feeder in our example can largely disregard output risk in selling forward.

Adjusting for Basis Risk and Lumpiness

When the forward sale is on the futures market, the presence of basis risk generally means that the quantity sold forward should be less than anticipated production. Because of basis risk, a 70- to 90-percent hedge in the futures often results in lower overall risk than does a 100-percent hedge. The minimum risk hedging level may be as low as 50 to 60 percent if the farmer is a long way from the par delivery point or produces a commodity, say Western White Wheat, that is not acceptable for delivery. Or, the minimum risk hedging level may

approach 100 percent if the farmer is in a position to conveniently deliver on the futures contract. For the cattle feeder in Texas, a 60- to 80-percent hedge is about right, from the standpoint of minimizing overall price risks.

The problem of lumpiness of futures contracts varies with commodities and size of a farmer's prospective output. For some producers, one futures contract exceeds the quantity they have to sell. For others, one contract may not be enough to cover the farmer's expected production and two contracts may be too much. For example, the cattle contract represents about 40 fed steers. If the farmer feeds 60 steers, he cannot sell one and a half contracts; he must sell either one contract or two contracts. Alternatively, consideration should be given to entering into cash contracts with a local buyer.

Evaluating the Risk that Buyer will Default

Most buyers who offer cash forward contracts to farmers are reputable firms that fully intend to meet contract terms. But they, like other firms, are subject to unforeseen financial setbacks and even occasional business failure. Consequently, the farmer must use discretion in contracting with buyers who may be financially overextended.

Default by the buyer would normally result in the farmer losing the difference between the contract price and the current cash price. But in delayed pricing arrangements, where the farmer gives up title to his crop without receiving payment, he might lose the full value of the crop.

The buyer who balances his forward purchases with sales on the futures market reduces the likelihood of serious loss due to a sudden price drop. Thus, a farmer may wish to determine that the firm he contracts with carries out a consistent hedging program in the futures market.

Speculating to Profit on an Anticipated Price Change

As noted earlier, to buy inputs and enter into production without selling the output forward amounts to speculation. The futures markets and some cash forward contracting provide other opportunities to speculate. In either case, price prediction is involved. In attempting to predict price movements, farmers may wish to follow some of the methods used by commodity speculators, including those based on technical analysis and those based on fundamental analysis.

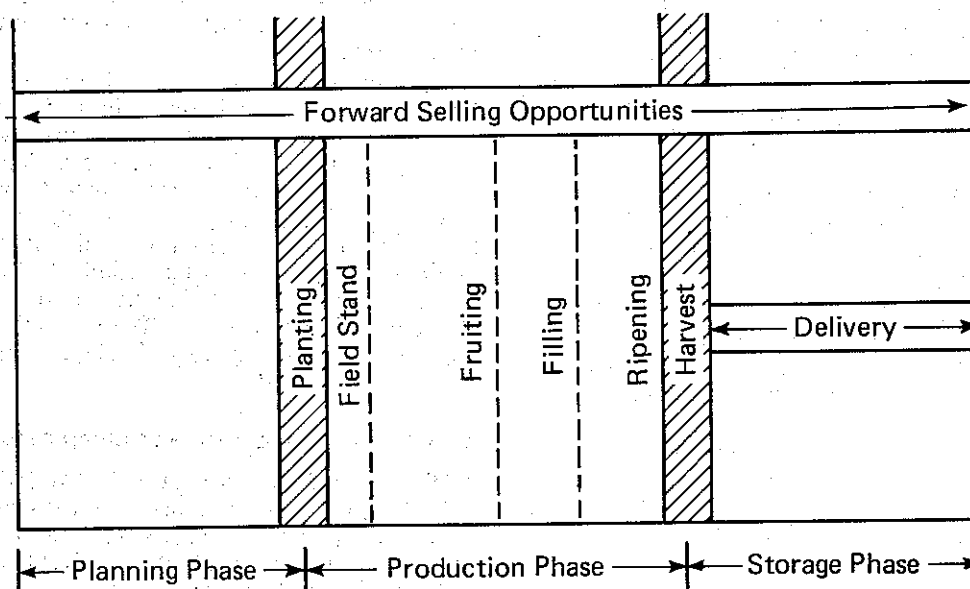


Figure 4. — Critical Stages During Production of an Annual Crop at Which Forward Selling Decisions Might Be Considered.

Technical analysis or "charting" involves plotting past prices on a chart, and looking for repetitive patterns. The objective is to recognize a pattern as it begins to develop and trade accordingly. A number of different kinds of charts are used. Since different traders may see different patterns in the same series of prices, technical analysis tends to be subjective. Whether it is useful or not for price forecasting is a matter of controversy. Nevertheless, charting is widely practiced among commodity speculators, and a number of commercial charting services are available.

Fundamental analysis involves identifying factors affecting the supply and demand for a commodity and assessing their effects on price. Among the factors to be considered are plantings, weather, numbers of livestock raised or on feed, production, stocks, exports, and general economic conditions. The USDA collects and disseminates much of this information in its crop and livestock production reports and situation reports. Since timeliness is essential, decisions should be based upon the latest available information. Sources of current information on commodities are discussed in the following section.

Often the producer may have some idea about the direction he expects prices to move, but also wants some price protection. He can adjust his forward sales accordingly. For example, if he thinks a modest price increase is more likely than a price decline, he may want to sell less forward than he would under other circumstances. Alternatively, if he thinks a price decline is more probable, he may want to increase his forward sales. If he sells more on the futures market than he expects to produce, expecting to buy his futures contracts back at a lower price, he, like any other speculator, is increasing his vulnerability to price uncertainty. This could be devastating. Each individual must adjust his own level of exposure to price risk in order to balance the need for price protection for himself and his banker against his ability to correctly anticipate price moves.

An Illustration

In operations that vary in profitability from period to period, relatively little can be learned from a single occasion. Decisions are best based upon an accumulation of information gained from extended experience. For convenience of discussion, the case of cattle feeding in the Texas High Plains will serve the purpose—using 10 feeding intervals between February

1972 and October 1974. Cattle futures trading is relatively new and the outcomes shown here do not necessarily reflect experience in earlier years.

The estimates of profits and losses, shown in figure 5, assume a 5-month feeding period for finishing high Good steers out to low Choice in the Texas Panhandle. Prices for 500- to 600-pound Good feeder steers at Amarillo, 900- to 1,100-pound Choice slaughter steers in Texas and New Mexico, and live cattle futures at Chicago were used in the estimates. Profits and losses are shown for feeding without forward selling and for feeding with an 80-percent short sale in the Chicago futures.

The first five feeding intervals, covering 1972 and 1973, represent a period of generally rising cattle prices. This was a profitable period for persons feeding cattle without selling forward and for persons carrying long speculative positions in the live cattle futures market. Short hedgers and short speculators, however, consistently lost money on their futures transactions. The opposite was true for the last five feeding intervals. Cattle feeders who did not sell forward and persons with long positions in the futures consistently lost money. At the same time, persons with short hedging or speculative positions made profits on their transactions.

For the 10 feeding periods taken together, feeders who sold forward fared about the same in terms of average profits as feeders who waited until their cattle were finished before selling. However, returns were more stable for feeders who sold forward. Without forward selling, results ranged from a profit of \$58.93 to a loss of \$62.32. With forward selling, the range was from a profit of \$24.67 to a loss of \$25.93.

The figure shows that returns on an enterprise such as cattle feeding are highly variable because of price fluctuations. If a livestock producer were able to accurately forecast price, he could make substantial profits by putting cattle on feed only when prices were going to be high. But if he were able to forecast prices, he could also make substantial profits by speculating on the futures. Lacking such ability to predict price changes, he can partially fix his returns at the beginning of the feeding period by selling forward. And by observing the forward price at the beginning of the feeding interval, he can determine whether returns are likely to exceed costs and perhaps avoid losses by not feeding on occasions when profit prospects are poor.

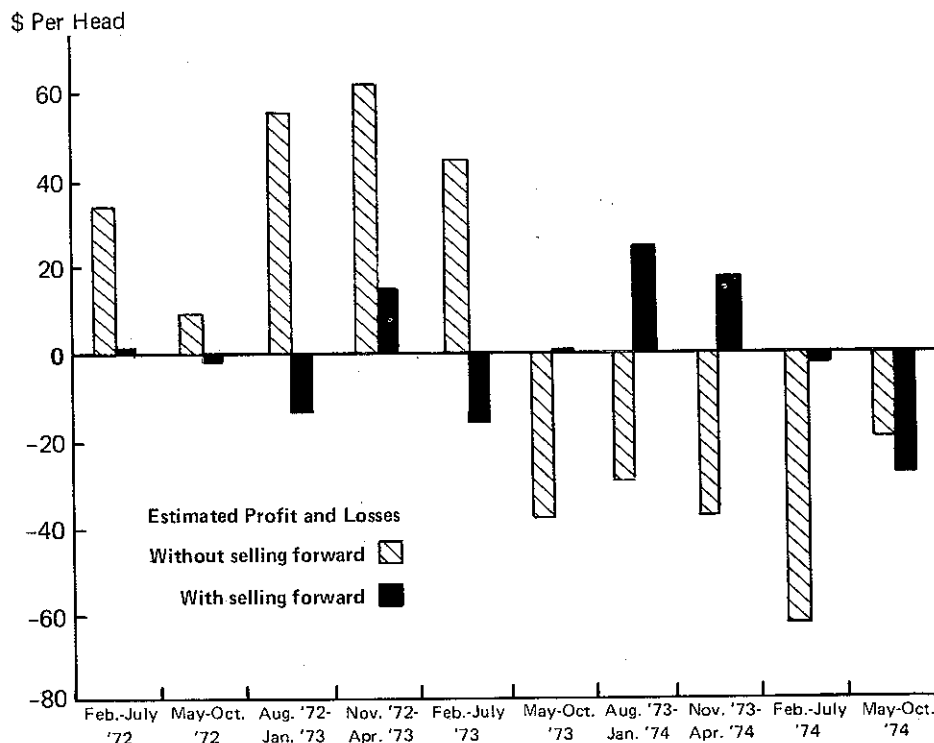


Figure 5. — Estimated Profits and Losses from Cattle Feeding in the Texas Panhandle for 10 Recent Feeding Periods.

SOURCES OF INFORMATION

Further information is available to farmers for use in making their decisions on when to sell, how to sell, and how much to sell. The main Government and private sources are as follows:

U.S. Department of Agriculture

USDA publishes a wide range of reports useful to farmers in making production and pricing decisions. These reports fall into three major categories: crop and livestock production reports, market news reports, and situation reports.

The crop and livestock production reports provide information on plantings, stocks, numbers of livestock on feed, livestock slaughter, and production. They are released throughout the year on prescheduled dates. Commodity traders follow these releases closely, and markets can often be observed to respond to information in the reports. Table 3 provides a list of the various reports. Copies and a schedule of release dates may be ordered from:

Crop Reporting Board
Statistical Reporting Service
U.S. Department of Agriculture
Washington, D.C. 20250

USDA Market News collects and disseminates current information on prices and related statistics. For many commodities, price quotations are released to news media daily and published reports are mailed weekly from Market News offices throughout the country. Information about Market News reports may be obtained from:

Information Division
Agricultural Marketing Service
U.S. Department of Agriculture
Washington, D.C. 20250

The USDA situation reports are published several times yearly to provide detailed discussion and analysis of demand and supply conditions for agricultural commodities. A list of the various reports is presented in table 4. These may be ordered from:

Economic Research Service
U.S. Department of Agriculture
Washington, D.C. 20250

Cooperative Federal-State Extension Service

Most States have extension specialists, located at State universities, who keep abreast of the current situation and outlook for commodi-

ties of interest to their farmers. Some issue newsletters on a regular basis.

States in which commercial production of certain crop and livestock products is important often will provide publications on forward contracting. Some States have developed special materials covering potential uses of futures trading by farmers and the mechanics of hedging for products of interest in the State.

Brokerage Firms

A large volume of relevant information on futures trading is available through local brokerage firms. Such information includes basic booklets on futures markets, the fundamental concepts of hedging, and details about the contracts for specific commodities. Most brokerage firms also distribute periodic commodity newsletters giving the firm's analysis of the market situation in each commodity and often suggesting possible trades to make.

Brokerage firms usually subscribe to wire news services that specialize in commodity news. These are often available for the public to read and provide timely information on all commodities.

Many commodity brokerage firms also conduct seminars to acquaint people with commodity futures trading. These seminars can be useful to the novice who is just starting to develop an understanding of futures. However, they usually are directed toward the speculative trader and may be of limited usefulness to the farmer interested in hedging.

One of the best potential sources of information in brokerage houses is the account executive who specializes in commodities and attempts to assist his customer in the reasonable use of the futures market in relation to the customer's particular needs. A well-qualified specialist is knowledgeable about the commodities with which he deals, keeps abreast of day-to-day market developments, and is able to help the customer work out a detailed hedging plan tailored to the customer's particular situation.

Commodity Exchanges

Each commodity exchange publishes information booklets concerning futures trading, hedging, and the specific contracts traded. These booklets are available from the exchanges upon request and serve as useful references for those interested in futures markets.

Commodity Futures Trading Commission

The Commodity Futures Trading Act of 1974 created an independent agency called the Commodity Futures Trading Commission— a successor to the Commodity Exchange Authority, formerly with the U.S. Department of Agriculture. The 1974 Act invests broad regulatory powers in the Commission in order to counter manipulation and promote fair dealing and effective futures markets. The Commission regularly collects data on the uses of futures trading and from time to time makes special studies. It maintains field offices in Chicago, Kansas City, Minneapolis, New York City, and San Francisco.

General Literature

For a recent general treatise covering the nature, extent, purposes, and problems of cash forward contracting, see:

Roy, Ewell Paul
Contract Farming and Economic Integration, 2nd ed.

The Interstate Printers and Publishers, Inc.,
Danville, Illinois, 1972

For recent books on the general nature of organized futures trading, see:

Gold, Gerald
Modern Commodity Futures Trading, 7th Ed.
Commodity Research Bureau, Inc., New
York, 1975

Hieronymus, Thomas A.
Economics of Futures Trading
Commodity Research Bureau, Inc., New
York, 1971

Table 3—Crop, livestock, and price reports issued by USDA's Statistical Reporting Service

*Field Crops		Dairy Products
Acreage		Milk Production
Crop Production		Milk Production, Disposition, and Income
Crop Values		
Prospective Plantings		Livestock and Products
Winter Wheat and Rye Seedings		Cattle
Field Crops - Production, Disappearance and Value		Cattle on Feed
Potatoes and Sweetpotatoes		Hogs and Pigs
Grain Stocks		Lamb Crop and Wool
Hop Stocks		Livestock Slaughter
Peanut Stocks and Processing		Meat Animals
Popcorn		Sheep and Goats
Potato Stocks		Sheep and Lambs on Feed
Rice Stocks		Wool and Mohair
Soybean Stocks		
Fruits and Nuts		Poultry and Eggs
Apples		Chickens, Eggs and Broilers
Cherries		Commercial Broilers
Cherry Utilization		Broiler Hatchery (Released in 21 States)
Citrus Fruits		Eggs, Chickens and Turkeys
Cranberries		Egg Products
Noncitrus Fruits and Nuts		Hatchery Production Annual
Seed Crops		Layers and Egg Production Annual
Alfalfa		Poultry Slaughter
Crimson Clover		Turkeys
Field Seed Stocks		Turkey Hatchery
Red Clover		
Tall Fescue		Other Reports
Timothy		Agricultural Prices
Vegetable Seeds		Prices Received by Farmers for Manufacturing Grade
Vegetable Seed Stocks		Milk in Minnesota and Wisconsin
Retail Prices		Cold Storage
Vegetables		Regional Cold Storage Holdings
Celery		Commercial Fertilizers
Onion Stocks		Honey
Tomatoes, Released at Orlando, Fla.		Farm Labor
Vegetables - Fresh Market		Farm Numbers
Vegetables - Processing		Farm Production Expenditures
Dairy Products		Flowers and Foliage Plants
Butter and Cheese Production Released at Madison, Wis.		Maple Sirup
		Mushrooms
		Mink
		Naval Stores

Table 4—Situation reports and supply-demand estimates reports issued by USDA's Economic Research Service

Cotton and Wool Situation	Wheat Situation
Dairy Situation	Agricultural Finance Outlook
Fats & Oils Situation	Agricultural Outlook
Feed Situation	Export Outlook
Fruit Situation	Fertilizer Situation
Livestock & Meat Situation	Farm Real Estate Market Developments
Poultry & Egg Situation	National Food Situation
Rice Situation	World Agricultural Situation
Tobacco Situation	Sugar & Sweetener Situation
Vegetable Situation	Supply-Demand Estimates