

# Introduction to Agricultural Economics

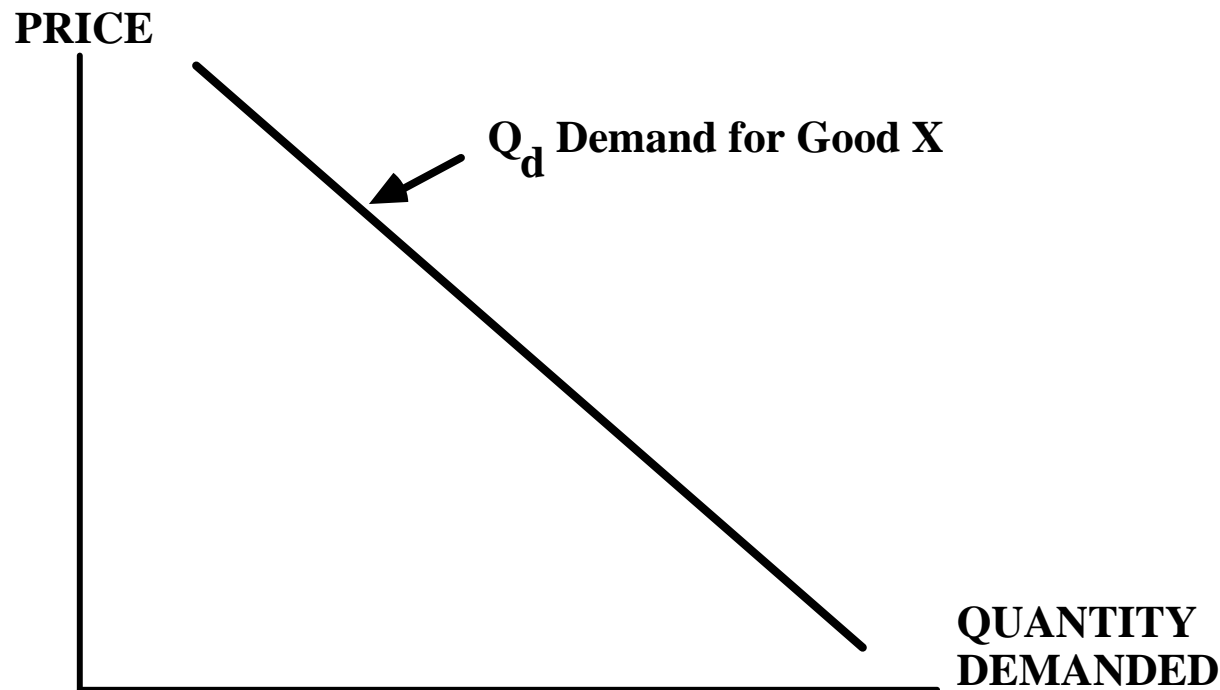
Economics examines:

- how scarce resources are allocated.
- how firms maximize profits.
- how market competition affects firms and consumers.
- the limitations of markets.

We will examine some problems unique to agriculture which lead to The Farm Problem.

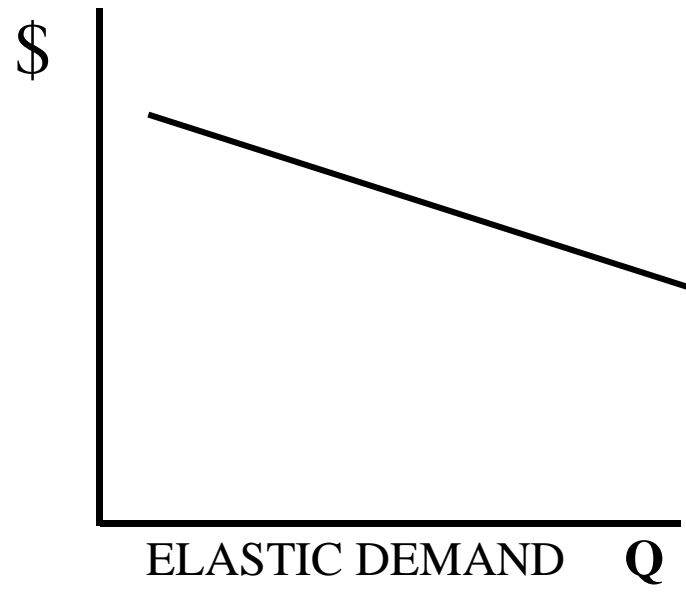
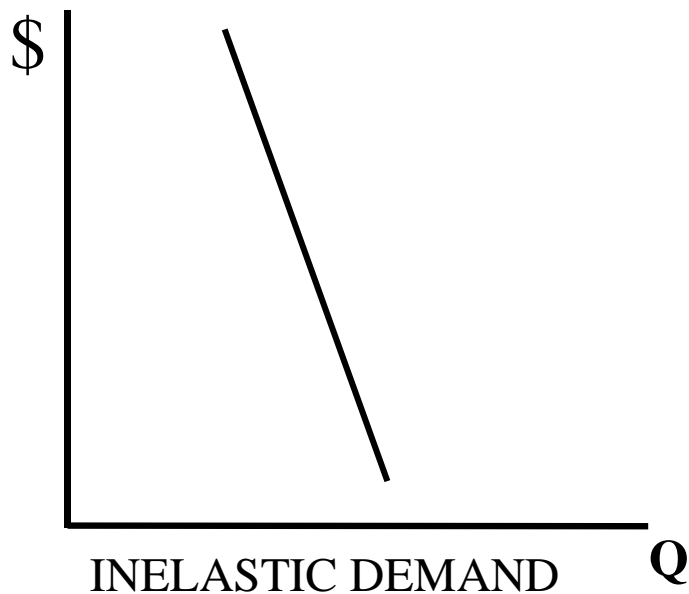
# DEMAND

The DEMAND CURVE shows the quantity of a good demanded at various prices. Demand Curves have negative slopes. Goods more necessary to life usually have steeper slopes .



# ELASTICITY

$$\text{Price Elasticity} = \frac{\% \text{ change in Quantity Demanded}}{\% \text{ Change in Price}}$$

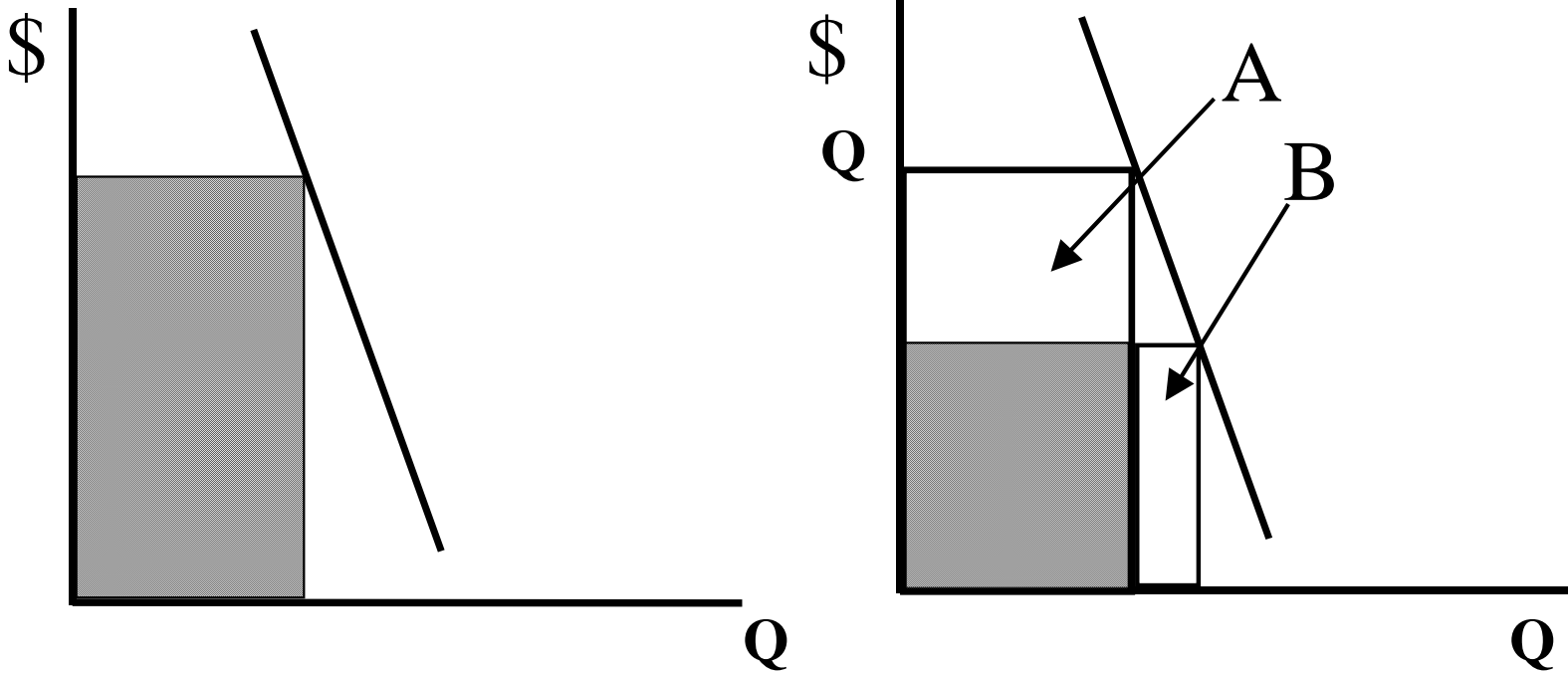


Inelastic - little change in demand for a change in price.  
Elastic - small changes in price cause large demand changes.  
Goods more necessary to life (e.g., medicine, water) usually have less elastic demand (steeper slopes) than other items.

# Elasticity of Agricultural Goods

- Demand for most farm products is inelastic.
- People can consume only so much then they are satiated. Even if price drops they will not buy much more.
- When demand is inelastic a drop in price that spurs more quantity being sold results in lower revenue and profit for the producer.
- Inelastic demand is a serious problem for farmers.

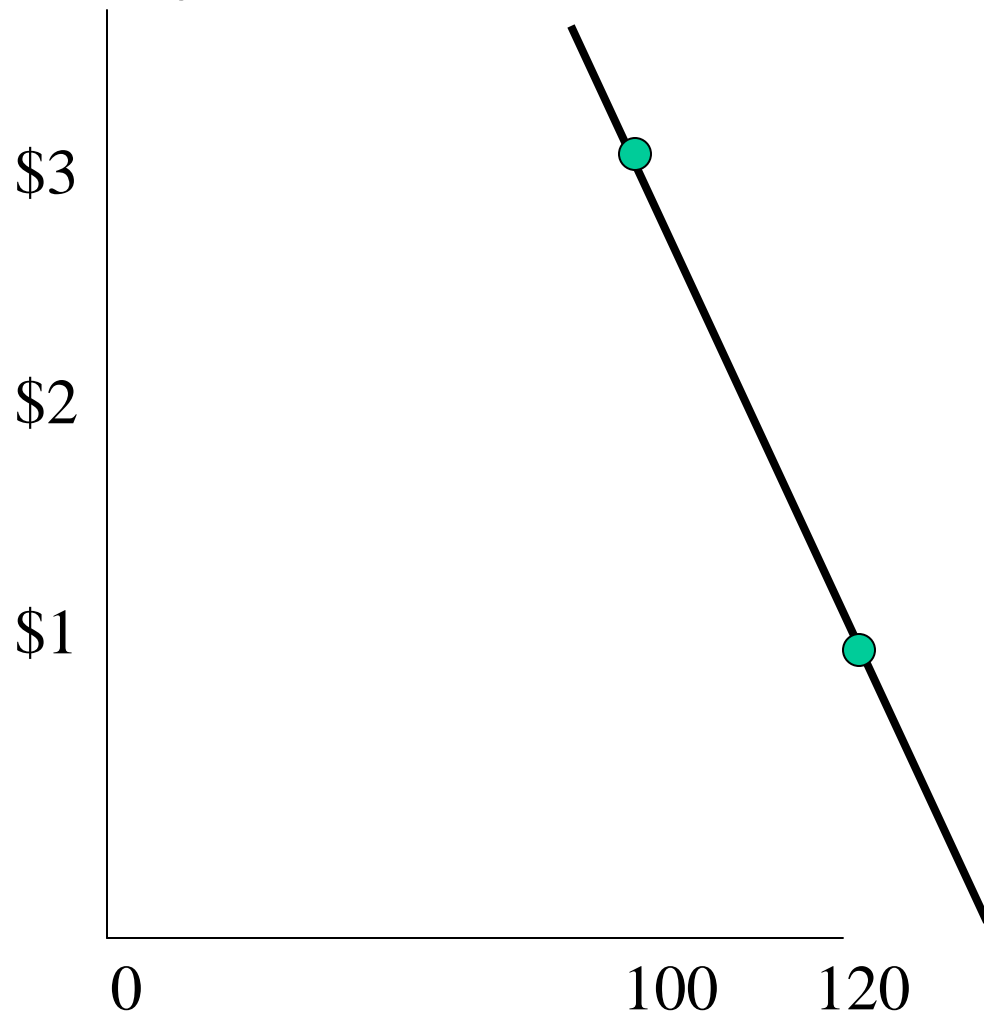
# Inelastic Demand and Revenue



When price falls the increase in quantity does not make up for the revenue loss due to the lower price.  
A (the lost revenue) is greater than B the revenue increase.

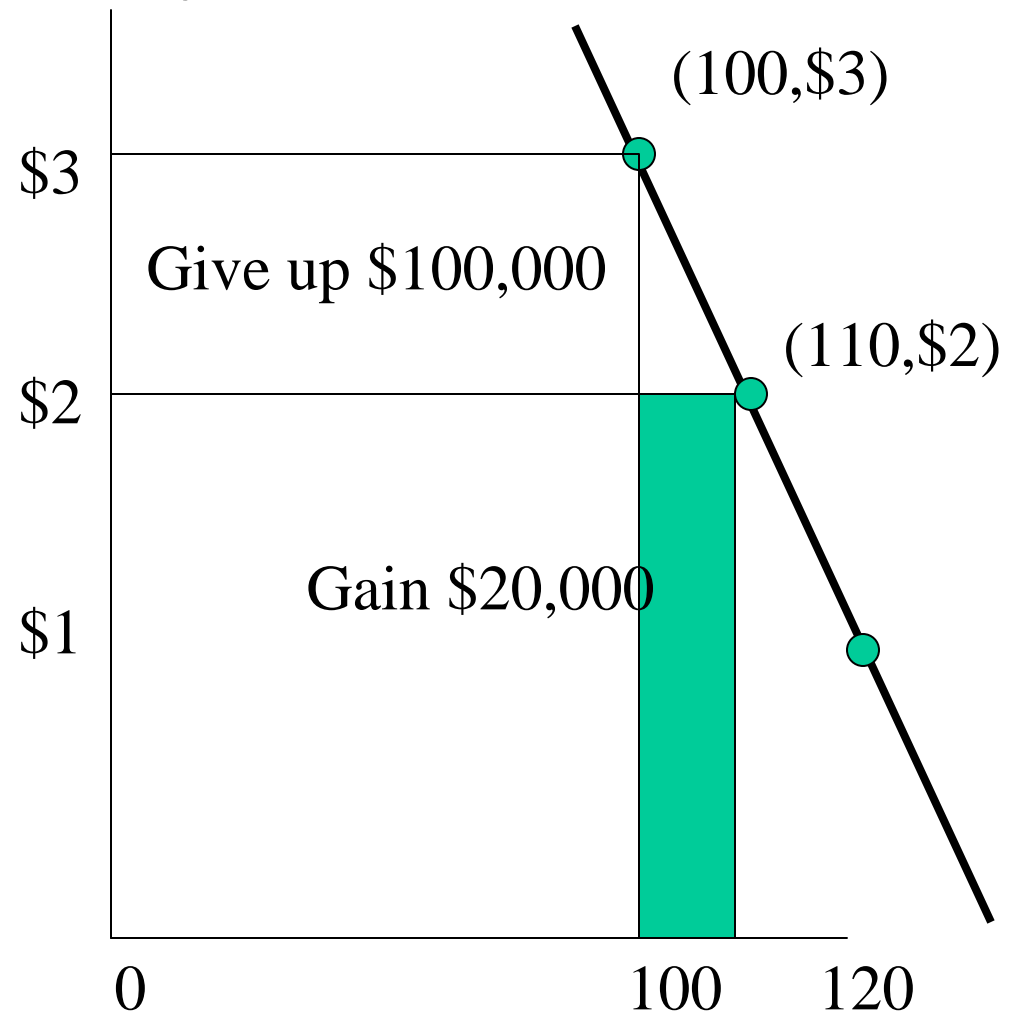
# Elasticity Exercise

Demand curve  
is steeply  
sloping, so  
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# Elasticity Exercise

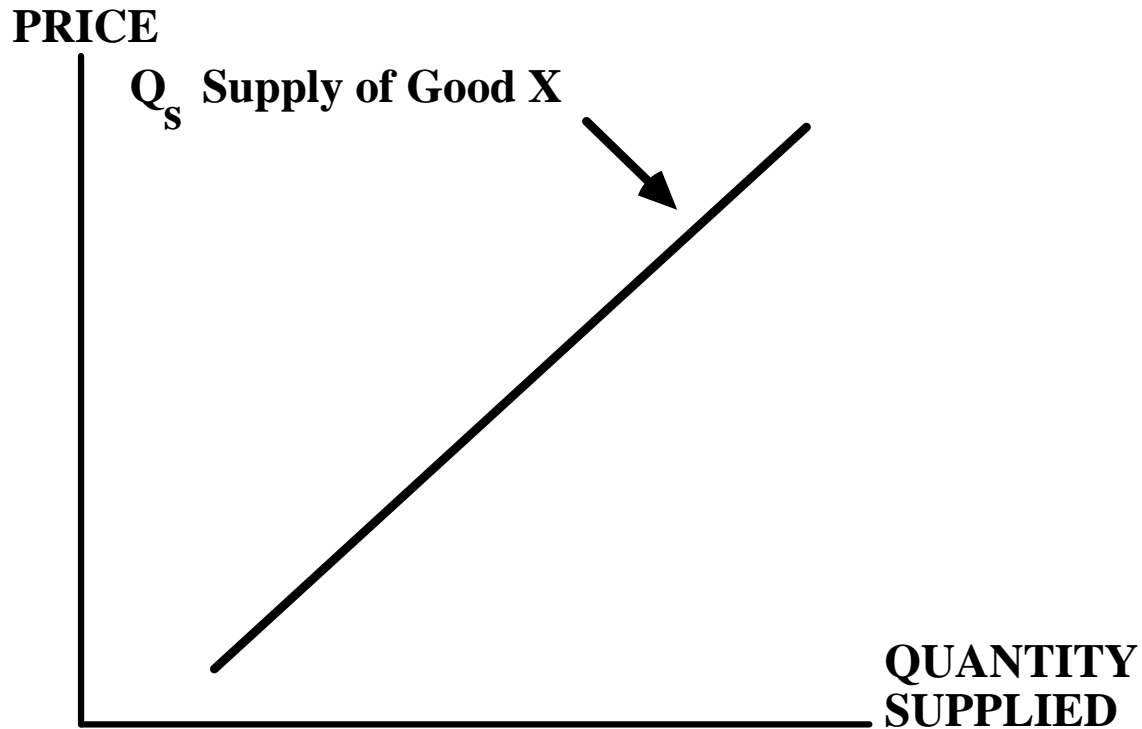
- Gross Income @ 100,000 bushels = \$300,000
- Gross Income @ 110,000 bushels = \$220,000
  
- Net Income @ 100,000 bushels = \$100,000  
\$300,000 - \$200,000
- Net Income @ 110,000 bushels = \$14,000  
\$220,000 - \$206,000



# SUPPLY

The SUPPLY CURVE shows the quantity of a good supplied by firms at various prices.

Supply Curves have positive slopes.



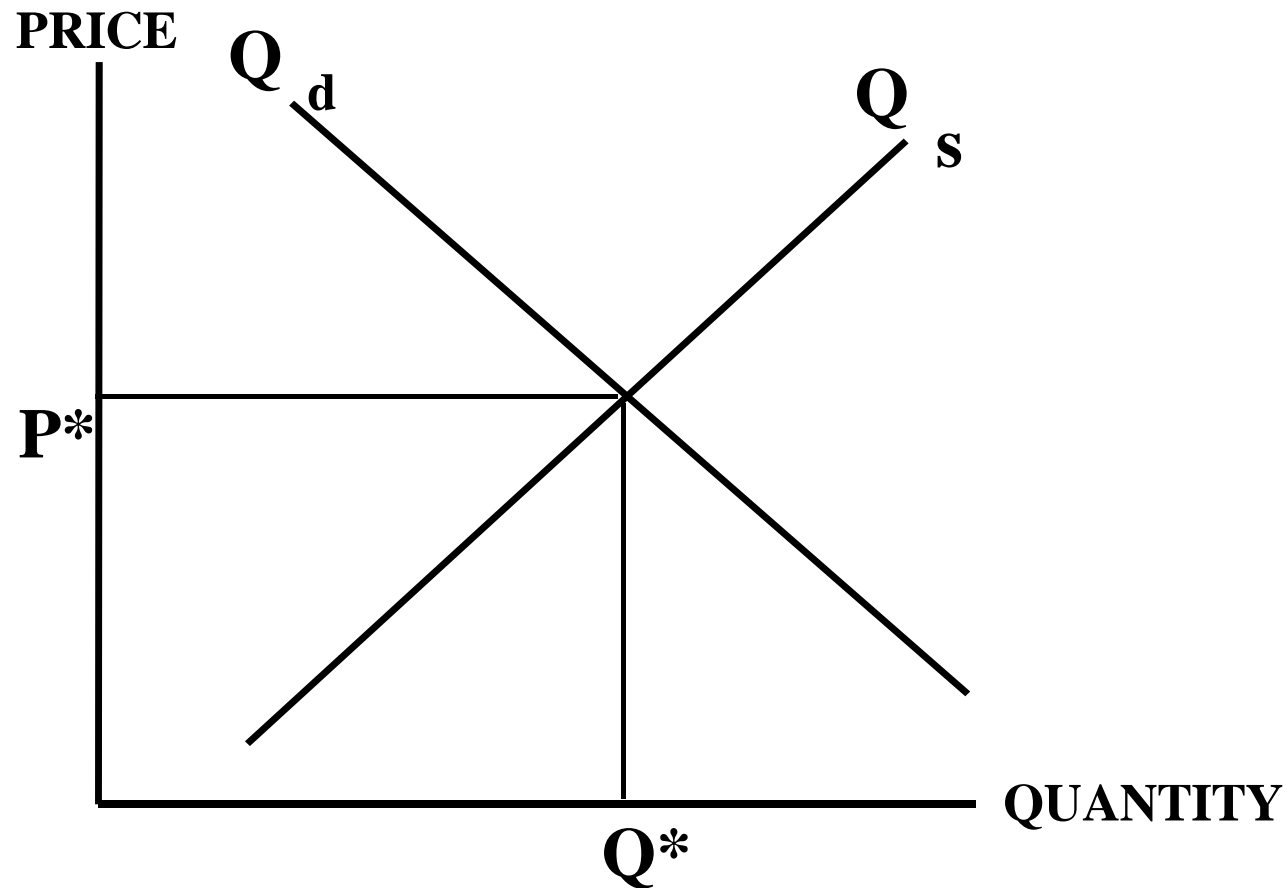
# The Market Clearing Price

- The Quantity at which the Demand and Supply curves cross gives the Price that clears the market.
- At the market clearing price the demand of buyers willing to pay that price or higher just equals the willingness of firms to supply that quantity.
- At any other price either:
  - Demand exceeds Suppliers willingness to provide goods (price too low).
  - Demand is less than the amount produced (price too high).

# The Market Clearing Price

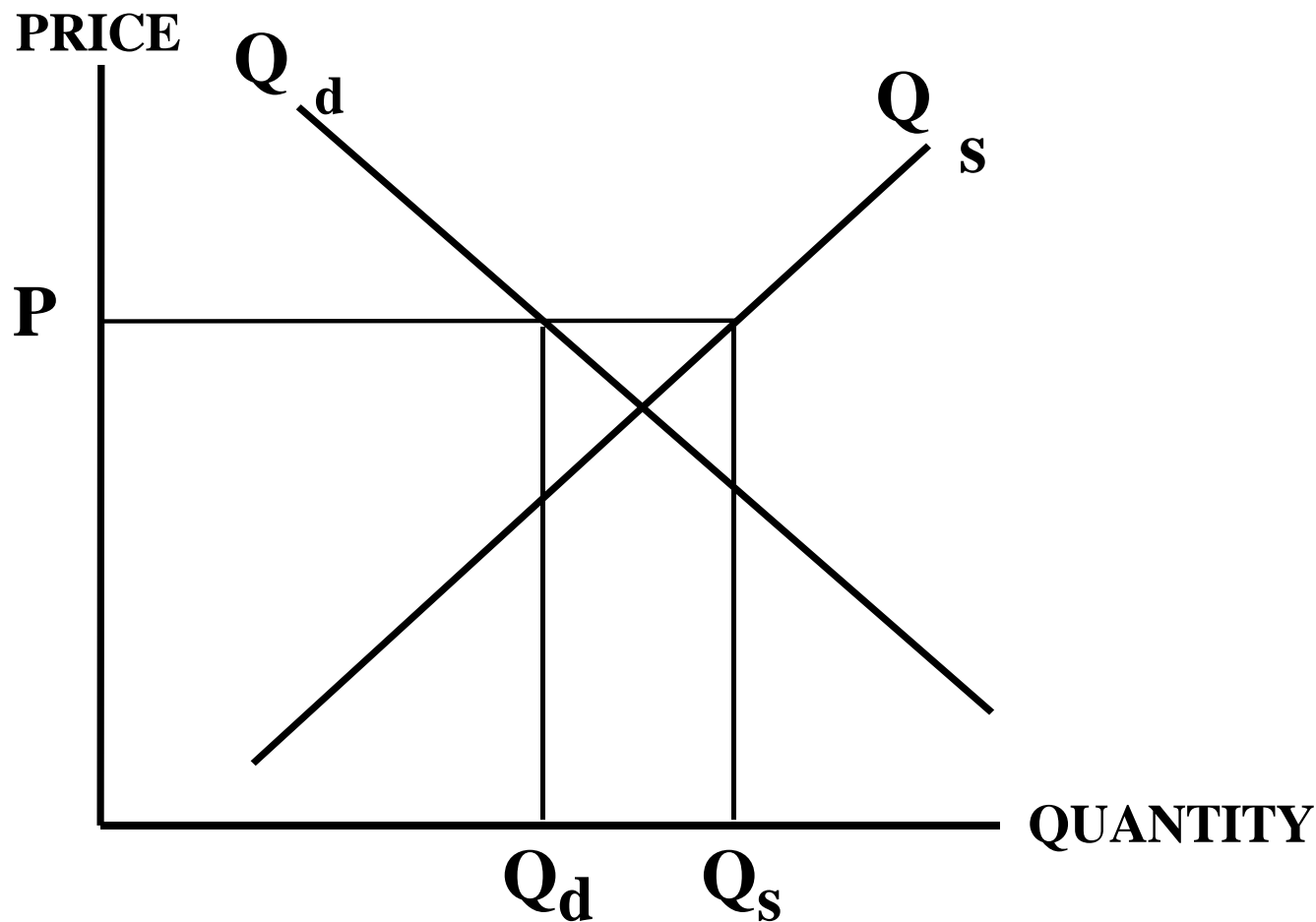
Quantity demanded equals Quantity supplied.

Market is in equilibrium.



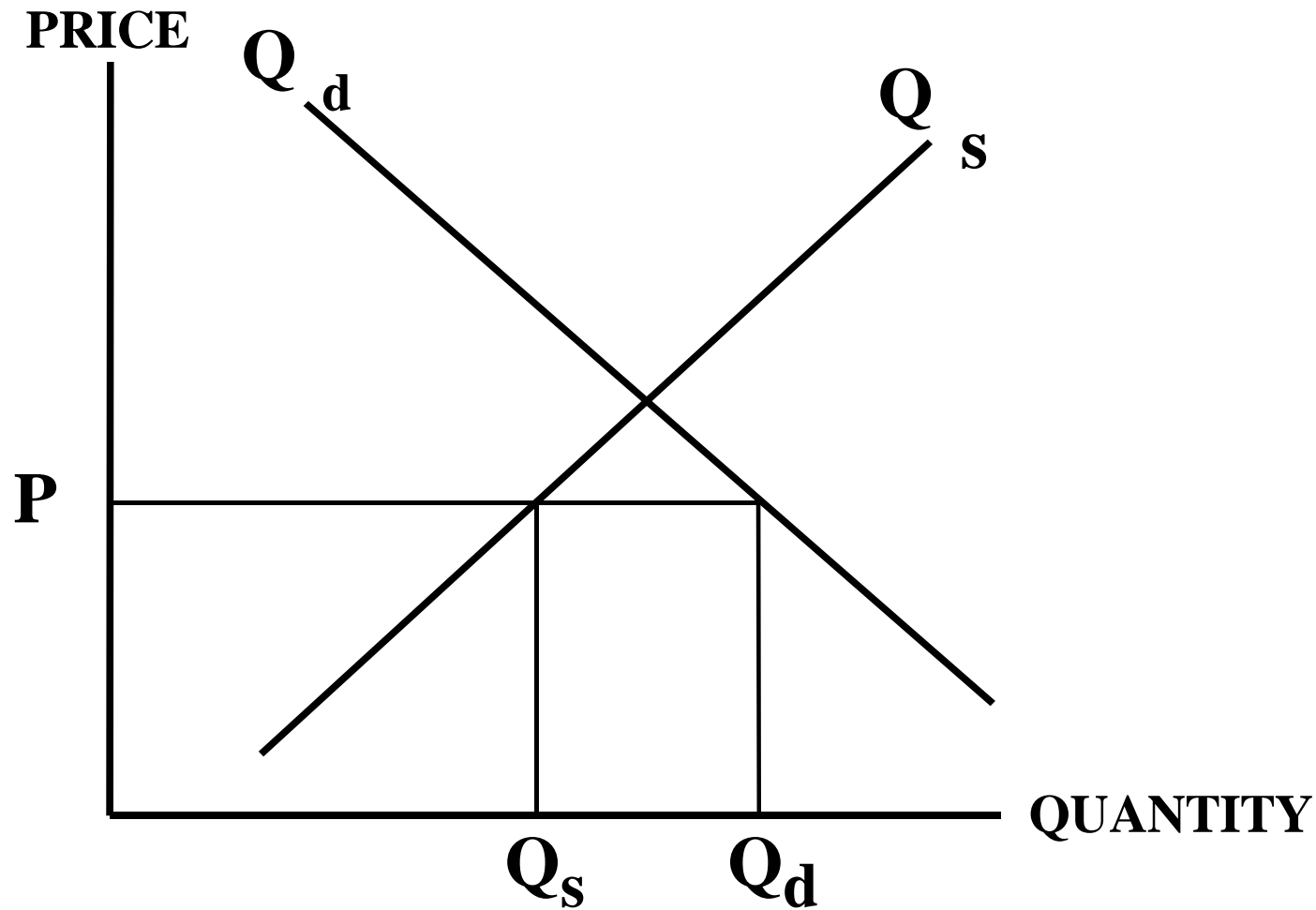
# If Price Is Too High

Supply exceeds Demand so a surplus occurs.



# If Price Is Too Low

Demand exceeds Supply so a shortage occurs

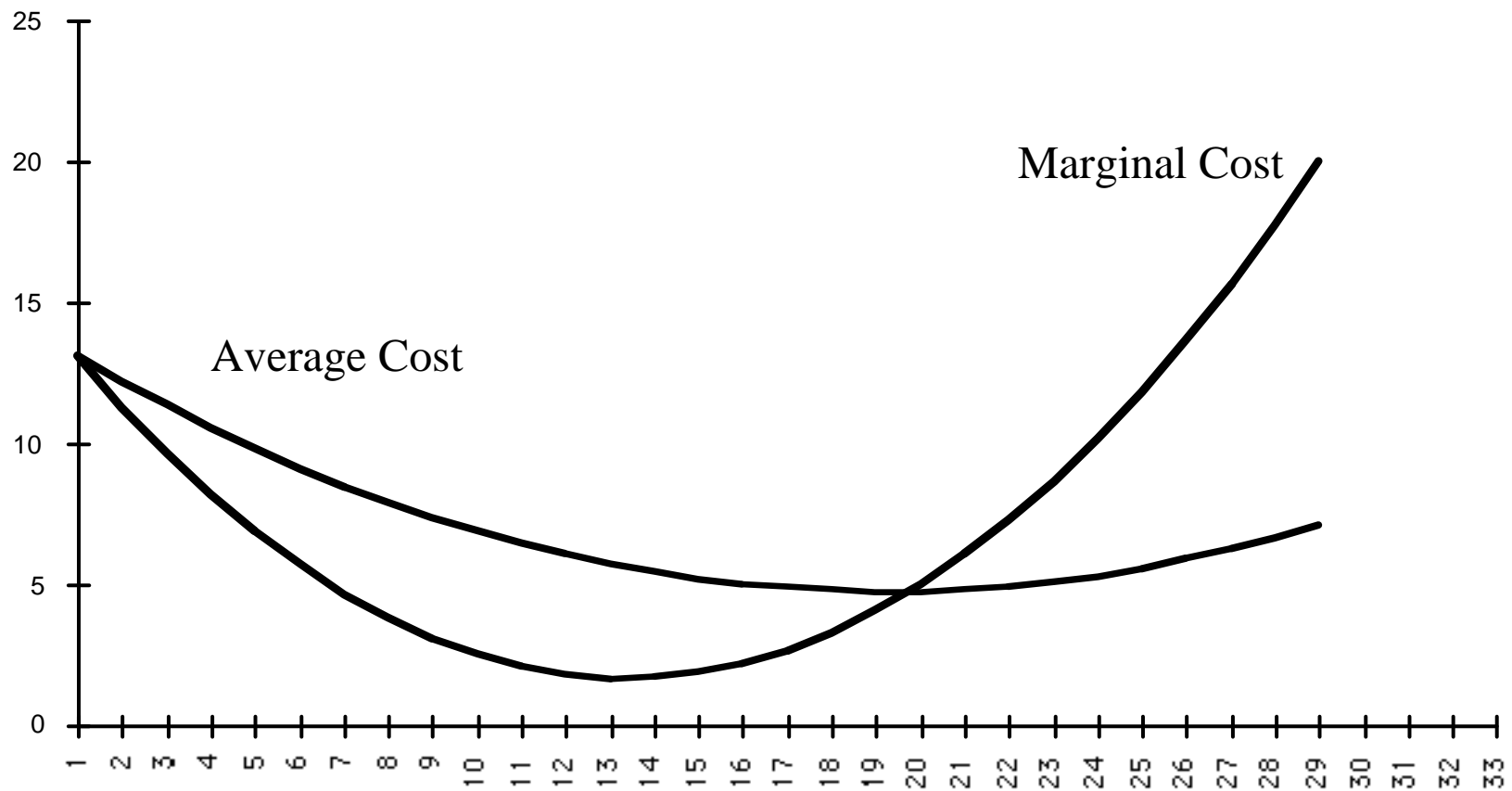


# Costs

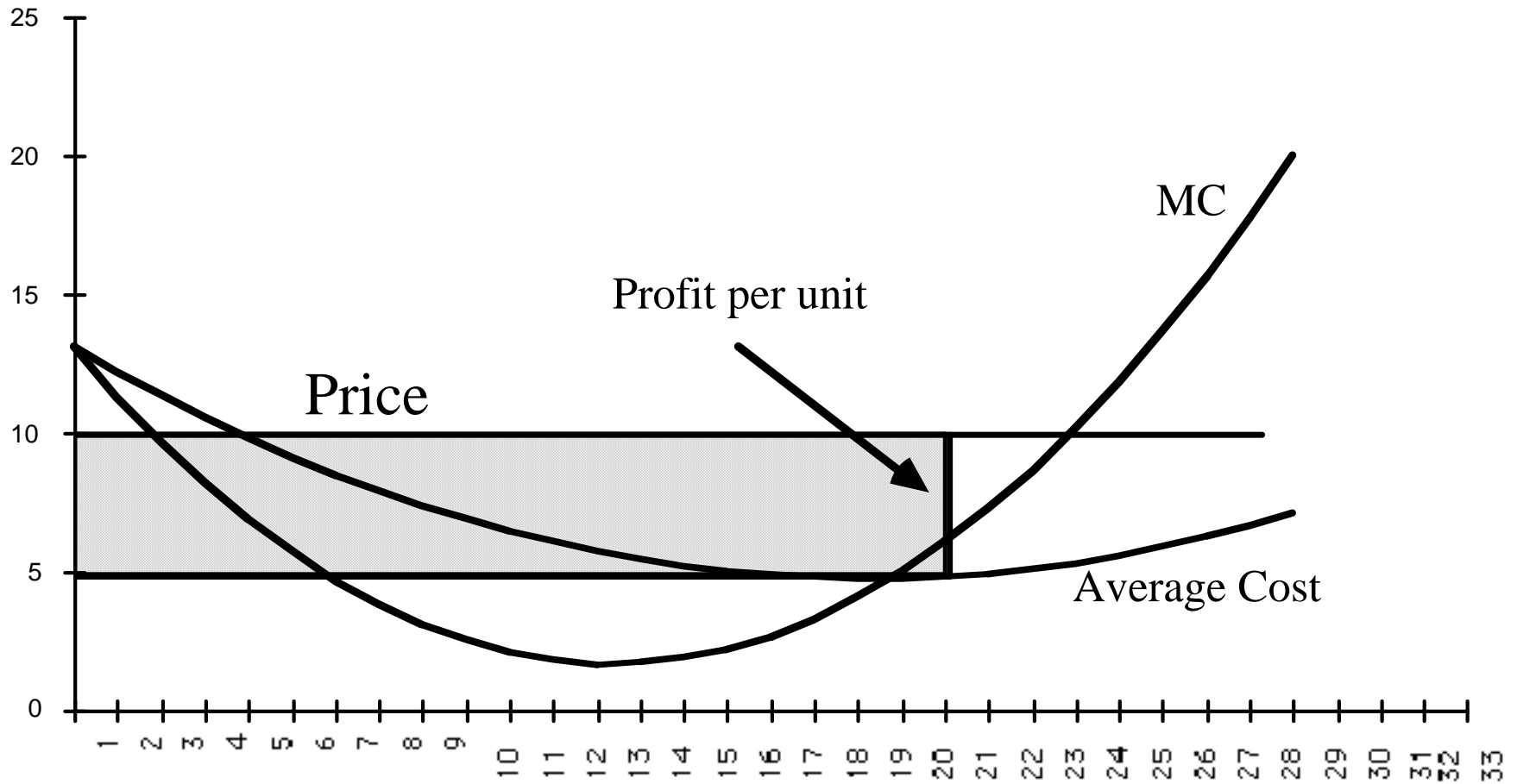
- Average - the cost of producing one item at a particular level of production.
- Average Cost x Quantity = Total Cost
- Average Cost = 
$$\frac{\text{Total Cost}}{\text{Quantity Produced}}$$
- Marginal Cost - the cost of producing one more unit.
- Compute Marginal Cost by subtracting the total cost of producing n units from the total cost of producing n+1 units.

# Typical Cost Curves for a Firm

Costs include a normal rate of return

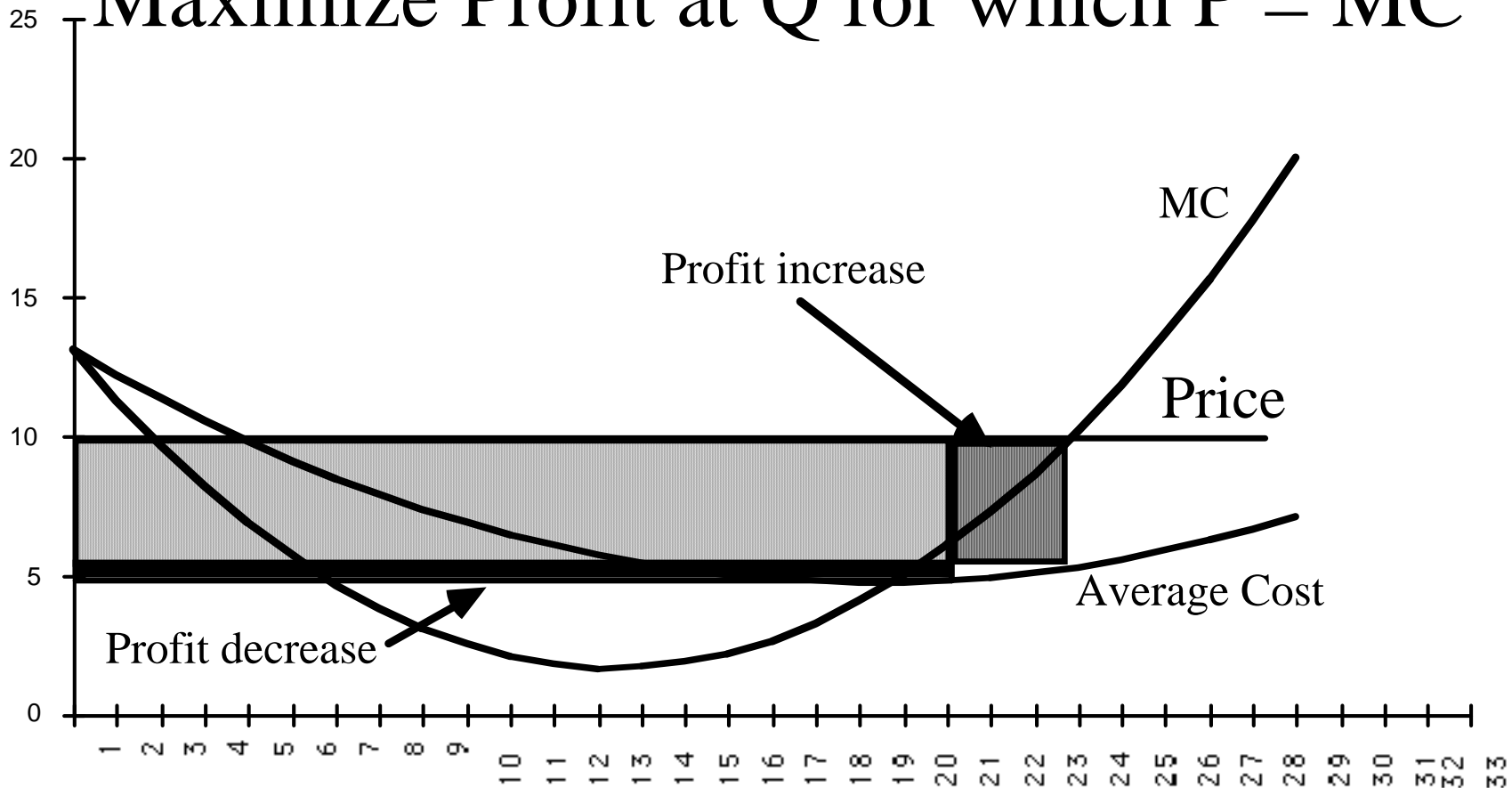


# The Shaded Area Shows Abnormal Profit





# Maximize Profit at Q for which $P = MC$



A normal profit is included in the cost curves.  
The profit shown here is above normal,  
supra-normal or abnormal profit.

## Maximize Profit at $Q$ for which $P = MC$

A company maximizes its profit by producing every unit it can for which marginal cost is below sales price.

As long as  $MC$  is less than sales price the unit contributes to the company's profit or contributes to covering fixed costs.

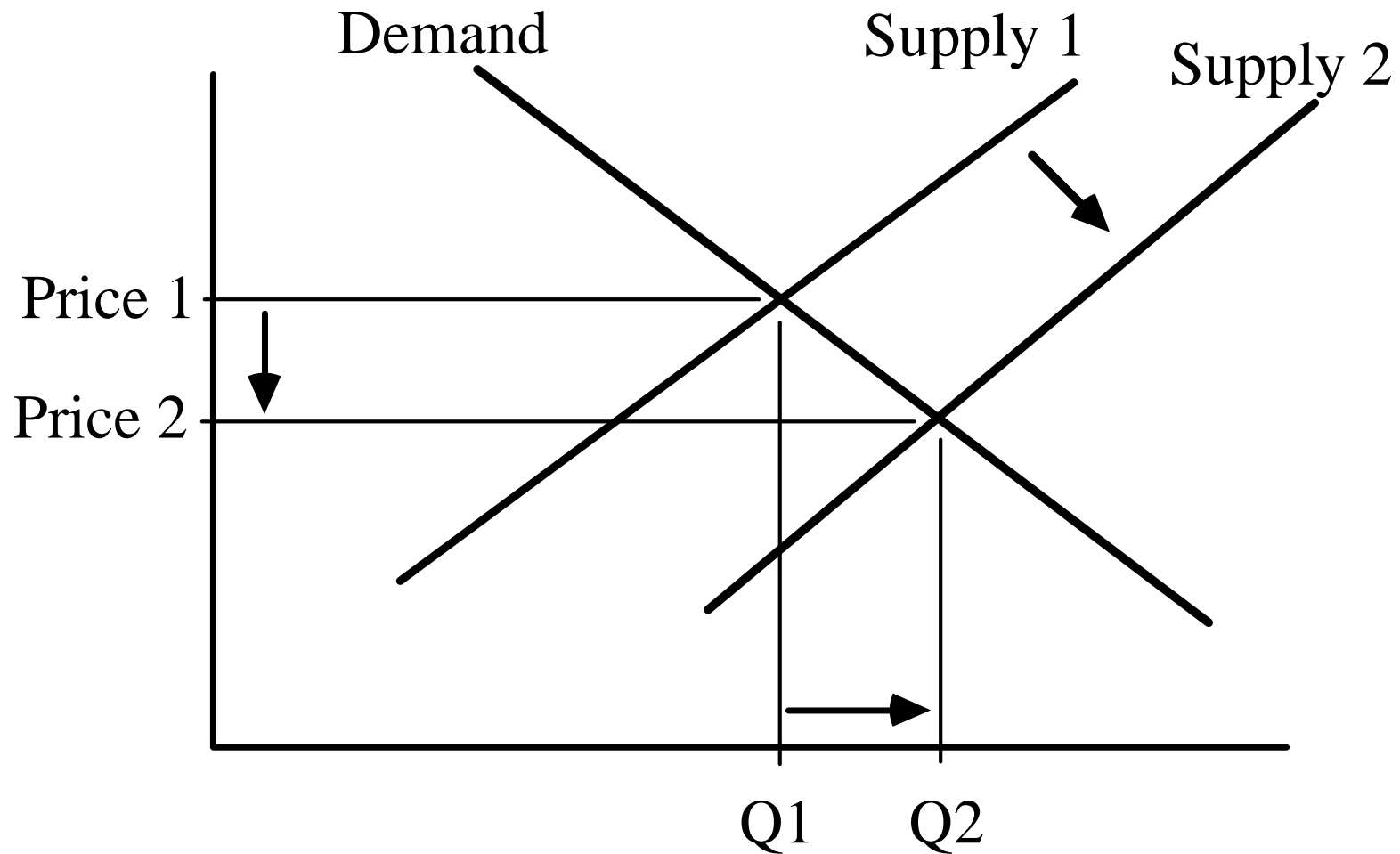
If the marginal cost (the cost of producing the next unit) is below the sales price, then that unit is costing the company more than it is bringing in and should not be produced.

## Supra-Normal Profits Attract Competitors

- When other companies see supra-normal profits they will enter that market. They will offer a similar product at a slightly lower price, but still make an abnormal profit.
- As long as profits persist, other firms will enter by offering consumers a lower price.
- Entry continues until the good sells for a price equal to the minimum of the average cost per unit and all abnormal profits have been competed away.

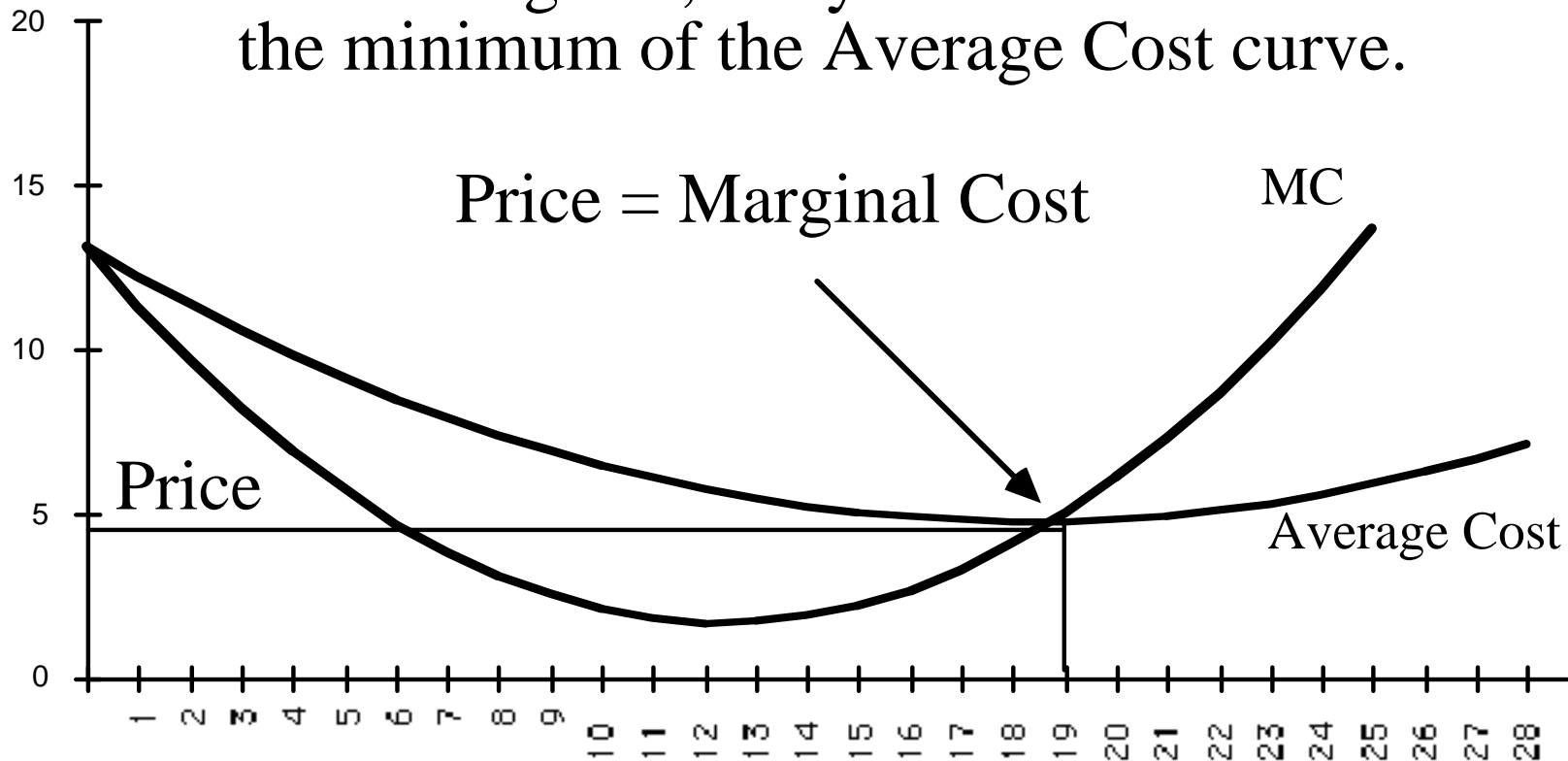
# Entry lowers Price

Higher Supply is sold only at a lower Price



# The Efficiency of Competitive Entry

In the long-run, entry will drive Price to the minimum of the Average Cost curve.



Every firm must produce in the most efficient manner or they will lose money. Consumers will pay the lowest possible price for the good.

# The Benefits of Competition

- It forces companies to adopt the most efficient production processes and make the most efficient use of resources.
- It drives Price to the lowest level at which production can be maintained (which allows companies to make a normal profit).
- Low prices let consumers spread their income over more goods, so increases their happiness.

## Assumptions for Perfect Competition

- Commodity-like Good - consumers can easily change suppliers.
- Consumers consider only Price when deciding which firm to buy from.
- Many small producers and many buyers none of whom can affect price. Price-taking behavior - take prices as given.
- Easy entry and exit from the market.
- Information about prices is freely available.

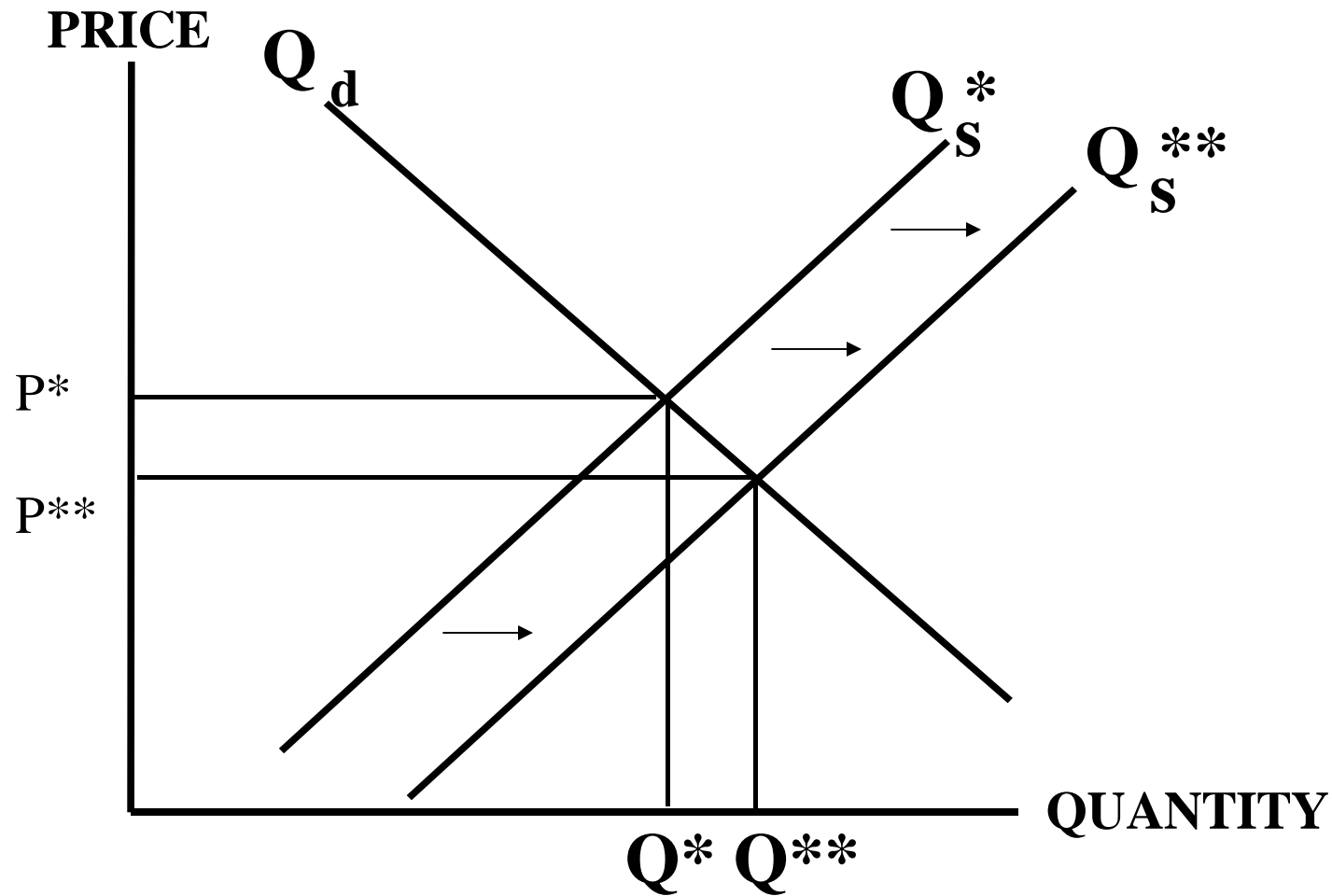
# Perfect Competition and Agriculture

- Commodity-like Good - YES.
- Consumers consider only Price - YES.
- Information is freely available - YES.
- Many producers and many buyers - NO.
  - With few buyers they can set prices
- Easy entry and exit from the market - NO.
  - Farmland has few other uses. This is the problem of Asset Fixity. Exit is difficult or impossible. Farmers may quit but the land is still used to produce crops or animals.



# The Farm Problem

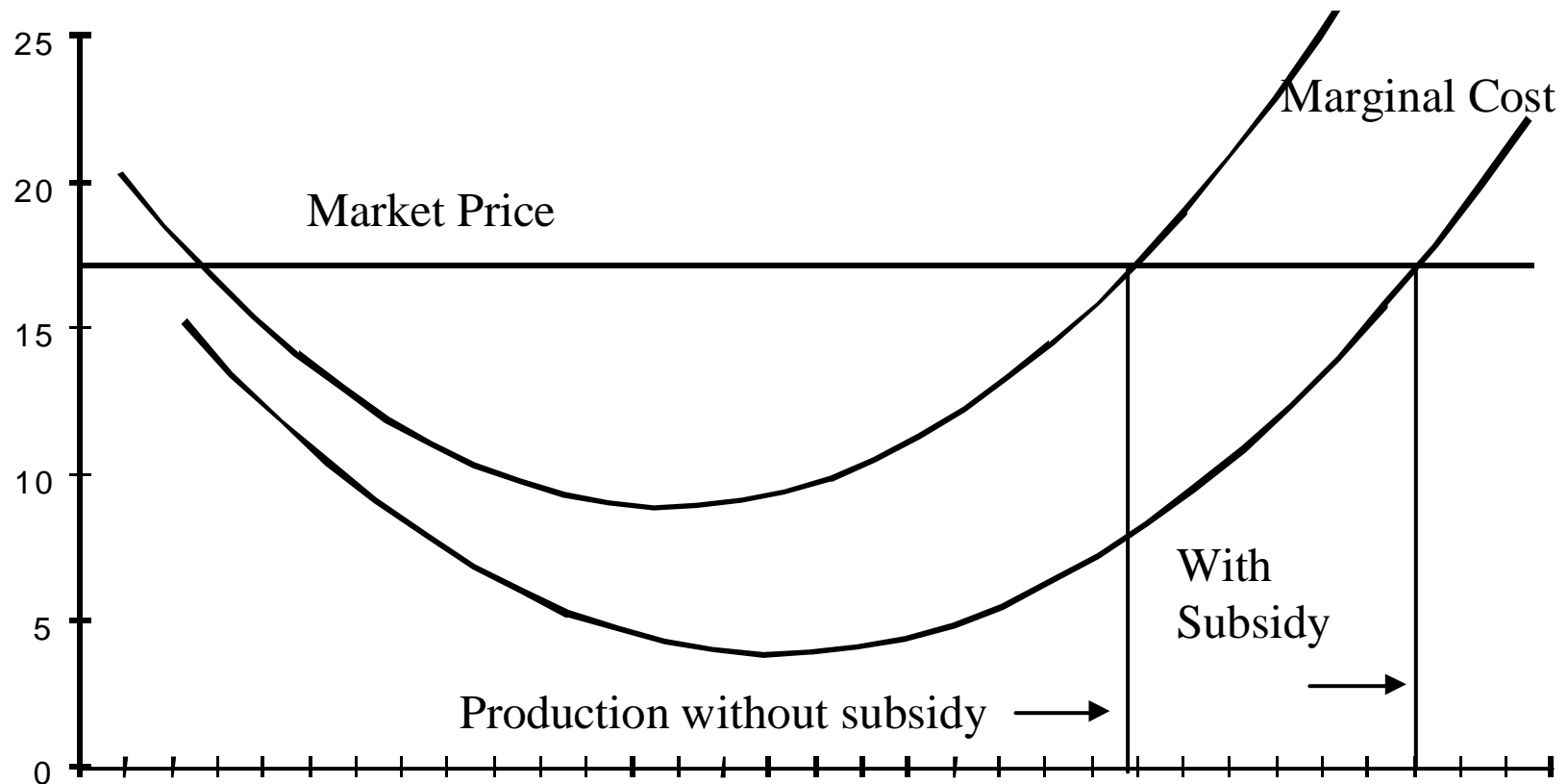
# Technology regularly increases yields



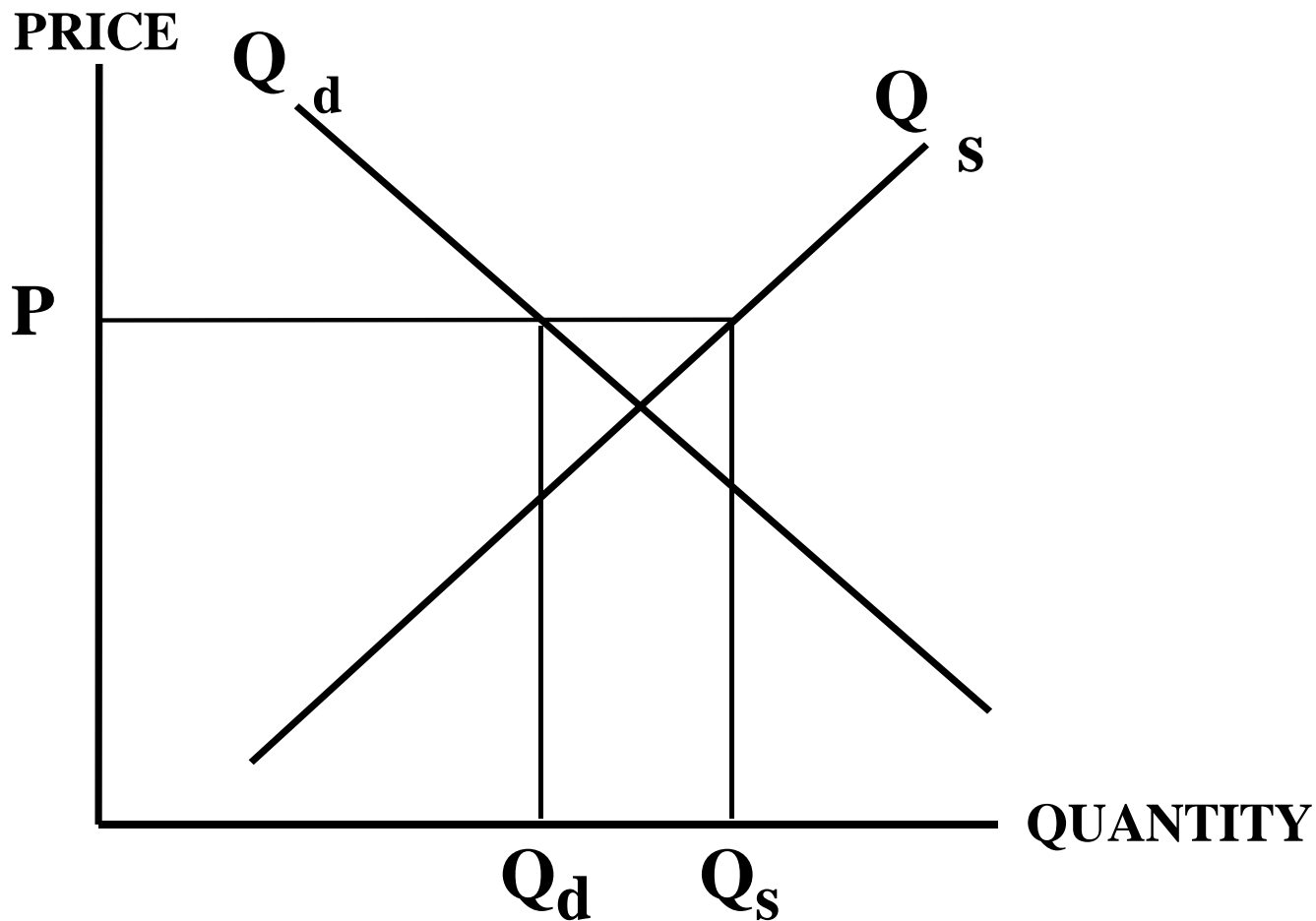
# Why do farmers adopt the new technologies?

- If all farmers ignored the new technologies then there would be less yield increase.
- But if a few adopt then everyone has to adopt.
  - A few adopters will over-produce and push the price down. technology.
  - Non-adopters bear both a low price and low yield.
  - Therefore, everyone adopts the new

# Subsidizing inputs lowers Cost Curves which motivates more production



Setting a parity price above the market prices creates a surplus.



# Supply Increasing Factors

- Technology
- Subsidies
- Price Supports

Combine to increase supply, but  
with inelastic demand income must  
go down!

# Possible Solutions

Continue to support prices

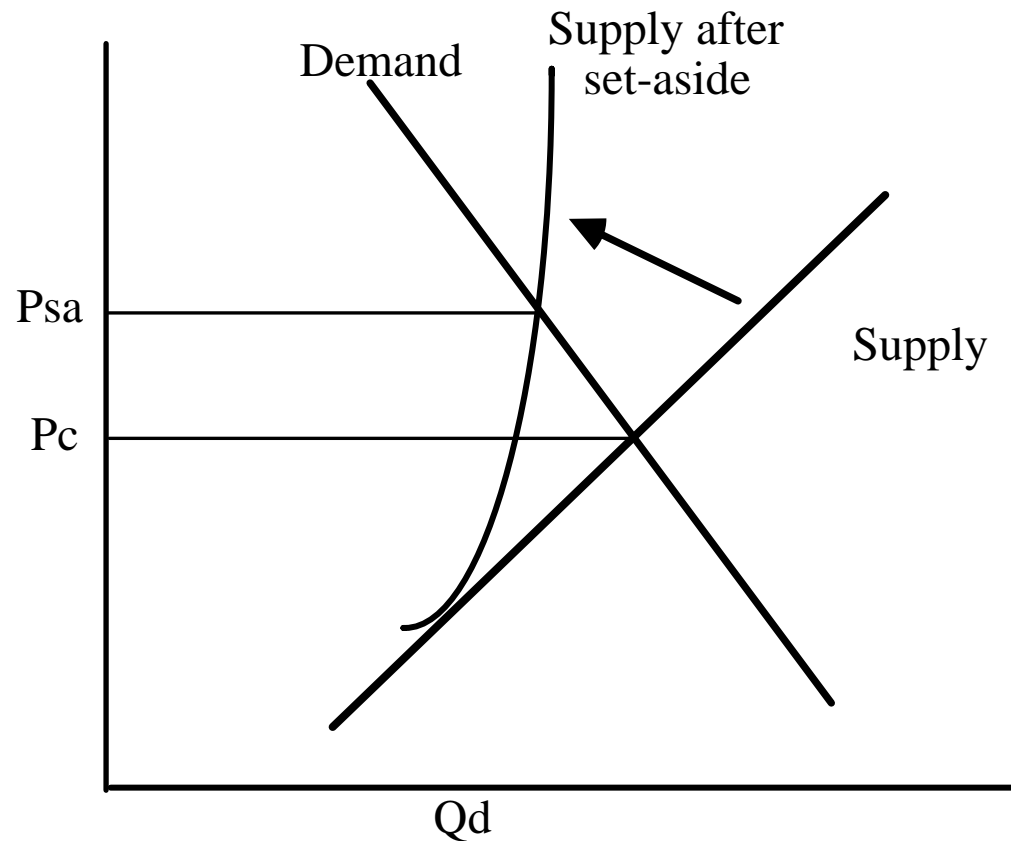
- Draws out more and more production
- Expensive

Reduce Supply

- Take land out of production
- Destroy food
- Send food overseas
- Prohibit cheaper food from other countries

# Supply Management

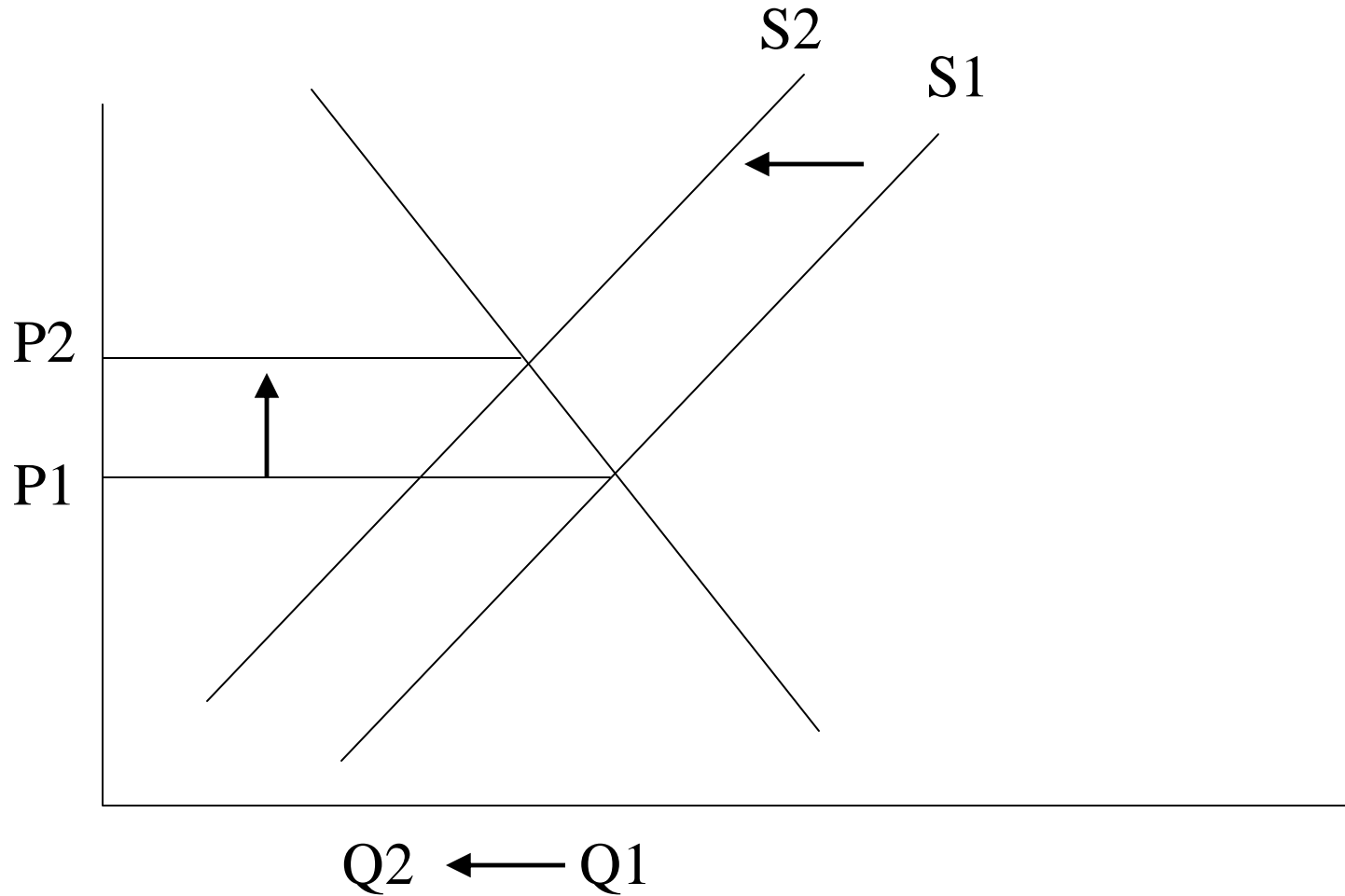
Set-aside or CRP programs reduce supply so enhance farm income





# Sending Food Overseas

Reduces domestic Supply so Price rises



# History of Farm Policies

- Parity Pricing - prices that provide same buying power per unit produced (e.g., per bushel of wheat) as in 1910-14 (inflation adjusted).
- Price Support Loan (Commodity Credit Corp.)  
nonrecourse loan using harvested crop as collateral set at some target price for the commodity. Farmers may repay the loan by selling the product, or let the Government have the crop at the support price.
- FAIR (Federal Agriculture Improvement and Reform Act)  
the 1996 Farm Bill reduces governmental intervention in favor of markets.

# The Farm Problem

- Inelastic demand for farm products.
- Technology increases yield and thus supply.
- There are limited ways to exit the market.
- Inputs purchased from a few big firms.
- Output sold to a few large firms.
- Many products are highly perishable.

## Result

- Over supply and very low farm incomes.