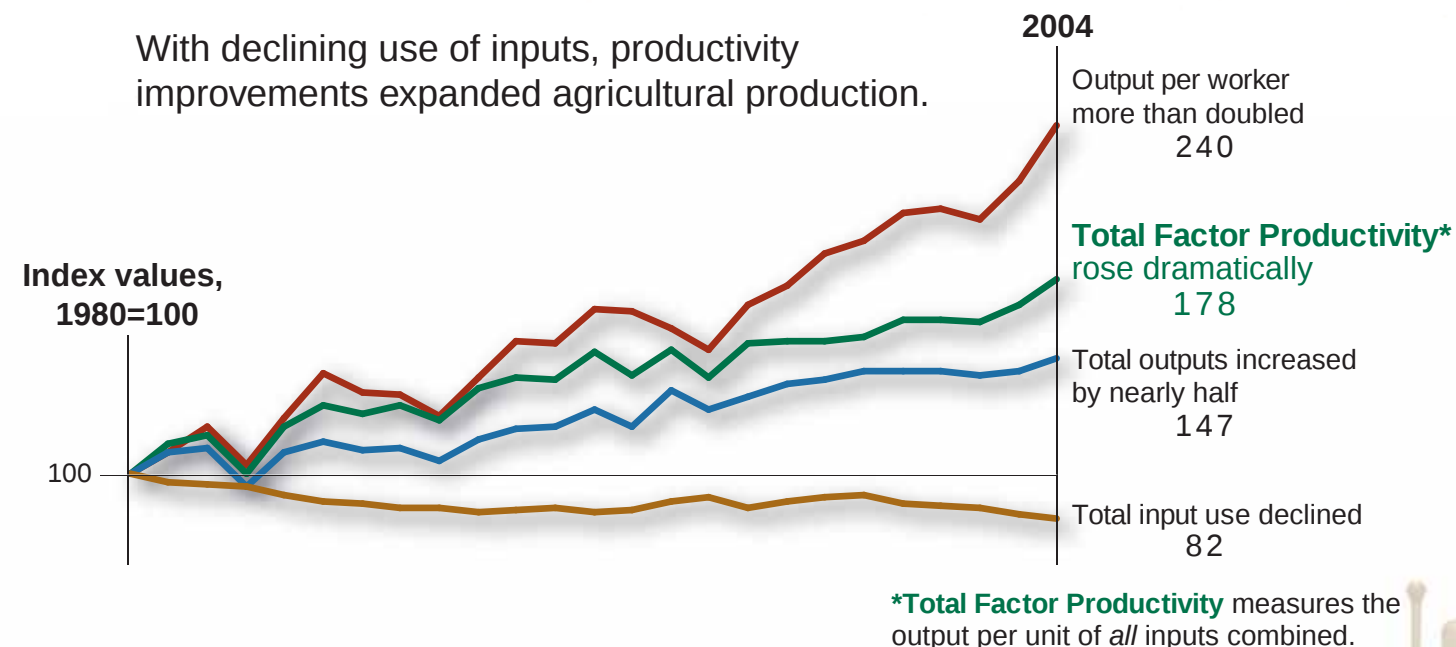


# Higher productivity drives growth in U.S. agriculture

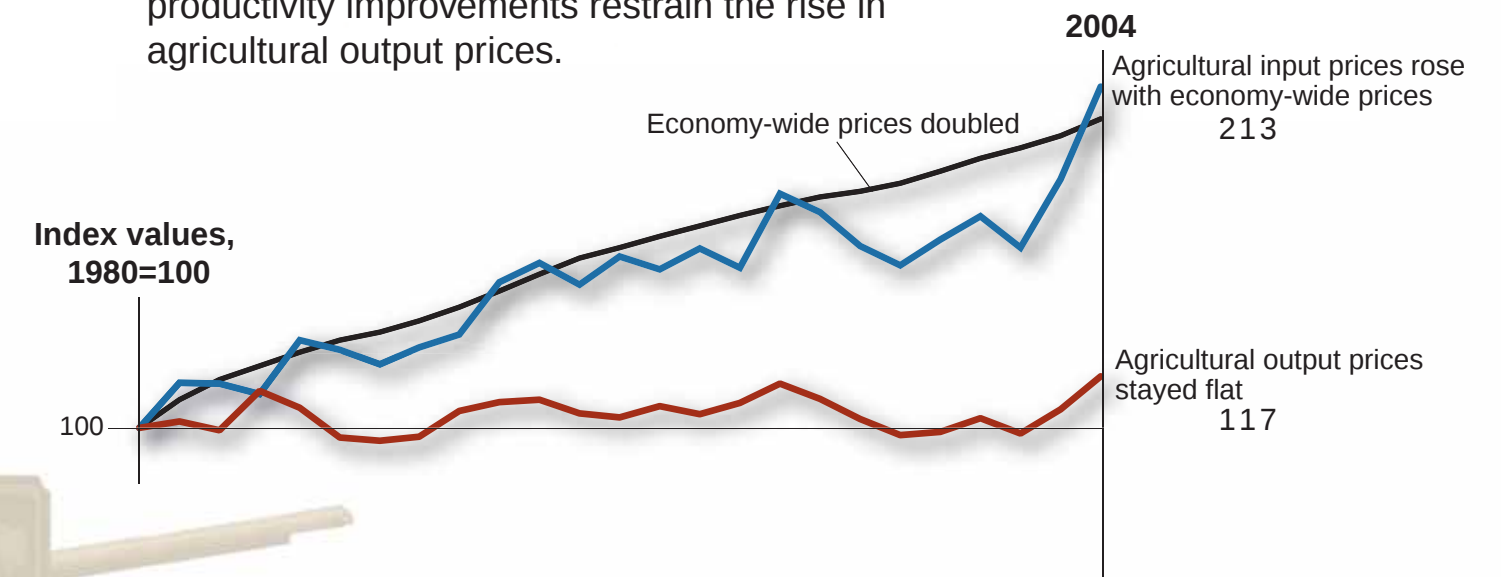
## More output per unit of input

With declining use of inputs, productivity improvements expanded agricultural production.



## Lower costs to produce commodities

Even as prices for agricultural inputs rise, rapid productivity improvements restrain the rise in agricultural output prices.



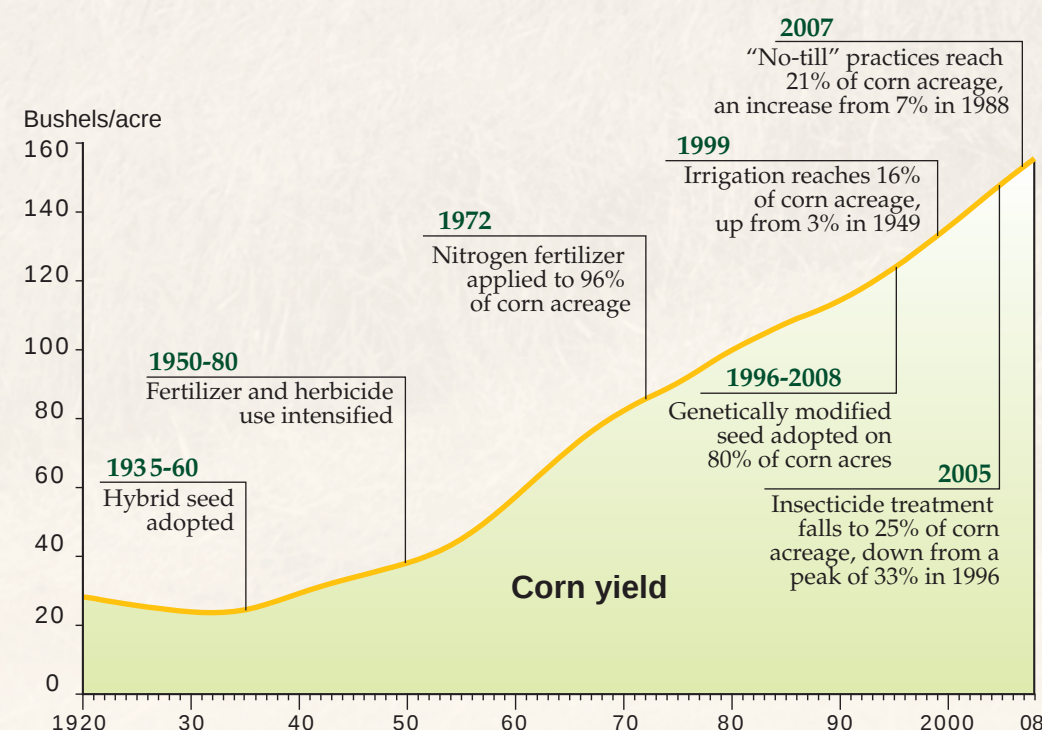
Technological advances brought about by agricultural research and development have both improved yields and reduced input requirements. Public agricultural research investments are responsible for about half of the measured productivity gain in U.S. agriculture.

Innovations in farm business size, organization, structure, and management further reduced the costs of production, keeping commodity prices low.

### CROP EXAMPLE

## Corn yield and technical change

U.S. corn yields averaged less than 30 bushels/acre until the mid-1930s, when the first of a series of major technical innovations—hybrid seed—was introduced. The switch to hybrid seed ushered in an era of steady improvement to corn cultivars grown by farmers and put yields on a growth path of about 2% per year. By 2008, average U.S. corn yield reached 155 bushels/acre, and the rate of growth showed little sign of slowing down.



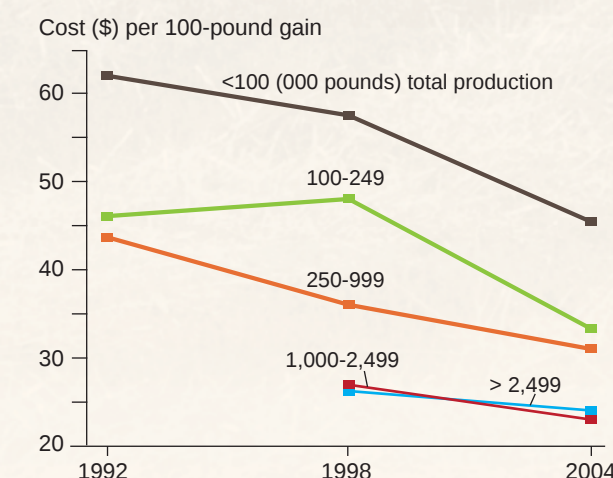
### LIVESTOCK EXAMPLE

## Hog operations and productivity growth

Productivity changes in hog production have been spurred by economies of scale and technological innovations ...

Farmers within the same size category are able to lower production costs over time.

In any year, larger operations produce hogs at a lower unit cost than smaller operations.



... and organizational innovations

Traditional farrow-to-finish operations have given way to large operations that specialize in one of the three major life-cycle phases of production, such as feeder to finish. Rise of production contracts between growers and owners has facilitated specialization.

