

# POULTRY & EGGS

## Timeline of Events (Poultry)

### 1940/60s

- A person had to work 30 minutes to afford a pound of chicken (1940s)<sup>1</sup>
- Took 14 weeks and 16 lbs of grain to prepare chicken for market; took 4 lbs of feed to gain 1 lb (1950s)
- Production averages 6.9 billion pounds ready-to-cook annually from 1960-1964, 9.1 billion lbs ready-to-cook from 1965-1969 (*see graph 1.25*)
- Per capita chicken consumption 24 lbs (1960)
- 85% of broilers marketed as whole carcass, 13% as cut-up parts and 2% further processed (1960) (*see graph 1.28*)
- Live weight at slaughter averaged 3.4 lbs from 1960-1964 and 3.5 lbs from 1965-1969 (*see graph 1.26*)
- Broiler exports equaled 2.5% of marketings from 1960-1964 and 1.3% from 1965-1969 (*see graph 1.29*)
- 33,221 farms with broiler sales in 1969 (*see graph 1.23*)
- 70,798 head sold per farm in 1969 (*see graph 1.24*)
- Top 20 firms controlled 1/3 of broiler production

### 1970s

- Production averages 11.1 billion pounds ready-to-cook annually from 1970-1974, 13.2 billion lbs ready-to-cook from 1975-1979 (*see graph 1.25*)
- Per capita chicken consumption 37 lbs (1970)
- 70% of broilers marketed as whole carcass, 26% as cut-up parts, 4% further processed (1970) (*see graph 1.28*)
- 75% of broilers marketed in retail groceries, 25% to food service outlets (1970) (*see graph 1.27*)
- Broiler exports equaled 1.3% of marketings from 1970-1974 and increased to 3.0% from 1975-1979 (*see graph 1.29*)
- 33,486 farms with broiler sales in 1974 dropping to 28,988 in 1978 (*see graph 1.23*)
- Head sold per farm increases from 74,181 in 1974 to 103,801 in 1978 (*see graph 1.24*)
- Live weight at slaughter averaged 3.7 lbs from 1970-1974 and 3.8 lbs from 1975-1979 (*see graph 1.26*)
- Warnings issued against the consumption of red meats in 1977 from the ongoing Framingham study and Sen. George McGovern's Select Committee on Nutrition and Human Needs

### 1980s

- Production averages 16.7 billion pounds ready-to-cook annually from 1980-1984, 21.3 billion lbs ready-to-cook from 1985-1989 (*see graph 1.25*)
- 50% of broilers marketed as whole carcass, 40% as cut-up parts, and 10% further processed (1980) (*see graph 1.28*)
- 71% of broilers marketed in retail groceries, 29% to food service outlets (1980) (*see graph 1.27*)
- Broiler exports averaged 4.3% of marketings from 1980-1989 (*see graph 1.29*)
- Top 20 firms control 73% of broiler production in 1984 with the top 4 firms controlling 34%
- Farms with broiler sales dropped from 27,444 in 1982 to 25,222 in 1987 (*see graph 1.23*)
- Head sold per farm increases to 125,598 in 1982 and to 168,531 in 1987 (*see graph 1.24*)
- Live weight at slaughter averaged 4.1 lbs from 1980-1984 and 4.3 lbs from 1985-1989 (*see graph 1.26*)
- Waste from a Tyson plant overwhelms the municipal sewage treatment system in Green Forest Arkansas (early 1980s)
- Tysons and McDonalds develop the Chicken McNugget. Tyson also markets a frozen version for home use;
- Poultry's share of global meat market 21% (1987)<sup>2</sup>
- Poultry industry voluntarily adopts safe-food handling labeling (1987)
- #1 processor Tysons buys # 3 Holly Farms (1989)

#### 1990s

- Production averages 35.8 billion pounds ready-to-cook annually from 1990-1995 (*see graph 1.25*)
- 18% of broilers marketed as whole carcass, 56% as cut-up parts, and 26% further processed (1990) (*see graph 1.28*); by 1995, the percentage of broilers marketed as whole carcasses and as cut-up parts had fallen to 11% and 53%, respectively, while the percentage marketed further processed rose to 36%
- 59% of broilers marketed in retail groceries, 41% to food service outlets (1990) (*see graph 1.28*)
- 1990 FDA approved irradiation of uncooked poultry
- Takes 7 weeks and 8 lbs of grain to produce a market ready chicken. Takes 2 lbs of feed to gain 1 lb
- 4/5s of broiler production is in a "broiler belt" stretching from eastern Texas to northern Florida and up to southeast Pennsylvania. Largest producer is Arkansas
- Farms with broiler sales drops to 21,777 in 1992 (*see graph 1.23*)
- Head sold per farm increases to 237,622 by 1992 nearly 3.5 times the number sold per farm in 1969 (*see graph 1.24*)
- Average Live weight at slaughter increases to 4.6 lbs (1993) (*see graph 1.26*)
- Chicken processing plants almost fully automated, capable of processing over 200 live birds per minute

- Mergers and acquisitions sweep through the meat and poultry industry (mid-1990s); 20 mergers completed in each of 1994 and 1995
- Large spill by a Hudson Foods plant near Hope, Arkansas (1993)
- FSIS publishes a final rule allowing irradiation of fresh or frozen uncooked poultry and mechanically separated poultry products (1992)<sup>3</sup>
- Joel Salatin publishes, Pastured poultry profit\$ (1993)
- Per capita chicken consumption reaches 72 lbs (1994)
- A person had to work 4.5 minutes to afford a pound of chicken (1995)<sup>1</sup>
- Leading U.S. exporting states in FY 95 (in order by dollar sales): Arkansas, Georgia, North Carolina, Alabama, Mississippi, California, Texas, Virginia, Delaware, Maryland
- USDA regulations effective December 1997 will limit use of the word “fresh” to raw poultry products that have been maintained at temperatures above 26° F
- Poultry’s share of global market 29% (1997)<sup>2</sup>
- Exports rose steadily from 6.1% of marketings in 1990 to an estimated 18.3% in 1997 (*see graph 1.29*)
- European Union banned U.S. poultry due to use of antimicrobial treatments
- USDA approved trisodium phosphate, organic acids compounds, etc. for treating poultry (1994)
- American Pastured Poultry Producers Association formed (1996/1997)
- National Contract Poultry Growers Association formed (1991/1992)

### **Trends (Broiler)**

**Consumption:** Production and processing changes allow chicken to make the transition from being viewed as an expensive luxury to being viewed as an everyday item.<sup>1</sup> In the 1940s, the average person had to work 30 minutes to afford a pound of chicken. By 1995, the average person had to work 4.5 minutes to afford a pound of chicken. Chicken consumption increases from 24 pounds per capita in 1960 to 72 pounds per capita in 1994. Per capita chicken consumption surpassed beef consumption in 1992.<sup>4</sup> Consumption is sparked by studies promoting chicken as a healthy alternative to red meat. Consumption is also sparked by industry marketing of convenience and value-added products such as cut chicken parts, boneless items, flavored/marinated products, and frozen nuggets and patties. Industry also markets products to meet consumer demand for “speed scratch” cooking in which prepared and packaged foods are combined with fresh ingredients to create a meal that is ready in 20 minutes or less.<sup>5</sup> Development of low- and non-fat meat products is currently a top priority of meat and poultry processors.<sup>5</sup> With the introduction of the chicken McNugget in the 1980s, chicken sales away from home begin to soar. Early 1990s bring rotisserie chicken with Boston Chicken increasing from 217 to 525 outlets in 1994. By 1994, consumers consume more chicken away from home than they do at home. Reasons for buying chicken: healthier/ nutritious (approximately 40%), most versatile (approximately 35%), lower/lowest in fat (approximately 30%), most

economical (approximately 28%), convenient/easy (approximately 28%), taste better/delicious (approximately 25%).<sup>6</sup>

**Production:** The number of farms with broiler sales drops from 33,221 in 1969 to 21,777 by 1992, however, the number of broilers sold per farm increases dramatically from 70,798 in 1969 to 237,622 in 1992. Average Live weight at slaughter increases from 3.3 lbs in 1960 to 4.6 lbs in 1993. Production increased from 6.9 billion lbs ready-to-cook in the early 1960s to 35.8 billion lbs in the 1990s. Automated, in-the-egg injection system developed which eliminates manual vaccination of newly hatched broiler chicken, 2/3s of U.S. broiler chicks treated this way by 1996. Production increases are brought about by the vertical integration of broiler production in the 1960s and 70s.<sup>7</sup> In this vertically integrated structure, the packing company or integrator, purchases breeding stock to produce hatching eggs. The integrator then hatches baby chicks. It also operates a specialized feed mill that mixes rations for raising chicks. The actual raising of chicks, however, is done by contract producers (growers). Baby chicks, feed, medical services, and advice are provided by the integrator. Chicken houses and labor are provided by the grower. Chickens are owned by the integrator who harvests them at maturity. Growers are paid based on their relative performance so growers do not bear price risk or production risks which affect every producer (weather, etc.).<sup>7</sup>

**Processing/Marketing:** Value-added production allows processors to increase the product's value and make grain prices less of a factor in meat profits, expand margins and creates greater margin stability.<sup>2,8</sup> Value added is defined as further-processed products beyond ready-to-cook and cut-up pieces; value addition started as an outlet for pieces resulting from cut-up operations early products were poultry rolls, pot pies, etc.; next stage of value-added products focused on further convenience and health aspects and included products such as rotisserie and low-fat products. Chicken wings tell the story of the industry, for years they were considered a nearly useless by-product but the market exploded when buffalo wings were developed.<sup>9</sup> Wide array of flavors being used in poultry such as oven roasted, honey flavored, hickory smoked, peppered, mesquite.

**Food Safety:** Tremendous growth in production/demand leads to a crisis for poultry industry in the late 1970s. The industry needs to increase processing speeds. In 1978, regulations allowed the poultry industry to wash rather than trim chicken and to speed up the production lines.<sup>10</sup> Practice has been controversial characterized by some as the birds swimming in "fecal soup".<sup>11</sup> "60 Minutes" show on poultry processing raises concerns about disease spread caused by processing techniques. Irradiation is approved for poultry in 1990 by FDA and 1992 by FSIS.

**Consolidation:** In 1989, Tysons (the number 1 processor) brought out Holly Farms then the # 3 processor. Mergers and acquisitions continued in the 1990s with 20 mergers completed in each of 1994 and 1995. In 1998, Tyson acquired Hudson Foods the 5th largest poultry producer. Consolidations have left many broiler growers with only one processor operating in their region. Poultry growers formed the National Contract Poultry Growers Association in 1991/1992 to counter the market power of these consolidated processors.

**Environmental issues:** In the 1980s and 1990s several spills from processing

plants occur which overwhelm local sewage treatment plants and raise concerns. Concerns about nutrient run-off from farms are fueled by Pfiesteria outbreak in Maryland/Virginia in 1997. The Maryland Governor proposes a plan in January 1998 to require farmers to have mandatory nutrient management plans for both nitrogen and phosphorus. Proposed bill by a Maryland Senator would require chicken producers to develop waste management plans in conjunction with their contract farmers. The other environmental issue for poultry producers relates to managing poultry carcasses. Estimated in 1995 that 5000 poultry farms in the top 25 poultry producing states are composting their mortalities, equal to approximately 12% of the commercial poultry farms in these states.<sup>12</sup> In 1991, Perdue farms joined the state of Delaware in recommending composting as the preferred, more environmentally sound method of managing poultry carcasses. Perdue installed composting equipment in all the new poultry houses of its growers. Pilgrim's Pride will change its grower contracts in 1998 to require the implementation of best management practices relating to the management of poultry litter and poultry mortality such as incineration, composting, or rendering to handle dead birds.<sup>13</sup> Poultry litter applied to the land must follow guidelines to assure that there is no negative environmental impact;

**Alternative Production:** Joel Salatin publishes book in 1993 on raising poultry on pastures. USDA-SARE (Sustainable Agriculture Research and Education program) sponsors farmers to experiment with pastured poultry production.<sup>14</sup> In a pasture system, poultry are raised on floor less pens which are moved daily to fresh pasture. Chickens are then processed on-farm and direct-marketed to customers.

**Exports:** Exports increase from approximately 2% of total marketings in the 1960s to over 15% of total marketings by 1997. Exports balance supply/demand between breast meat and leg meat. Leg quarters are the primary product being sold in international markets. Two major markets are Russia and China. Increase in Russian demand is due to change over to a market economy which precipitated rapid and large declines in livestock inventories. China's rising poultry imports are a consequence of increasing economic growth and higher personal incomes. Increased reliance on exports makes the industry more sensitive to economic and political changes worldwide. Adds a degree of potential instability to the domestic broiler industry, the sudden loss of any major market would be a major blow to the industry.

### **Uncertainties For The Future (Broiler)**

**Environmental issues:** Can the industry satisfactorily address the concerns raised about waste particularly about nutrient run-off? Environmentalists fear that industry expansion and manure "mountains" have offset improvements gained through treatment of wastewater in processing plants<sup>11</sup>. Critics contend that chicken waste products being washed into lakes, etc. are building up phosphorus and nitrogen levels (nutrification) which provides a bountiful food supply for algae. EPA reports that nationally confined

animal feedlot runoff contributes to 7 percent of lake and 13 percent of river impairments.<sup>15</sup> Industry questions whether manure run-off from farms is a primary contributing factor in groundwater or surface water contamination. Coastal Zone Act 1990 Amendments provided the first federal regulations to address nonpoint source pollution from agriculture; CZARA mandated that animal waste measures include retention ponds, solids separation basins, vegetative practices, such as filter strips between production facilities and nearby surface waters.

**Consumption:** Is growth in consumption leveling off? Broiler consumption in the U.S. rose dramatically during the 1980s and most of the 1990s. There are signs that the market is maturing and leveling off.<sup>16</sup>

**Food safety:** Will the new USDA inspection systems (HACCP) work and will it meet demands for greater inspection of poultry products? Will new techniques such as irradiation be used? Critics have contended that inspection of poultry products is not as rigorous as inspection of meat products. High-tech, fast-paced production lines heighten fecal contamination.<sup>11</sup> Outbreaks of salmonella have been of concern, however, chicken consumption has continued to increase.

**Drug availability:** Will concerns about antimicrobial resistance, etc. reduce the availability of drugs for use during poultry production?

**Reliance on exports:** Will exports continue to increase? Supporters argue that, “The American poultry industry is among the best positioned in the world to take advantage of this surging market because of its vast processing capacity, as well as easy access to high-tech global distribution networks and surplus grain supplies”.<sup>17</sup> Irradiation may help expand overseas poultry markets as some countries are increasing testing requirements for bacteria in imported foods and enforcing zero-tolerance standards for salmonella on poultry (Indonesia, Greece).<sup>3</sup> Irradiation can also increase shelf life and make it possible to ship some products as fresh instead of frozen. India potential market as non-tariff import restrictions are lifted in the next 5 years.<sup>13</sup>

**Animal welfare issues:** Can industry overcome animal welfare/rights concerns about factory farming methods. Critics argue that, “Efficiency is not a word that should be used in connection with producing food from animals”.<sup>18,19</sup> Industry contends that controlled buildings allow chickens to be handled better, provides for more direct observation of the animals and greater ability to protect animals and workers from weather extremes. Alternative production techniques such as pastured poultry may offer alternatives to factory production.

**Grower relations:** Can industry overcome concerns about treatment of growers? Critics categorize contract between growers and processors as one which makes farmers virtual serfs on their own land.<sup>20</sup> Because of the high level of concentration in the industry, growers worry about their ability to obtain fair prices. Growers also worry about requirements from processors for them to upgrade their equipment without any extra money being paid by the processors.<sup>21</sup> Poultry growers provide one-half of the entire capital needed to produce U.S. poultry.<sup>22</sup> Industry contends that in the contracts

the processors take on much of the production risk<sup>7</sup>.

### **Timeline of Events (Turkey)**

#### 1960s

- Production averages 1.7 billion pounds ready-to-cook annually from 1960-1964, 2.1 billion lbs ready-to-cook from 1965-1969 (*see graph 1.36*)
- Average Live weight at slaughter 15.8 lbs 1960-1964 and 17.1 lbs 1965-1969 (*see graph 1.37*)
- Per capita consumption averages 7 lbs 1960-1965, 8 lbs 1966-1969

#### 1970s

- Production averages 2.4 billion pounds ready-to-cook annually from 1970-1974, 2.6 billion lbs ready-to-cook from 1975-1979 (*see graph 1.36*)
- 60% of production under contract in 1970, 12% produced on integrator farms
- 7271 farms with sales in 1978 (*see graph 1.34*)
- Average head sold per farm 23417 in 1978 (*see graph 1.35*)
- Average Live weight at slaughter increases to 18.0 lbs 1970-1974 and 18.4 lbs 1975-1979 (*see graph 1.37*)
- Per capita consumption averages 8.5 lbs 1970-1975, 9 lbs 1976-1979
- 2-3% of production exported during the 1970s (*see graph 1.38*)

#### 1980s

- Production averages 3.2 billion pounds ready-to-cook annually from 1980-1984, 4.6 billion lbs ready-to-cook from 1985-1989 (*see graph 1.36*)
- 6838 farms with sales in 1982 dropping to 6813 in 1987 (*see graph 1.34*)
- Average head sold per farm increases to 22944 in 1982 and 33121 in 1987 (*see graph 1.35*)
- Average Live weight at slaughter increases to 19.3 lbs 1980-1984 and 20.5 lbs 1985-1989 (*see graph 1.37*)
- Top 5 producing states in 1983: North Carolina, Minnesota, California, Missouri, and Arkansas
- 2% of production is exported during the early 1980s, drops to less than 1% in 1986 and 1987 (*see graph 1.38*)
- Per capita consumption averages 10.9 lbs in 1980-1985, 14.7 lbs 1986-1989

#### 1990s

- Production averages 7.7 billion pounds ready-to-cook annually from 1990-1995 (*see graph 1.36*)
- Farms with sales drops to 5658 in 1992 (*see graph 1.34*)
- Average head sold per farm increases to 44627 in 1992 (*see graph 1.35*)

### **POULTRY & EGGS**

- Average Live weight at slaughter increases to 21.6 lbs 1990-1993 (*see graph 1.37*)
- 65% of production under contract in 1990, 28% produced on integrator owned farms
- Top producing states: North Carolina, Minnesota, Arkansas, Virginia
- Per capita consumption 19 lbs (1995)
- 44% of all turkey ends up in sandwiches (mid-1990s)<sup>23</sup>
- 1.2% of production is exported in 1990, exports increase to nearly 7% of total production by 1995 (*see graph 1.38*)
- Spiking mortality disease hits turkey producers in the southeast. Deaths reached 40% of stock in some farms

### **Trends (Turkey)**

**Consumption:** Turkey consumption increases from 7 pounds per capita in the early 1960s to 19 lbs per capita in 1995. Consumption is sparked by studies promoting chicken as a healthy alternative to red meat. Consumption is also sparked by industry marketing of convenience and value-added products such as cut parts, ground products, flavored/marinated products, and frozen nuggets and patties. Development of low- and non-fat meat products is currently a top priority of meat and poultry processors. Challenge for turkey processors is to become part of the week-night dinner menu and not just a holiday item.

**Production:** The number of farms with turkey sales drops from 7271 in 1978 to 5658 by 1992, however, the number of turkeys sold per farm increases from 23,417 in 1978 to 44,627 in 1992. Average Live weight at slaughter increases from 15.8 lbs in the early 1960s to nearly 22 lbs in the early 1990s. Production increased from 1.7 billion lbs ready-to-cook in the early 1960s to 7.7 billion pounds in the 1990s. Most turkey's are grown uncaged, in barns.

**Alternative production:** Plainville Farms, the largest turkey grower in New York/New England, is the first major turkey grower to raise hens on a regimen without animal by-products in their diet<sup>24</sup>. Canola oil replaces the meat and bone meal normally fed to turkeys. Antibiotics will be given only if required, not as an ongoing preventative measure. Turkeys are free to roam in open-sided, naturally ventilated buildings. USDA permits Plainville to use the term Animal Friendly Practices on its products.

**Processing/products:** Strongest trend in the turkey market is further processing, the principle that "every turkey, properly cooked and formed is a little chameleon"<sup>25</sup>. New products launched: turkey mignon, turkey ham, turkey pastrami, hot dogs, turkey sausage, ground turkey burgers, gourmet turkey breast roast in 6 flavors<sup>26</sup>. Turkey competes with pork in the sausage market. Boston Market and KFC have expanded their menus to include turkey. Wide array of flavors being used in poultry such as oven roasted, honey flavored, hickory smoked, peppered, mesquite. Little automation in turkey plants due to variation in sizes of turkeys.

### **POULTRY & EGGS**



**Exports:** Exports have grown from 2% of total production in the 1970s to nearly 7% of total production in 1995. Much of the growth in turkey exports has been through shipments of lower valued turkey products which compete directly with pork products for use in sausage and other processed product fabrication.<sup>13</sup>

**Environmental Issues:** Environmental concerns are similar to those noted above for the broiler industry.<sup>27</sup> Entrepreneurs are experimenting with products made from manure, one such product is Sustane. Sustane is a granulated, dehydrated manure compost which has garnered the turfgrass industry market (golf courses, etc.).<sup>28</sup> It is also marketed to horticulture and organic agriculture industries.

### Uncertainties For The Future (Turkey)

**Consumption:** “Can turkey become part of the week-night dinner menu?”, “Is turkey truly the other white meat”.<sup>29,23</sup> The challenge for the turkey industry has been to create products that consumers would view as an everyday item; turkey for so many years was considered a holiday item. Cooking a whole turkey is not convenient.

**Food safety:** see discussion for broilers above

**Drug availability:** see discussion for broilers above

**Reliance on exports:** see discussion for broilers above

**Environmental issues:** see discussion for broilers above

### Timeline of Events (Eggs)

#### 1960s

- Production averages 63.3 billion eggs annually from 1960-1964, 67.4 billion from 1965-1969 (*see graph 1.32*)
- Per capita consumption approximately 320 eggs per year (early 1960s)
- 470,832 farms with layers in 1969 (*see graph 1.30*)
- 632 layers per farm in 1969 (*see graph 1.31*)
- Production per 100 hens averaged 54.8 per day in 1960-1964 and increased to 58.1 from 1965-1969 (*see graph 1.33*)
- Pullorum-typhoid free flocks developed

#### 1970s

- Production averages 67.7 billion eggs annually from 1970-1974, 66.1 billion from 1975-1979 (*see graph 1.32*)
- Number of farms with layers drops to 304,738 by 1974 and to 161,817 by 1978 (*see graph 1.30*)
- Number of layers per farm increases from 885 in 1974 to 1152 in 1978 (*see graph*

### 1.31)

- Production per 100 hens increases to 60.2 eggs on average per day in 1970-1974 and then to 64.0 eggs per day from 1975-1979 (*see graph 1.33*)
- 35% of market eggs produced under contract in 1970, 20% produced on integrator owned farms
- Per capita consumption drops to 274 eggs annually (late 1970s)
- Egg Beaters a cholesterol and fat-free egg white product introduced (1973)

### 1980s

- Production averages 69.1 billion eggs annually from 1980-1984, 68.9 billion from 1985-1989 (*see graph 1.32*)
- Number of farms with layers drops to 146,957 by 1982 and to 89,922 by 1987 (*see graph 1.30*)
- Number of layers per farm increases from 1166 in 1982 to 1862 in 1987 (*see graph 1.31*) Production per 100 hens increases to 66.7 eggs on average per day in 1980-1984 and then to 68.1 eggs per day from 1985-1989 (*see graph 1.33*)
- Easy Eggs salmonella-proof liquid egg with a 10-week shelf life marketed
- Test-marketing pasteurized shell eggs (1996)
- Between 1985 and 1995, 582 salmonella enteritidis outbreaks
- Per capita consumption of eggs continues to drop, sinking to 249 eggs annually (late 1980s)

### 1990s

- Production averages 69.9 billion eggs annually from 1990-1993 (*see graph 1.32*)
- Salmonella enteritidis control programs and egg quality assurance programs begun (early 1990s)<sup>30</sup>
- Number of farms with layers drops to 70,623 by 1992 (*see graph 1.30*)
- Number of layers per farm increases to 2,985 by 1992 (*see graph 1.31*)
- Production per 100 hens increases to 70.7 eggs on average per day (1990-1993) (*see graph 1.33*)
- 43% of market eggs produced under contract in 1990, 50% produced on integrator owned farms
- Simply Eggs liquid, pasteurized, low cholesterol egg introduced; product contains egg yolks (1992)
- Per capita consumption drops to 236 eggs annually (1990-1995)

## Trends (Egg Industry)

**Consumption:** Egg consumption drops from 320 eggs per capita in the early 1960s to 236 eggs per capita in the mid-1990s. Decreased consumption is related to studies linking cholesterol to heart disease.<sup>31</sup>

**Production:** The number of farms with layers drops from 470,832 in 1969 to

## POULTRY & EGGS

70,623 by 1992, however, the number of layers per farm increases from 632 in 1969 to 2,985 in 1992. Production per 100 hens increases from 55 per day in the early 1960s to 71 per day in by the mid 1990s. Production increases slightly from 63.3 billion eggs in the early 1960s to 69.9 billion by the early 1990s.

**Marketing:** Responding to the health concerns raised about cholesterol, new cholesterol free egg products have been introduced.<sup>32</sup>

**Food Safety:** Concerns about salmonella have led to recommendations by the CDC that food service and institutions use pasteurized eggs, particularly when high-risk populations are served or when recipes call for pooling shell eggs.<sup>30</sup> Several major companies, such as United and American airlines and Marriott and Hyatt hotels, and Burger King and McDonalds, have eliminated shell eggs in recipes that call for raw or lightly cooked eggs.

### **Uncertainties For The Future (Eggs)**

**Consumption:** Will egg consumption continue downward trend? Will substitute products reverse the downward trend?

**Food safety:** see discussion under broilers

**Environmental issues:** see discussion under broilers

**Animal welfare issues:** see discussion under broilers

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chart1



chart2





chart3



chart4



chart5

