



# Wheat Objective Yield Survey Data, 1993 - 2007

Released May 30, 2008, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, U.S. Department of Agriculture. For information on *Wheat Objective Yield Survey Data, 1993 - 2007* call Todd Ballard at 202-720-8068, office hours 7:00 a.m. to 3:30 p.m. ET.

## Wheat Objective Yield Data, 1993-2007

The National Agricultural Statistics Service (NASS) conducts a Wheat Objective Yield Survey for three major classes of wheat; winter, Durum, and other spring. Each is treated as a separate survey, however, with identical methodologies. Winter wheat objective yield surveys are conducted in 10 major winter wheat producing States (Colorado, Illinois, Kansas, Missouri, Montana, Nebraska, Ohio, Oklahoma, Texas, and Washington). Other spring wheat is measured in Minnesota, Montana, and North Dakota. The Durum survey is done in North Dakota only. Approximately 1,500 samples are allocated to the winter wheat States, 300 to the spring wheat States and 140 for Durum. Forecasts of winter wheat acreage, yield, and production are published in the *Crop Production* report monthly from May through August with final estimates published in the September *Small Grain Annual Summary*. Forecasts for other spring and Durum are published in the July and August *Crop Production* reports with final estimates published in the September *Small Grain Annual Summary*. The May objective yield survey is only conducted in Texas, Oklahoma, and Kansas.

The focus of this report for winter wheat is limited to the major States (Colorado, Illinois, Kansas, Missouri, Montana, Nebraska, Ohio, Oklahoma, Texas, and Washington), since a continuous data series exists for these States for the 15-year reference period. These ten States accounted for 69 percent of all winter wheat produced in 2007. For other spring wheat, this report will focus on the three major States (Minnesota, Montana, and North Dakota) which accounted for 77% of all other spring wheat produced in 2007.

An objective yield sample consists of two independently located plots, each of which consists of three parallel 21.6 inch sections of row. Counts, measurements, and observations of plant characteristics are made within these plots during the monthly survey periods. Just before farmer harvest, both units are hand harvested by an enumerator. A sample of heads is sent to a NASS laboratory where spikelets and grains are counted. A final gross yield is computed from this data. The yield is measured as bushels of wheat per acre at 12 percent moisture. Harvest loss is measured in separate units located near the monthly yield plots. State level indications are produced from the objective yield data. Regional level indications are derived by weighting the State data by harvested acres.

This report examines the changes in the objective yield indicated number of heads per square foot over the last 15 years. The report also looks at the changes in the derived weight per head, which is calculated by dividing the final Agricultural Statistics Board (ASB) yield by the objective yield survey indicated head count. The State level objective yield data in this report are published annually in the September *Small Grains Annual Summary* report.

### Note

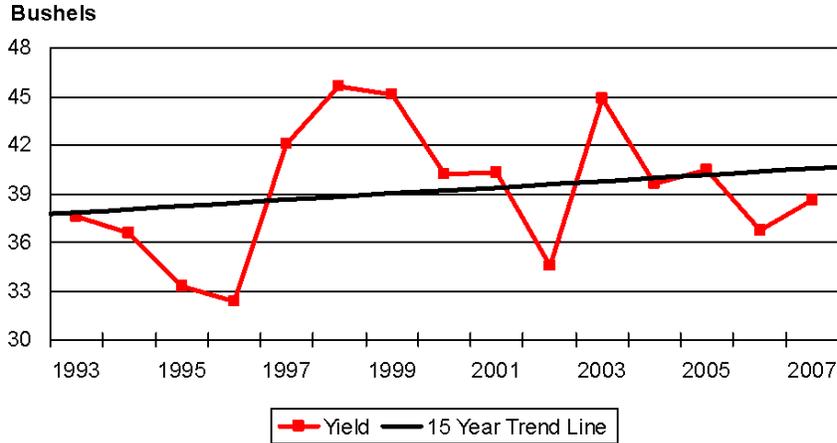
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**Agricultural Statistics Board Final Estimates - 10 Major Winter Wheat States Combined**

Winter wheat production in the ten major winter wheat objective yield States in 2007 was 18 percent lower than 1993. This decrease is due to the lower harvested area. The average winter wheat yield in the ten major States climbed 3 percent between 1993 and 2007 (Chart 1). The 15-year trend yield, based on the final ASB yields over the last 15 years, rose from 37.8 bushels per acre in 1993 to 40.6 bushels per acre in 2007. This represents an increase of 7 percent, or an average increase of 0.19 bushel per year between 1993 and 2007.

Chart 1

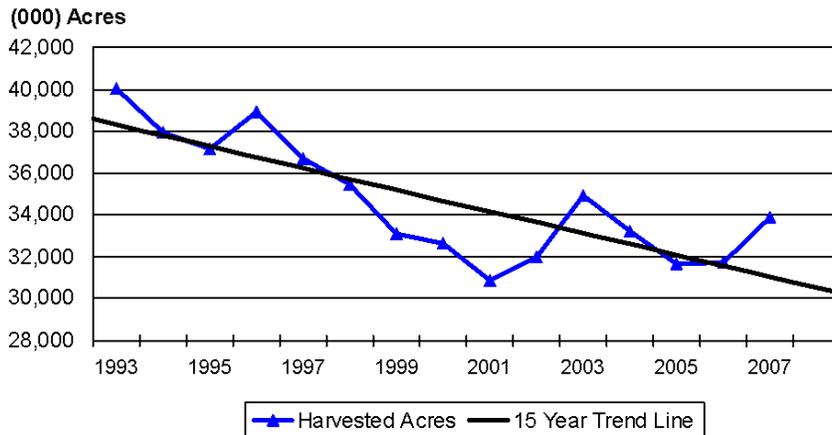
**Winter Wheat Yield (ASB)  
10 Major States Combined**



Harvested acres for the ten States totaled 26.6 million acres in 2007, down 21 percent from 1993 (Chart 2). The 15-year trend line also shows a significant decrease of 25 percent between 1993 and 2007.

Chart 2

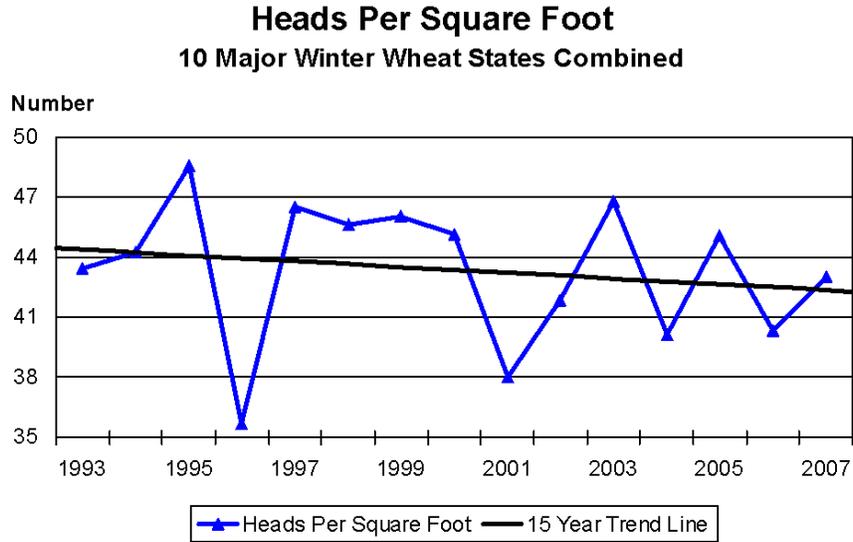
**Winter Wheat Harvested Acres (ASB)  
10 Major States Combined**



### Winter Wheat Heads Per Square Foot

The objective yield indicated heads per square foot have decreased slightly over the last 15 years and were quite variable from year to year. The ten objective yield States averaged 43.02 heads per square foot in 2007, down 1 percent from the 43.40 heads per square foot in 1993 (Chart 3). The highest average heads per square foot for the ten major States combined (since the data series began in 1989) occurred in 1995, at 48.57. The 15-year trend line shows the heads per square foot decreased 5 percent, from 44.38 heads per square foot in 1993 to 42.35 heads per square foot in 2007.

Chart 3



Charts 4 and 5 show the heads per square foot, by State, for the ten major States. The States are broken into two charts for clarity; one for the five States with the highest average head count and one for the five States with the lowest average head count. Illinois led all States in head counts over the last 15 years, averaging 53.46 heads per square foot between 1993 and 2007. Ohio was the second leading State, averaging 52.59 heads per square foot over the same time period. Texas recorded the lowest average head count from 1993 to 2007, with an average of 35.45 heads per square foot.

Chart 4

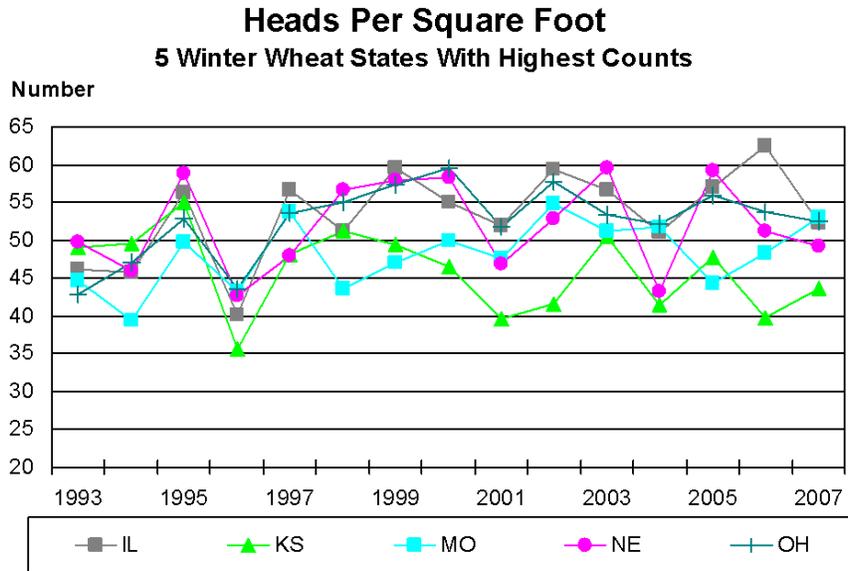
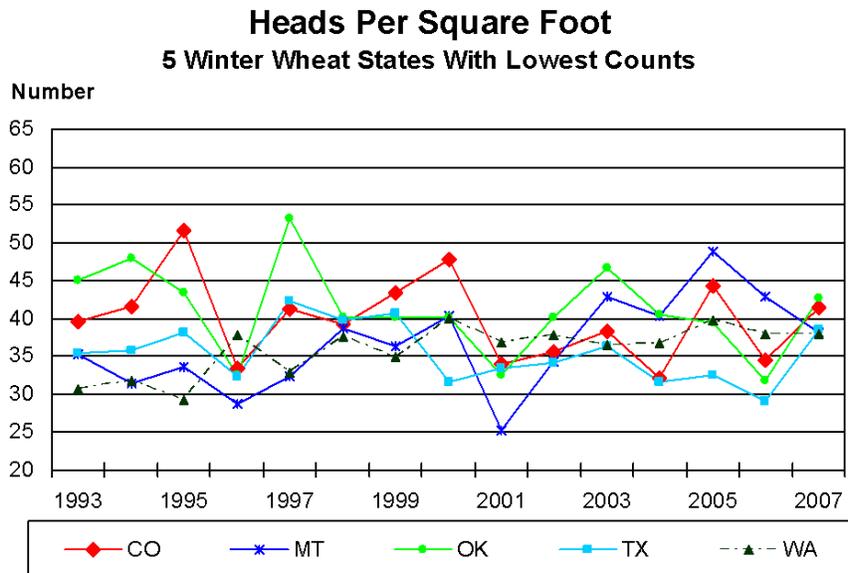


Chart 5



**Derived Head Weight - 10 Major Winter Wheat States Combined**

The derived head weight, which is calculated by dividing the combined ten State average ASB yield by the average heads per square foot for this region (converted to grams per head), has shown a slight increase over the past 15 years. The derived head weight for the ten major States for 2007, at 0.561 grams per head, was up 3 percent from 1993. So, while the heads per square foot have trended downward slightly from 1993 to 2007, the derived head weight has trended upward slightly (Chart 6).

The 15-year trend line for the derived head weight between 1993 and 2007 indicates a 12 percent increase, from 0.536 grams per head in 1993 to 0.598 grams per head in 2007 (Chart 7). The record low (since 1989) derived head weight occurred in 1995, when the hard red winter crop was damaged by freeze.

Chart 6

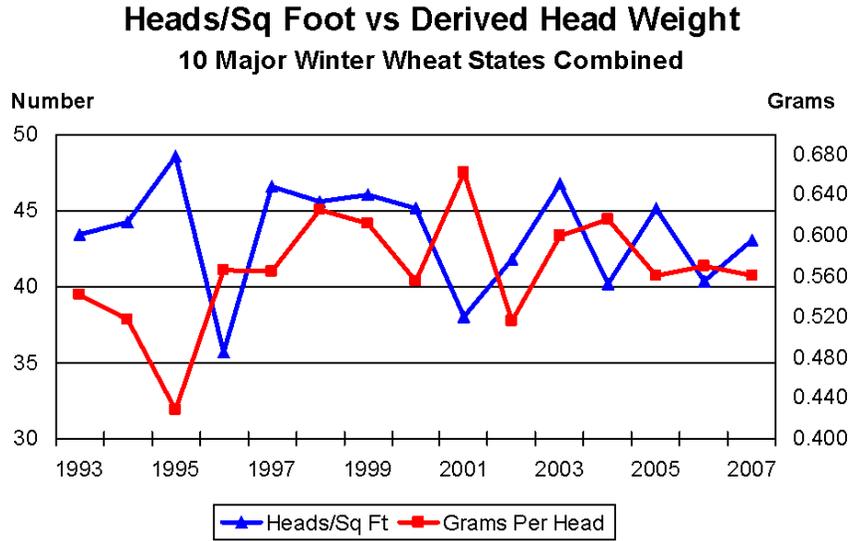
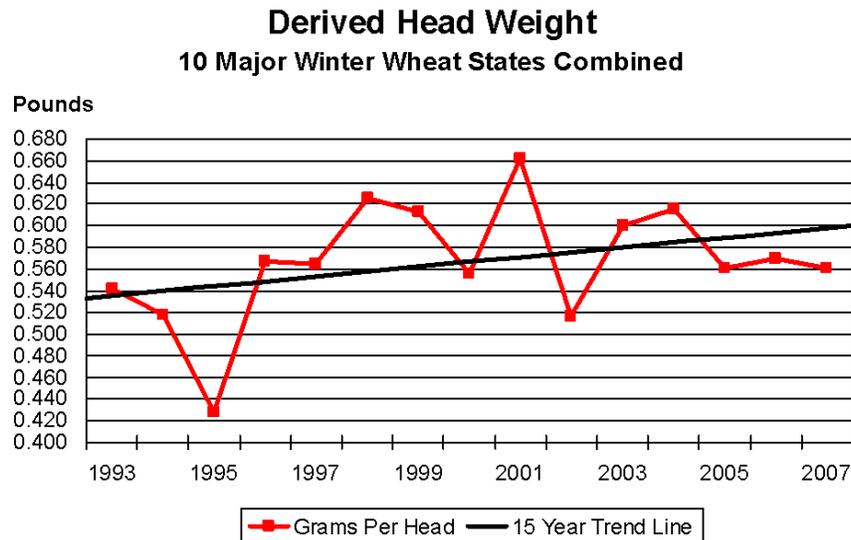


Chart 7

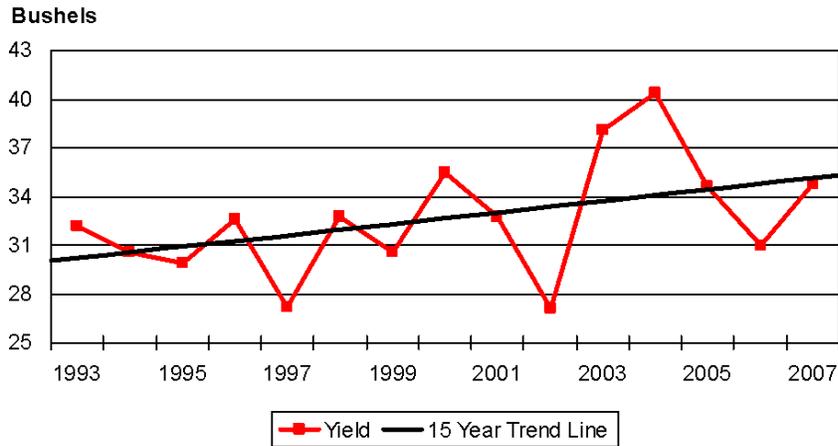


**Agricultural Statistics Board Final Estimates - 3 Major Spring Wheat States Combined**

Spring wheat production in the three major spring wheat objective yield States in 2007 was 18 percent lower than 1993. This decrease is due to the lower harvested area. The average spring wheat yield in the three major States climbed 8 percent between 1993 and 2007 (Chart 8). The 15-year trend yield, based on the final ASB yields over the last 15 years, rose from 30.2 bushels per acre in 1993 to 35.1 bushels per acre in 2007. This represents an increase of 16 percent, or an average increase of 0.33 bushel per year between 1993 and 2007.

Chart 8

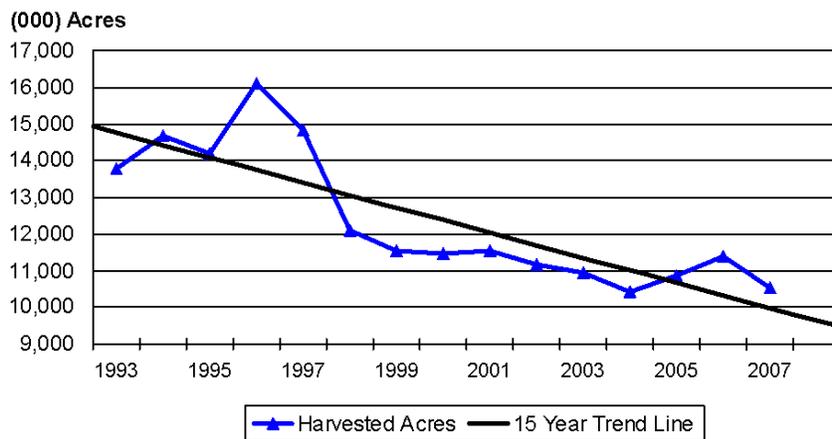
**Spring Wheat Yield (ASB)  
3 Major States Combined**



Harvested acres for the three States totaled 10.6 million acres in 2007, down 24 percent from 1993 (Chart 9). The 15-year trend line also shows a decrease of 32 percent between 1993 and 2007.

Chart 9

**Spring Wheat Harvested Acres (ASB)  
3 Major States Combined**



**Spring Wheat Heads Per Square Foot**

The objective yield indicated heads per square foot have increased over the last 15 years. The three objective yield States averaged 41.01 heads per square foot in 2007, up 1 percent from the 40.46 heads per square foot in 1993 (Chart 10). The highest average heads per square foot for the three major States combined (since the data series began in 1989) occurred in 2005, at 43.00. The 15-year trend line shows the heads per square foot increased 12 percent, from 36.57 heads per square foot in 1993 to 40.79 heads per square foot in 2007.

Chart 10

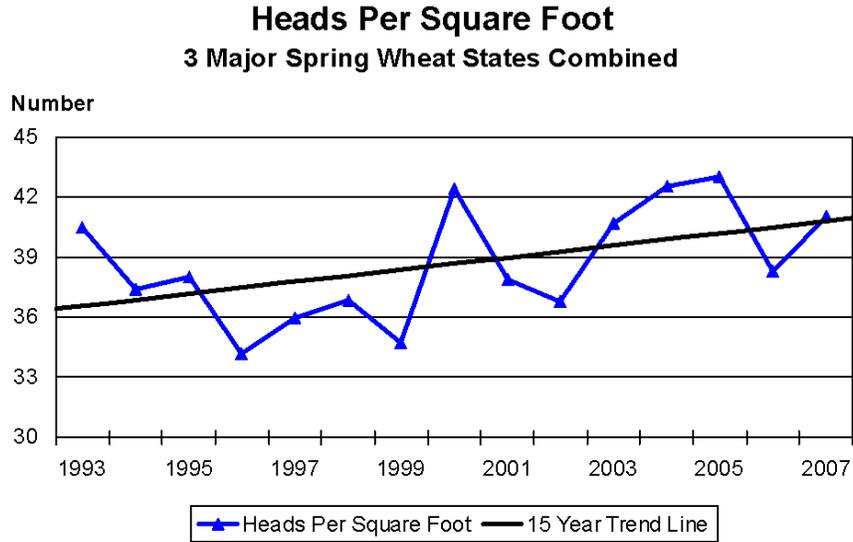
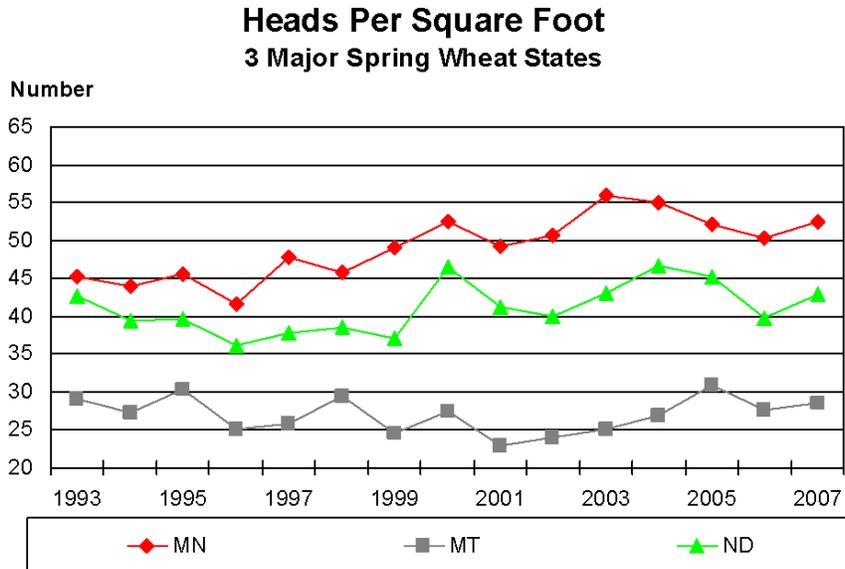


Chart 11 shows the heads per square foot, by State, for the three major States. Minnesota led all States in head count over the last 15 years, averaging 49.14 heads per square foot between 1993 and 2007. North Dakota was the second leading State, averaging 41.1 heads per square foot over the same time period. Montana recorded the lowest average head count from 1993 to 2007, with an average of 26.95 heads per square foot.

Chart 11



### Derived Head Weight - 3 Major Spring Wheat States Combined

The derived head weight, which is calculated by dividing the combined three State average ASB yield by the average heads per square foot for this region (converted to grams per head), has shown an increase over the past 15 years. The derived head weight for the three major States for 2007, at 0.530 grams per head, was up 7 percent from 1993. Heads per square foot and the derived head weight have both gone up from 1993 to 2007 (Chart 12) resulting in yields increasing over the same period.

The 15-year trend line for the derived head weight between 1993 and 2007 indicates a 4 percent increase, from 0.518 grams per head in 1993 to 0.538 grams per head in 2007 (Chart 13). The record low (since 1989) derived head weight occurred in 2002, when the hot, dry weather affected crop development.

Chart 12

### Heads/Sq Foot vs Derived Head Weight 3 Major States Combined

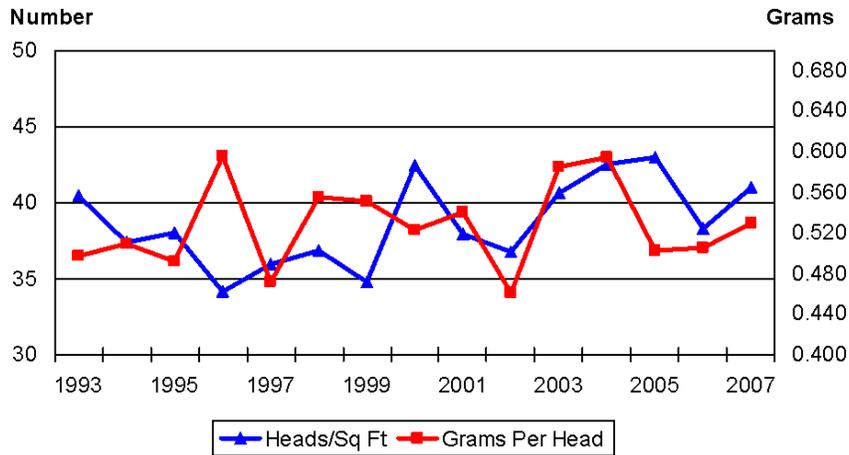
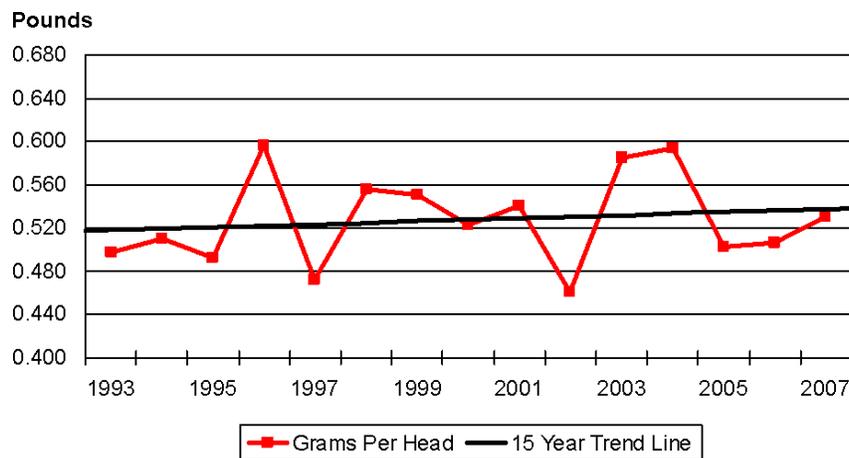


Chart 13

### Derived Head Weight 3 Major Spring Wheat States Combined



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