

# 2005 Harvest Year Report

for USCHI's

## Custom Harvester Analysis and Management Program (CHAMP)

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U.S. Custom Harvesters Inc.

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**Background and Structure**

At the urging of a number of USCHI (U.S. Custom Harvesters, Inc.) members, a pilot financial management program was initiated in January, 1998. The program was soon coined CHAMP, for Custom Harvester Analysis and Management Program. CHAMP, conducted by two economists at Kansas State University (K-State), Kevin Dhuyvetter and Terry Kastens, relies chiefly on results from a participant mail-in survey. The primary purpose of the program is to provide participants (CHAMP members) with important economic and production information about themselves. In this program, each participating firm is able to evaluate its production and economic performance relative to the CHAMP group as a whole, with individual firm information remaining confidential.

CHAMP is designed to be dynamic, so that it's accuracy and relevance can improve over time. Besides immediately providing useful information to individual participants, this program provides custom harvesting industry benchmarks and trend information over time and is instrumental in guiding future government lobbying efforts.

Each year, following compilation of the survey information in late February, each CHAMP member receives a report showing how it stands relative to group benchmarks or averages. In that report, individual cost categories are reported so participants can see where best to focus their management efforts to increase profits. Additionally, this written report, which depicts only aggregate values of interest (not values for individual members) is made publicly available each year. At USCHI's annual spring meeting, Dhuyvetter and Kastens present survey

results to CHAMP and USCHI members and conduct short one-on-one consultations with individual CHAMP members. Historical CHAMP harvest reports and participation information are available by clicking on the CHAMP logo at [www.aganalysisplus.com](http://www.aganalysisplus.com). Also, these reports can be found at USCHI's website or at [www.agmanager.info](http://www.agmanager.info).

A formal CHAMP guidance or advisory committee was established by USCHI in 1998. The advisory committee's main role was to serve as a liaison between CHAMP members and the K-State economists conducting the program – ensuring that members' economic analyses needs are being met over time. The committee also served as an important link between CHAMP membership and the overall USCHI membership in general, and USCHI's governing board in particular. More specifically, the CHAMP committee was to help 1) devise the questions asked in the annual mail-in survey, 2) determine arrangements for funding the CHAMP program, and 3) describe and promote the program to other custom harvesters. In more recent years the committee idea has been less formalized. Function 1 above has been ensured through various one-on-one interactions between CHAMP members and the K-State team, with meaningful changes in procedures evolving over time to improve the usefulness of the CHAMP analysis and report. Functions 2 and 3 above generally have been handled by CHAMP members directly in their routine involvement with the USCHI board.

USCHI members initiated CHAMP and USCHI strongly supports it. For the 1997 - 1999 harvest years, K-State charged \$150 per CHAMP member annually. However, only \$75 was paid directly by the CHAMP

member, with the balance (\$75) covered by USCHI. For 2000-2003 harvest years, through an annual payment of \$8,700, John Deere has underwritten the fixed costs associated with the CHAMP program. Beginning with 2004, AGCO has picked up the annual \$8,700 payment. Since 2000, and for 2004, CHAMP member fees are \$225 each. USCHI covers \$75 of the \$225 – for CHAMP members who are also USCHI members. Although AGCO and USCHI financially support CHAMP, to ensure confidentiality, completed surveys are viewed by only Dhuyvetter and Kastens.

### **Interpreting Survey Results**

Numerical inputs to our analysis sometimes change based on information attained from the one-on-one CHAMP contacts at USCHI's annual meeting. Also, other occasional historical numerical errors emerge over time. Hence, the values shown in this report are sometimes revised in our databases over time. Yet, to ensure continuity over time for this series of reports, historical values shown in the text portion of this current report generally are merely the same ones shown in previous years' reports, rather than revised numbers. Consequently, it is possible that some of the historical numbers you may see us present to audiences could deviate slightly from the historical numbers shown here or in prior reports; but, deviations should not be large. Indeed, any graphical depictions of historical trends shown following the text of this report actually use revised data when available, and hence may be slightly inconsistent with the text part of this report.

### **Changes for 2005**

Shortly after the March 2005 meeting pertaining to the 2004 harvest year, called mainly to our attention by one CHAMP member, we elected to make a change regarding how interest is "charged" to

members assets. Historically, we had charged interest against not only machinery, etc., but also against cash, savings, and accounts receivable. Our position had been that such assets could indeed be used elsewhere and hence should have an opportunity interest charge assigned. But, the problem was that some members, especially those who choose to operate with little debt, may have large cash balances at the beginning of the year, trade combines with that cash shortly after January 1, and again end up with large cash balances at the end of the year. Because we have generally charged interest on combines purchased after January 1 and used in harvest, this approach tended to somewhat "double count" interest for such members. Accordingly, our "fix" was to no longer assign interest on cash balances. Though the fix itself can induce other distortions, we believed it to be more appropriate. Accordingly, we went back and changed not only 2004's numbers for each member, but also their historical ones in line with our change in procedure.

A second change we made at the same time as the one just listed was to no longer charge interest and depreciation on that portion of a member's equipment that was used outside of the harvesting operation. This change only impacts a member's results if that member distinguishes miles and hours for equipment used inside and outside of the harvesting operation. Though this change did not impact many members (since few have traditionally distinguished miles and hours), it did impact a handful materially.

A third change we made for 2005 was as follows. Historically we have used the average surveyed interest rate as our assigned interest rate to all members. Now, we use each member's stated interest rate on that member's debt but use the overall average interest rate on that member's equity. This was a change that did not

greatly impact many members. Yet, it was a way to more appropriately capture the benefit to those members who may have acquired concessionary financing (say a low SBA interest rate), while not inappropriately assign such a low rate to their equity (since the interest opportunity cost of their equity would likely be higher). Unlike for the first two changes discussed above, this change was not retroactive into historical data.

A fourth change for 2005 was that each combine is no longer assigned a platform. That means that we can now better distinguish combine and platform depreciation. This change was not made retroactively.

Other changes made for the 2005 harvest year is that we no longer ask members to report percent of grain hauled to the farm. Nor, do we ask for number of fields or the portion of meals home-prepared.

Still other changes made for 2005 harvest year were more for improving efficiency of data collection. For example, we provided a spreadsheet-based tool for tracking harvest revenue during harvest in 2005.

### Survey Results

CHAMP members were asked to provide detailed production and financial information, some of which has not typically been compiled by custom harvesting firms. Additionally, they were asked to prorate financial information between the custom harvesting business and any side business. For 2005, 23 surveys were returned. Although such “few” responses may be inadequate for industry representation or certain intense statistical analyses, that sample is adequate to garner some understanding of custom harvesters’ economic performance.

As with the previous CHAMP surveys and

mail-in surveys in general, in this now-web-based survey there was plenty of room for error. Most surveys required one or more follow-up phone calls to clarify information provided. To maximize the number of useable responses in this analysis, some judgement had to be exercised in modifying and interpolating survey responses. In all such cases, the judgement was a joint effort of both Kevin Dhuyvetter and Terry Kastens – individuals who have extensive experience in working with farm and custom harvester financial analyses. However, because of CHAMP member efforts to improve previous years’ surveys, and because many surveys are completed by repeat members (10 members participated in all 9 years and only 1 was totally new in 2005), the judgement required of the analysts continues to diminish. Surveys from repeat members indicate there is a “learning curve” associated with filling out the forms, and that a better understanding of the economic principles of the business results, which should mean improved management abilities as well.

Table 1

	no. of CHAMP members	members in for current year and prior year	members in for current year and any prior year
1997	43	-----	-----
1998	24	21	21
1999	25	18	22
2000	23	20	20
2001	20	18	19
2002	25	19	23
2003	21	20	20
2004	23	22	22
2005	23	23	22

Throughout this report, references to a particular year mean *that* harvest year, and are associated with the survey completed early in the calendar year following harvest. Unless specified otherwise, averages

reported here are firm averages. That is, some values require first averaging within a firm and then across firms. For example, reported average profit per acre is calculated by first computing profit per acre within each firm, then averaging across all responding firms. This answers the question, Randomly choosing a firm, what would I expect its profit per acre to be? Caution must be used in interpreting such results. For example, if large firms (those harvesting many acres) are profitable but small firms are not, the average profit per acre reported here could be negative even though the typical acre being harvested by the industry is harvested at a profit.

**General Information**

The first page of the 2005 survey, the Information Page, requests general information of interest to custom harvesters. Information ranged from demographics and business structure to questions designed to uncover how important custom harvesting was to a member’s overall business, as well as questions about family involvement.

Table 2

	no. of states represented by CHAMP	age of main person in charge	years in business
1997	10	47.0	23.9
1998	7	45.4	24.9
1999	6	44.9	26.3
2000	6	43.8	25.4
2001	6	45.9	26.7
2002	6	46.0	29.0
2003	6	46.6	29.5
2004	6	46.6	31.3
2005	6	48.2	32.7

CHAMP members in 2005 were located in 6 states, with most (11) in Kansas. The average age of the “main persons in charge” was 48.2 years, which was an average of 41 people (because some of the 23 CHAMP

members listed more than one person to be in charge). These ages are somewhat lower than the average age of U.S. farmers, which is regularly asserted to be in the mid 50’s.

Of the 23 2005 members, 2 operated as a partnership, 4 as an LLC, 6 as a sole-proprietorship, and 11 as a corporation. Firms appear well established, with an average number of years in business of 32.7.

Most (14 of 23) members indicated they typically run their combines 1 or 2 years. Fifteen members indicated they typically run new combines, 6 run used combines, and 2 run either or both of new and used.

In addition to custom harvesting, a majority of members (16 of 23) have sideline businesses. Farming/ranching was a sideline for 12 of the members, 10 were involved in trucking, and 3 had some other sideline business (do not add to 23 since some have more than one side business).

A repeatedly large percent of members lodge in campers or mobile homes (rather than stay in motels). These campers have become an intricate part of the equipment moved from job to job. Consequently, this question was dropped from the survey in 2003. Similarly, a question regarding percent of meals home- vs. restaurant-prepared has become less important and so dropped from the survey in 2005.

On average, across the 41 “main persons in charge,” managers indicate they allocate 70.7% of their time to the custom harvesting business. Some (27%) of the managers indicated they spent more than 80% of their time in their harvesting businesses; 22% were so-employed less than or equal to half time.

In 2005, harvesting firms spent 6.3 months in actual harvesting on average, with 7 firms spending 7 months. The number of

customers serviced by a CHAMP member ranged from 19 to 100, and averaged 44.1 (table 3).

At the harvest season peak, member harvesters employ 12.4 individuals on average, with the most common number indicated to be between 6-11 people. Of the total season-peak individuals, 31.4% were family members. On average, the typical non-family employee stays with a harvester for 1.9 seasons, with the most frequent response being 2 seasons (table 4).

Table 3

	% using mobile homes	% of restaurant meals rather than home-prepared	% of time main person allocates to harvesting	No. of customers
1997	79%	38.4%	NA	NA
1998	84%	43.4%	73.1%	33.4
1999	96%	34.0%	69.0%	39.1
2000	95%	29.1%	70.8%	38.8
2001	95%	27.5%	69.7%	37.4
2002	94%	29.6%	70.8%	40.5
2003	NA	24.6%	70.9%	42.7
2004	NA	21.7%	68.5%	44.6
2005	NA	NA	70.7%	44.1

Table 4

	season peak no. of employees	% of employees that are family	years non-family employee with business
1997	NA	NA	NA
1998	8.5	31.3%	2.0
1999	11.4	36.2%	1.9
2000	9.8	34.1%	1.7
2001	8.8	34.6%	1.8
2002	11.5	30.0%	1.8
2003	11.1	31.6%	1.8
2004	13.2	28.6%	2.1
2005	12.4	31.4%	1.9

season-peak employees, how many are foreign?" The average percentage of the calculated values across the 23 members in 2005 was 23.9%. Across the 285 total employees accounted for by the 2005 members, 33.9% were foreign.

Most (72%) members finance their combines through the dealer or manufacturer; 57% get their combine insurance the same way. With a minimum of 4.65% and a maximum of 9.50%, the average reported interest rate on loans in 2005 was 6.75%.

Table 5

	% of foreign employees (average of member percentages)	% of all employees that are foreign	not used
2004	34.1%	45.5%	xxx
2005	23.9%	33.9%	xxx

Table 6

	% that finance combines through dealer or manufacturer	% that get insurance through dealer or manufacturer	average reported interest rate
1997	NA	NA	NA
1998	76%	NA	8.90%
1999	76%	NA	8.94%
2000	77%	NA	9.32%
2001	70%	NA	7.66%
2002	81%	NA	6.55%
2003	71%	71%	6.31%
2004	67%	61%	5.94%
2005	72%	57%	6.75%

Table 7

	% of members calling year POOR	% of members calling year FAIR	% of members calling year GOOD
2005	4.35%	56.5%	39.1%

A new question was begun in 2004, "Of the

A new question (table 7) was added in 2005 which asked, Financially, would you say that 2005 was a poor, fair, or good year?

### Combine Information

The second page of the 2005 survey, the Combine Page, reports details about the combines used by CHAMP members – such as brand, model year, hours of use, and other descriptive features. In addition, start-of-year, purchase, sale, and end-of-year values of combines were also reported on this page. Information from those values provides an estimate of annual market depreciation, which averaged 10.3% across the 108 owned combines used in 2005, and by far the lowest depreciation observed during the life of the CHAMP program..

John Deere made up 74.6% of the 118 combines used for harvest in 2005, with 22.0% for Case-IH, and 3.4% for all other brands. More than half (76.3%) of the combines were of model year 2004 or newer. A large majority (91.5%) of combines were owned rather than leased (3.4%) or rented (5.1%). The Deere preference also can be seen in that 15 of 23 members (65%) ran mostly Deere combines.

Table 8

	combine market depreciation	% of combines that are JD	% of combines that are Case-IH	% of combines owned
1997	NA	58.0%	37.0%	95.0%
1998	NA	67.4%	27.2%	90.0%
1999	16.1%	63.2%	34.6%	91.0%
2000	15.1%	77.6%	22.4%	89.0%
2001	14.7%	61.3%	37.3%	89.3%
2002	14.0%	71.2%	25.4%	92.4%
2003	14.4%	65.6%	30.0%	91.1%
2004	13.3%	75.9%	21.6%	87.1%
2005	10.3%	74.6%	22.0%	91.5%

Of the 118 combines used in 2005, 88.1%

had yield monitors, and 55.1% had GPS-equipped yield monitors. Based on this small sample of combines, it appears that yield monitors are virtually a standard, and that GPS inclusion is still increasing. On the other hand, only 11 (47.8%) of the members provide *any* yield maps for their customers in 2005, and, of those that did provide yield maps, they provided for only 5.7% of their customers, on average. So, it appears that an increasing number of members clearly are willing to provide a mapping service and that a slowly increasing proportion of customers are actually demanding that service (multiply the two rightmost columns of table 9 to see that).

Table 9

	% of combines with yield monitors	% of combines with yield monitors with GPS	% of members providing yield maps	for map providers, % of customers affected
1997	38.0%	21.0%	NA	NA
1998	37.0%	15.2%	NA	NA
1999	54.9%	25.6%	NA	NA
2000	55.3%	27.1%	NA	NA
2001	60.0%	37.3%	NA	NA
2002	78.8%	39.8%	NA	NA
2003	81.1%	40.0%	28.6%	8.1%
2004	89.7%	50.9%	39.1%	7.3%
2005	88.1%	55.1%	47.8%	5.7%

Among the 118 combines used in 2005, the typical combine was used for 530 separator hours (728 engine hours) and had 1018 hours on the separator hourmeter at the end of 2005 or when it was traded if traded during the year (table 10). The average separator-to-engine hours ratio across the 118 combines was 72.9%, but that ratio varied widely among combines (49.1% to 89.7%). Moreover, usage rates were quite disperse, reflecting that firms differ in the amount of time spent on the harvest run, are subjected to different weather-related

harvest delays, have different amounts of downtime, and have different management styles. For example, some harvesters might use rented combines for short periods of peak harvesting activity.

Comparing individual and average usage rates and end of season hours across years is not straightforward, as combine trading patterns can affect the numbers. For example, if combines are traded during the season, low average hours per combine will result – along with numbers of combines per harvester that may be much larger than the typical number of combines simultaneously operated by that harvester.

Table 10

	separator and engine hours per combine this year	separator hours on combine at end of year	combines simultaneously operated	separator hours per combine simultaneously operated
1997	585/NA	1156	3.5	581
1998	577/NA	1106	3.2	641
1999	524/NA	975	4.2	603
2000	559/NA	1146	3.6	577
2001	502/NA	1263	3.3	551
2002	458/NA	805	4.9	473
2003	574/761	1161	4.1	588
2004	525/711	1023	4.7	587
2005	530/728	1018	4.7	591

In 2005, on average across the 23 CHAMP members, the number of combines simultaneously operated was 4.7. Using the total combine separator hours accumulated during 2005 for each member, divided by the number of machines simultaneously operated by that member, provides a better picture of harvest intensity. The average of this value (across the 23 members) in 2005 was 591 separator hours (table 10), and ranged from 328 to 857; the average engine hours calculated this way was 790 and the average separator-to-engine hours ratio was

75.1% (ranging from 65.8% to 88.9%).

Average acres covered per combine simultaneously operated in 2005 was 7358 (table 11), substantially higher than in 2004 and the highest year ever. Relative to CHAMP reports before 2003, note that what used to be “acres harvested” is now referred to as “acres covered.” This is because we later make a distinction between acres harvested by the firm and acres harvested by someone else renting the firm’s combines.

Closely related to hours per combine and acres per combine is acres per hour, at 12.44. The trend towards more acres per combine or higher harvest speed shown in table 11 likely is an indicator of ever larger combines and platforms (e.g., 12 of 23 harvesters now use one or more 36-foot grain platforms). As always, wide variability across members prevails, with 1 member even above 16 acres per hour. Of course, these differences also are partly due to the types of crops harvested – some crops naturally require slower travel speeds.

Table 11

	acres covered per combine operated	acres per hour
1997	5505	9.51
1998	5852	9.23
1999	5311	8.83
2000	5969	10.45
2001	5821	10.68
2002	5486	11.79
2003	7052	12.10
2004	6872	11.81
2005	7358	12.44

### Platform Information

The third page of the CHAMP survey sought information on the combine headers/platforms used by harvesters. Average annual depreciation on the 348 platforms listed on the platform page was



6.9% (table 12).

Of the 118 combines that tallied more than zero hours in 2005, 62.7% had flex heads, 57.6% had cornheads, 48.3% had rigid platforms, 51.7% had draper platforms, 21.2% had row crop heads, and 61.9% had pickup heads.

Table 12

	combine platform depreciation	% of combines with flex heads	% of combines with corn heads
1997	NA	NA	NA
1998	NA	40.2%	70.7%
1999	9.1%	51.7%	61.7%
2000	7.4%	50.6%	67.1%
2001	5.1%	72.0%	62.7%
2002	7.9%	61.9%	69.5%
2003	7.5%	57.8%	63.3%
2004	5.0%	50.9%	69.8%
2005	6.9%	62.7%	57.6%

Table 13

	% of combines with draper heads	% of combines with row crop heads	% of combines with pickup attachments
1997	NA	NA	NA
1998	15.7%	30.4%	70.7%
1999	13.3%	25.0%	55.8%
2000	0.0%	28.2%	68.2%
2001	6.7%	20.0%	60.0%
2002	19.5%	14.4%	84.7%
2003	5.6%	22.2%	63.3%
2004	23.3%	20.7%	66.4%
2005	51.7%	21.2%	61.9%

Because the total number of operations involved in CHAMP is not great, coupled with the fact that operators are probably consistent across years in the machines they operate, the effective sample size appropriate for making reliable inferences may be closer to the number of operations

than the number of combines. Thus, caution should be observed in making too much of observed differences across years.

### Trucks and Supporting Equipment

The fourth page of the 2005 survey, the Non-combine Harvesting Equipment Page, reports details about grain trucks, trailers, tractors, grain carts, service vehicles, and other supporting equipment used by CHAMP members. At an average model year of 1992.2 (13.8 years old at the end of 2005 given model years are tied to a January 1 purchase), the 141 grain trucks reported by members were much older than the combines, and older (1.1 years) than trucks reported in 2004 (table 14). Tandem-axle trucks made up 34.8% of the 141, triple-axle trucks were 2.1%, and semis were 63.1%. The increased use of semis rather than tandem axle trucks appears to have leveled..

Members owned 98% of their grain trucks as opposed to leasing or renting. On average where reported, 15,949 miles were put on each truck during the 2005 harvest season. At the end of 2005, the average odometer reading was 486,221. Ending mileage values suggest that many of the trucks had been at one time or are currently being used for over-the-road hauling.

Table 14

	age of trucks in years	% of trucks that are tandem axle	% of trucks that are semis
1997	NA	NA	NA
1998	11.6	59%	41%
1999	11.6	50%	42%
2000	11.3	61%	39%
2001	12.8	46%	54%
2002	11.8	38%	57%
2003	12.2	42%	56%
2004	12.7	34%	63%
2005	13.8	34.8%	63.1%

Reported grain truck values were used to estimate market depreciation, which averaged 0.4% across the 138 trucks where those values were reported (table 15). The depreciation on trucks of 0.4% was only a fraction of the 10.3% depreciation reported on combines. Like combines, trucks generated the least depreciation ever in 2005.

Table 15

	% of trucks that are owned	miles per truck in harvesting	odometer at end of year for trucks	truck depreciation
1997	NA	NA	NA	NA
1998	91%	16308	NA	5.2%
1999	93%	17766	443883	5.9%
2000	89%	19589	513162	12.1%
2001	89%	12692	558707	11.0%
2002	92%	13549	552128	11.0%
2003	94%	12982	454461	7.2%
2004	96%	12433	473299	4.0%
2005	98%	15949	486221	0.4%

### Crops Harvested and Revenue Generated

The annual survey solicits information on the number of acres and bushels of each crop harvested in each state, the associated revenue coming from those crops and how it was split between combining and trucking, as well as the portion of harvested crops that was also hauled by the harvester. Typically, this information was included on the Revenue Page of the survey.

Collectively, 2005 CHAMP members harvested 785,510 acres, either directly or indirectly (through the acres harvested by combines they rent out). Small grains, defined as wheat, barley, durum, oats, and rye, represented 71.7% of the total acres harvested. At 539,767 acres, wheat (i.e., wheat and durum) made up the majority (68.7%) of all crop acres harvested. Although wheat acres comprised 68.7% of total harvested crop acres, the revenue share

for wheat, at 61.0%, was somewhat smaller (table 16). That is because other crops often get more revenue per acre than wheat – because they are more expensive to harvest.

Across the states, Kansas had the most acres for corn, milo, and wheat in 2005. South Dakota had the most soybeans and the most “other,” Montana had the most barley, and North Dakota had the most non-sunflower oilseeds (e.g., canola, flax). Besides the usual crops of wheat, corn, milo, soybeans, barley, sunflowers, and canola, many other crops were harvested as well. For example, oats, pinto beans, edible beans, peas, flax, mustard, grass, lentils, and popcorn each were listed as being harvested by at least one firm.

Table 16

	% of harvested acres that are wheat or durum	% of harvesting revenue from wheat or durum	field size in acres
1997	68.9%	NA	NA
1998	68.9%	59.7%	94.3
1999	63.4%	57.0%	113.3
2000	67.2%	58.3%	111.3
2001	64.1%	57.7%	111.9
2002	64.0%	57.2%	117.8
2003	71.9%	66.0%	129.9
2004	64.2%	56.0%	138.0
2005	68.7%	61.0%	NA

Across 2004 and previous years, acres per field by crop did not reveal any obviously explainable differences. Therefore, this question was dropped from the survey in 2005.

For some custom harvesters, renting combines to others is an important source of revenue. But, such activities make benchmarking certain costs and returns across harvesting firms more difficult. In particular, firms that rent out combines have sharply reduced costs for the acres those machines harvest (since many costs are now

the responsibility of the lessee), and sharply reduced revenue as well. Consequently, starting with the 2002 crop year, we have separated total revenue into its components of harvest revenue, combine rent revenue, and other revenue. Table 17 shows the average across the CHAMP members for each of these values in years 2002-2005, and comparable values, where available or where they can be computed, from prior years.

Table 17

	harvesting revenue in \$ per covered acre	combine rent revenue in \$ per covered acre	other revenue in \$ per covered acre	total revenue in \$ per covered acre
1997	\$21.08	\$0.27		\$21.35
1998	\$25.04	\$0.61		\$25.65
1999	\$22.15	\$0.88		\$23.03
2000	\$20.92	\$0.73		\$21.65
2001	\$20.90	\$0.82		\$21.72
2002	\$19.63	\$0.40	\$0.60	\$20.63
2003	\$21.34	\$0.18	\$0.48	\$22.01
2004	\$22.94	\$0.24	\$0.32	\$23.52
2005	\$24.17	\$0.30	\$0.39	\$24.86

As reported in table 17, over all member reports for all crops, the average total revenue received per covered acre in 2005 was \$24.86. But, as suggested earlier, total revenue per covered acre would be expected to fall in the face of increased importance associated with combine rent revenue.

That per acre total revenue is expected to fall with increased dependence on combine rent revenue arises from our use of covered acres in the “per acre” part, rather than harvested acres. Recall from earlier that, at least here, we distinguish “covered” from “harvested” in that “harvested” refers to only the acres harvested directly by the CHAMP member, whereas “covered” includes also the acres harvested by others

who might be renting combines from the CHAMP member.

Had we used “harvested” acres rather than “covered” acres in the denominators underlying table 17, a temporal increase in combines being rented out should lead to a corresponding temporal increase in total revenue per acre. However, even if we could appropriately adjust the \$24.86 value in table 17 upwards to reflect what it would be expected to be in the absence of renting out combines, it likely would only rise by around \$0.15 to \$25.01/acre. Underlying that calculation is the following. Across the members, the average harvesting revenue for acres actually harvested by the firms (rather than by others renting and operating the members’ combines) is \$24.62/acre. Then, substituting this value in the first column of table 17, followed by a 0 in the rental revenue column, would result in \$25.01/acre total revenue. Regardless, this whole discussion points to the fact that it is inappropriate to benchmark revenue without considering costs when the goal is to determine important profitability trends over time associated with custom harvesting.

It should be noted that members who rent out machines are asked to provide a best guess of type of crop, number of acres, and crop yield for the harvesting accomplished by the lessee of such combines. Based on such guesstimates, the typical rental income for the 4 members renting out machines in 2005 was \$15.03/acre, considerably higher than 2004’s number of \$11.53.

Because of the higher yields associated with corn, especially irrigated corn, that crop always holds a special place in revenue benchmarking. At \$38.52 (table 18), corn generates the highest revenue per acre (i.e., per covered acre) among all crops harvested. The corn results are somewhat reversed when revenue is depicted on a per bushel basis. Corn, at only 26¢/bu, is the lowest

revenue crop. The average revenue across all major crops was 69.5¢/bu (major crops here are defined as wheat, durum, barley, corn, milo, soybeans, oats, sunflowers, and non-sunflower oil crops).

Table 18

	\$/acre revenue for corn	¢/bu revenue for corn
1997	NA	NA
1998	\$39.79	28¢
1999	\$31.32	27¢
2000	\$29.97	26¢
2001	\$34.27	30¢
2002	\$28.91	21¢
2003	\$33.87	22¢
2004	\$33.36	25¢
2005	\$38.52	26¢

Averaged across the crops, and adjusted to hauling 100% of the crop if something other than 100% had been hauled by the harvester, trucking revenue made up 28.1% of total harvesting revenue. Among traditional crops, at 32%, the trucking part was highest for corn – which should not be too surprising given that corn is a relatively high-yielding crop. Most harvested grain is also hauled away from the fields by the harvesters. Across all member reports, the average percent of harvested grain hauled by the harvester was 89.8%.

Table 19

	% trucking revenue is of total revenue	% of grain hauled by harvester	% of grain hauled to farm
1997	NA	NA	NA
1998	24.6%	91.7%	23.7%
1999	28.1%	90.3%	24.0%
2000	22.9%	90.7%	28.1%
2001	24.9%	87.4%	19.4%
2002	28.9%	84.1%	26.0%
2003	26.5%	87.2%	31.3%
2004	24.9%	91.4%	29.4%
2005	28.1%	89.8%	NA

Members vary substantially in the crops they choose to harvest. The percent of harvested acres that is small grains is one indication of that choice. Although, on average, members harvest 72.0% small grains, there is substantial variability among firms – ranging from 49.5% for 1 firm to 86.1% for 1 firm.

### General Financial Information

For the most part, financial information was taken from the Cash Flow Page and Balance Sheet, but asset values on equipment pages were used as well. Expense categories that could be meaningfully extracted include labor (paid and unpaid), travel, fuel and lubrication, repair and maintenance, insurance, telephone and utilities, other expenses, and market depreciation.

For 2000 forward, the value of unpaid labor has been much better reported than in previous years. A few follow-up phone calls rounded out that series so that no analyst judgement calls were required for that category. Clearly, the economic concept that operator labor, even when not directly compensated by salary, has an opportunity cost is much better understood than at CHAMP's onset.

### Interest and Depreciation

In an economic analysis, interest and depreciation demand special treatment and explanation. Even if a firm operates with zero debt there is an opportunity cost on investment capital. After all, the money tied up in such a firm's assets could be invested elsewhere. Further, there is little reason to believe that the opportunity cost-of-money rate for a zero-debt firm is any higher or lower than the interest charged against actual loans for borrowers. Thus, we impute an investment interest expense for each member.

In years prior to 2005, to compute the interest *charge* for each member we used the same interest *rate* for all members, which was assumed to equal the average reported interest rate across the members for that year. As discussed in the “Changes for 2005” section of this paper, starting in 2005, we impute a unique interest rate for each member. The imputed interest rate is a weighed average of the interest rate reported by the member and the average reported rate across all members. That is, the reported rate is multiplied by the debt-to-assets ratio and then added to the product of the average reported rate and one minus the debt-to-assets ratio. Practically, this weighting has the effect of charging the member-reported rate on a member’s debt and an average-across-members rate on a member’s equity.

We believe that our 2005 change in interest rate procedures discussed above improves our measure of interest opportunity cost in the face of members who garner especially low (concessionary financing, e.g., a low-interest SBA loan) or especially high interest rates. Finally, as discussed in the “Changes for 2005” section, we no longer “charge” interest on cash, savings, and accounts receivable – to more accurately reflect those members who may routinely have large cash reserves January 1, transform them to combine investment shortly thereafter, and again have large cash reserves Dec. 31.

Table 20

	interest rate
1997	9.50%
1998	8.90%
1999	8.94%
2000	9.32%
2001	7.66%
2002	6.55%
2003	6.31%
2004	5.94%
2005	6.75%

As in 1998-2004, we did not impute an interest charge on operating expenses because it seems reasonable that harvesting revenue generally comes in regularly during the harvest season – implying that expenses likely are paid from revenue as they are incurred. For convenience, table 20 reports information that was reported in table 6.

For depreciable assets, economic (or market) depreciation is the loss in value over time due to usage. Although not a cash expense, depreciation is a true cost because it reflects a loss in net worth. However, economic depreciation is often much less than tax depreciation. For example, based on 1997 responses providing market and tax basis (book) machinery values, the typical market-to-book ratio was 2.2 (would be 1.0 if economic and tax depreciation were equal).

For this analysis, annual market depreciation was taken to be the change in combine, platforms, and supporting equipment values from the appropriate pages of the survey. For each equipment item, the end-of-year value (or when it was sold or traded) was subtracted from the beginning-of-year (or when purchased) value to derive its depreciation value. Significant value-enhancing improvements (such as adding a rear-wheel drive to a combine) were treated as purchases to an existing combine.

### Total Expense Calculation

Total expense was calculated as:

- Labor (paid and unpaid)
- + travel
- + fuel and lubrication
- + repair and maintenance
- + insurance (includes workmen’s comp)
- + telephone and utilities
- + other expenses
- + market depreciation
- + interest on assets (assigned)

---

- = Total Expense

## Revenue and Operating Profit

Except for arithmetic and data entry errors, revenue is the straightforward sum of reported combine and trucking revenue from the Revenue Page and other revenue from the Cash Flow Page. Total Operating Profit is then defined as revenue less total expense. It should be noted that this is economic profit and it is expected to be zero, on average, in the long run. That is, a return to all assets already has been assigned. On average and approximately, that return on assets is 6.75%, the average member-reported interest rate. We say “approximately” because of our use in 2005 of unique member interest rates, as already discussed. For example, if members with higher debt-to-assets ratios are associated with higher reported interest rates, then the average assigned return on assets will be slightly higher than 6.75%, and vice versa. Finally, in this sense, profit is the return above “all costs plus the 6.75% return on assets.”

To enhance understanding, various financial measures can be divided by the number of combines operated, the number of acres harvested, or the number of separator hours tallied. This provides important comparison values for an individual member. Departures from survey averages can show a firm where it’s management may be weak (if categorical costs are substantially higher than survey averages) as well as areas where it may have a comparative advantage. Moreover, when viewed across time for an individual member, such numbers can reveal improvement or deterioration in management over time.

## Financial Ratios

Financial ratios can provide useful measures for comparing a member’s financial situation with that of the group. Financial ratios rely mostly on information taken from

the balance sheet, which is a statement of assets and liabilities for the business.

The debt-to-asset (D/A) ratio is a straightforward calculation of total liabilities divided by total assets. It is a poor indicator of profitability but a good indicator of risk. That is, profitable firms can increase net worth rapidly with the higher leverage implied by a high D/A. However, firms with high D/A may not be able to withstand prolonged periods of losses.

Return on assets (ROA) is calculated as {profit + interest} divided by some measure of total assets. The interest that is added back in the numerator of ROA is the amount that had been assigned in the first place, which was the assigned interest rate (discussed earlier) times average value of assets. Interest is added back to profits because it is a return to invested capital – whether that investment is made by the equity holder or the lender. Because of adding back interest, ROA can be used to compare firms with different debt loads. Here, the assets are average annual assets, including asset value information during the year (from the Combine, Platform, and Non-combine Pages). That is, formulas were developed to properly handle equipment owned only part of the year. Note that, as already discussed, cash, savings, and account receivable are not assigned an interest charge.

Return on equity from the income statement (ROE – IS) is calculated as {profit + interest on equity, not on total assets} divided by some measure of equity or net worth, usually beginning equity and sometimes average equity (here, we use average equity because that is what we work with for imputing interest). Only interest on equity is added back to our measure of profit – which had considered interest on all assets – because interest actually has to be paid on borrowed capital. As used here, the measure

of equity or net worth is the average of beginning and ending custom harvesting net worth, taken from the Balance Sheet Page.

Return on equity also can be calculated from the balance sheet (ROE – BS), as the change in harvesting equity over the year divided by some measure of harvesting equity or net worth, usually beginning equity. Because, ignoring income taxes, the change in equity should equal the {profit + interest on equity} measure used in computing ROE – IS, the two ROE measures should be approximately equal (also unless different denominators are used across the two ROE measures, whereupon small differences might be expected).

Prior to 2002, the change in equity over the year required in ROE – BS calculations was taken to be the change in *overall* equity (net worth) from the Balance Sheet Page because that number was believed more reliable than the change in equity associated with only the custom harvesting business (since managers might move money in or out of the harvesting business and that potentially distorts the required calculations). However, starting in 2002, we believed the opposite to be true, and so began to use the change in equity associated with only the custom harvesting business.

One measure of financial efficiency is the expense ratio (ER), which is simply calculated as expenses divided by revenue. It shows the expense required to generate each dollar of revenue. In some ways, in the face of structural changes in an industry or business over time, for example, more reliance on combine rent revenue, or changes in the types of crops harvested, the only reliable benchmarks remaining are financial ratios. Consequently, such ratios should be included in an economic study examining profitability. Table 21 shows two such ratios over time for the CHAMP program, ROA and ER, and again includes

interest rate for convenience.

Table 21

	ROA	ER	interest rate
1997	NA	NA	9.50%
1998	14.7%	93%	8.90%
1999	6.7%	107%	8.94%
2000	4.7%	112%	9.32%
2001	7.6%	101%	7.66%
2002	0.8%	116%	6.55%
2003	13.3%	89%	6.31%
2004	9.9%	93%	5.94%
2005	13.2%	90%	6.75%

It would be difficult to construe table 21 as particularly positive or particularly negative for the typical custom harvester. Four years out of 9 (1998, 2003, 2004, and 2005) were good years economically. In the other years, adding debt in an effort to smooth through hard times only made matters worse since ROA was less than the interest rate, meaning that the return on a firm's equity would be lower yet, and most likely negative. Yet, all in all, the table indicates that the typical harvesting firm likely has been gaining equity over time. Fortunately, after 4 tough years in a row, 2003-2005 stood out as being decent years economically. Perhaps the tide has changed? But, we should remember that our results are subject to survivor bias, which defines the situation where losing firms exit the industry over time, leaving only profitable ones in the database.

### Individual Firm Report

Attached to this report is an example of the type of report provided to each CHAMP member. The example firm (Happy Harvester) has slightly greater total assets per combine operated than the average CHAMP member (\$319,000 vs. \$316,346), and given more assets, expected slightly higher market depreciation (\$28,567 vs. \$28,256). Its repair and maintenance cost

per combine were higher than that of the average member (\$20,352 vs. \$18,937). The example firm generated a little less revenue per combine than the average member (\$183,662 vs. \$185,090), and profit was somewhat lower than average due especially to higher labor cost. At 7,496 acres harvested and 604 separator hours per combine, this firm covers more ground in more time than the average member, which had 7,358 acres and 591 hours per combine. At 12.40 acres per hour, it had nearly the same efficiency by that measure as the average firm at 12.44. Overall, at a profit of \$1.93/acre, this firm was somewhat less profitable than the survey average, which was a profit of \$2.59/acre. Consequently, this firm had a return on assets that was 1.9 percentage points below the survey average, but yet not bad by historical standards.

On average, members have \$137,844 invested in each combine they operate, \$43,807 in platforms, and \$118,896 in supporting equipment for each combine they operate. On average, supporting equipment is valued at 61.16% of the combined value of combines and platforms, or 38.58% of all equipment.

A number of graphs or figures that show member distributions of various revenue, cost, and/or profit categories are attached to this report. Most show substantial variability among firms. Given the distributions, it is easy to see why some firms might make large profits while others lose ground financially.

Table 22 shows that the average profit per acre in 2005 was \$2.59. Like table 21, this table indicates that 2003, 2004, and 2005 were among the best years profit-wise for CHAMP members in the last 9 years. A 9-year average per acre profit of \$0.23 is implied by these values. In the long run, the average is expected to be \$0, or perhaps even negative if the custom harvesting

industry is still downsizing in an attempt to match up supply of custom harvesting with demand for it. In that regard, the 9-year average does not seem too far out of line with expectations.

Table 22

	profit, \$/acre
1997	-\$0.09
1998	\$1.80
1999	-\$1.27
2000	-\$2.27
2001	\$0.12
2002	-\$3.05
2003	\$2.44
2004	\$1.62
2005	\$2.59
9-year avg	\$0.23

It is important to note that small differences in annual averages tend to reflect large differences in how particular years were perceived by harvesters. For example, 1999 (-\$1.27) and 2000 (-\$2.27) were perceived to be quite tough years for many harvesters (at least until 2002), whereas 1998 (\$1.80), 2003 (\$2.44), and 2005 (\$2.59) were perceived to be good years for many harvesters.

In an analysis within our databases, where revised numbers were used when available, and where historical adjustments have been made in line with intentional retroactive changes over time, a number of cost categories saw meaningful changes from 2004 to 2005. The largest of such changes, of course, was fuel. Fuel costs jumped from \$3.16/acre in 2004 to \$4.21 in 2005, for a 33% increase. Also, this came on the heels of a 42% change from 2003 to 2004 (from \$2.23 to \$3.16/acre). On the other hand, after being especially concerned with insurance cost in 2004, this value increased only another \$0.06/acre in 2005. Also, some changes were positive in terms of



profitability. For example, depreciation fell \$0.31/acre, as it has for the last three years now, and repairs remained unchanged.

For a number of cutters, especially those largely committed to harvesting in the High Plains, 2005's respectable crop yields were a welcome respite from recurring droughts in the area. Perhaps the most positive thing that can be said about 2005 overall is that most harvesters appeared to do a good job of passing on higher fuel prices with higher charges for their services.

Over all, the financial risk position for custom cutters has continued to improve in 2005 – with the deb-to-assets ratio falling from 47.60% in 2002 to 45.75% in 2004 and now to 42.09% in 2005.

### **Other Analyses**

A tradeoff between repairs & maintenance and market depreciation would be expected among harvesters. That is, firms that run older lower-valued combines, leading to lower depreciation, would be expected to have higher repairs & maintenance, indicating an expected negative correlation between repair & maintenance cost per hour and market depreciation per hour. On the other hand, if firms tend to be consistently high- or low-cost operators across several cost categories, then finding a positive correlation should not be that unusual. For 2005, the correlation of interest was indeed negative, at -0.26, weakly supporting the idea that firms might be trading off repairs and depreciation. On the other hand, recent correlations, e.g., 0.05 in 2004 and 0.11 in 2003, weakly support the idea that firms that are low cost operators in terms of repair & maintenance might also be low cost operators in terms of depreciation. Put another way, it is possible to have both low repairs and low depreciation, and that is precisely where the best managers are.

Another notable relationship is that between cost per acre and profit per acre, which, in 2005, displays a correlation of -0.68 (-0.77 in 2004 and -0.890 in 2003). Clearly, lower costs lead to higher profits in a competitive business such as custom harvesting – and especially in the last three years. However, at a given cost per acre, profit per acre still varies as much as perhaps \$6, indicating that revenue must vary. The graph of revenue vs. cost per acre, at a correlation of 0.50 in 2005 (0.58 in 2004), shows that firms charging higher custom rates likely do so because they have higher costs. That is, they probably are harvesting crops that cost more to harvest. More importantly, revenue varies far less than cost, which suggests firms may be able to do much more about their costs. That is, revenue is probably more market determined, whereas costs are determined more by firm management.

Another relationship of note is the negative relationship between profit and intensity of combine use that was observed in 2004 (correlations of -0.11 and -0.11 for acres/combine and hours/combine, respectively; 2003 values were -0.27 and -0.34). Comparable correlations for 2005 are 0.10 and 0.08. These 2005 correlations are consistent with years before 2003, where that correlation (profit vs. acres/combine) was 0.10 in 2002, 0.49 in 2001, and 0.30 in 2001. Certainly, on average over time, we would expect that the relationship between profitability and intensity of combine use ought to be positive. On the other hand, as noted in 2004, it could be that some cutters are becoming more astute at assessing over-supply of their services in specific areas, causing them to simply stay dormant rather than aggressively try to accumulate combine hours by harvesting in areas where profits are marginal at best. So, it is clear that there is plenty of room for management style to impact profitability, irrespective of general underlying market forces.

Another relationship that had been found to be interesting in previous years was that between small grains harvesting and profitability. In prior years, this relationship had been substantially negative or positive. In 2001, that correlation was only -0.04 and we asked the question, Might it be that, with more experience harvesting fall crops, harvesters are gradually adjusting their related custom charges to better reflect their costs associated with those crops? In 2002 that correlation was again positive (0.12), possibly reflecting the fact that fall crops in the Great Plains were especially poor yielding in 2002. In 2003, this correlation was 0.04, and in 2004 it was 0.17, indicating there was essentially no correlation between profitability and the crops harvested. For 2005, the correlation was 0.05, once again providing support that harvesters may be adjusting their charges to better reflect their costs.

Given the increased use in 36-foot headers, an interesting question is whether or not this is resulting in a proportional increase in acres harvested per separator hour. Examining the relationship between acres harvested per separator hour and average header width revealed that, on average in 2003, harvesters with 36-foot headers were harvesting more acres per hour than harvesters with 30-foot headers. More specifically, for each foot increase in header width there was a corresponding increase in acres/separator hour of 0.335. Assuming a harvester with a 30-foot header cut 11.8 acres/separator hour in 2003, then based on the relationship observed that year, we would have expected a harvester with a 36-foot header to cut 13.8 acres/hour [ $11.8 + 0.335*(36-30)$ ]. This represents a 17% increase, which is slightly below the 20% increase in header width. But, this relationship was not nearly as strong in 2004, where the 20% increase in header width resulted in an increase in harvest capacity of only about 7%. Similarly,

results in 2005 suggest around a 6% increase in harvest capacity associated with 36- over 30-foot headers. So, we await more years of data before reaching strong conclusions about 30- vs. 36-foot grain platforms.

## Summary

Following the two “bad” years of 1999 and 2000, 2001 appeared to be a return to normalcy for CHAMP members. Then, 2002 made it clear that “the situation could get much worse than in 1999 and 2000. Fortunately, 2003 has also made it clear that “things can be a lot better” as well. And, 2004 was a reasonable year as well. Likely, the “good” year of 2005 was totally unexpected early in 2005. At that time, harvesters were especially concerned with higher fuel prices and whether or not they could effectively pass on to their customers their attending higher costs.

As always, in 2005 there was considerable variability in the profitability of harvesters and plenty of places where firms might improve their operations. CHAMP members continue to display a willingness to consider innovative ways to enhance profitability – especially regarding machinery efficiency. For example, in 2005, 5 of 23 (4 of 23 in 2004; 3 of 21 in 2003; 6 of 24 in 2002; 5 of 20 in 2001; 4 of 22 in 2000) members again rented combine(s) out to other individuals. Moreover, 4.3% (5.2% in 2004; 3.8% in 2003; 7.4% in 2002) of the acres harvested by CHAMP combines were while they were being rented out to someone else. Time will ultimately tell whether the tendency to rent machines out becomes stronger or weaker over time.

Much of the opportunity for individual firms to increase profitability is in the area of cost control. However, to reduce costs it is imperative to know what the strengths and weaknesses of each business are so that

management focuses in the right areas.

Participants in the CHAMP program receive information comparing their individual cost categories with the averages of others. This helps them identify their comparative advantages. Based on the members that participated in the CHAMP program in multiple years, harvesters' understanding of the economic principles of their businesses has improved through filling out the forms. This increased understanding can improve management efforts, which ultimately will make the individual harvester more competitive and profitable in the future.

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**Custom Harvester Analysis and Management Program (CHAMP)  
2005 Harvest Year  
Individual Firm Report**

Happy Harvesters Inc. Box 999 Wheat Country, KS 99999
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	Firm Value	Survey Average Value	Firm Value per Combine	Survey Avg. of Value per Combine	Firm Value per Acre	Survey Avg. of Value per Acre	Firm Value per Hour	Survey Avg. of Value per Hour		
Number of Machines Operated	3.0	4.69	----	----	----	----	----	----		
Value of Combines	\$445,000	\$664,042	\$148,333	\$137,844	\$19.79	\$19.55	\$245.45	\$242.78		
Value of Platforms	\$94,000	\$196,796	\$31,333	\$43,807	\$4.18	\$6.02	\$51.85	\$74.82		
Value of Other Equipment	\$308,000	\$503,523	\$102,667	\$118,896	\$13.70	\$16.42	\$169.88	\$205.47		
Value of Other Assets	\$110,000	\$72,001	\$36,667	\$15,799	\$4.89	\$2.11	\$60.67	\$26.06		
<b>Total Assets</b>	<b>\$957,000</b>	<b>\$1,436,362</b>	<b>\$319,000</b>	<b>\$316,346</b>	<b>\$42.56</b>	<b>\$44.09</b>	<b>\$527.85</b>	<b>\$549.12</b>		
Total Acres Covered	22,488	34,153	7,496	7,358	1.0	1.0	12.40	12.44		
Combine Rent Acres	N/A	1,468	N/A	121	N/A	0.020	----	----		
Small Grains Percent	76.3	72.0	----	----	----	----	Combine Efficiency			
Total Separator Hours in 2005	1,813	2,721	604	591	0.081	0.082	77.8%	75.1%		
<b>INCOME AND EXPENSE</b>									% of Total Revenue	
									<u>Firm</u>	<u>Survey Avg.</u>
Harvest Revenue	\$541,511	\$801,897	\$180,504	\$180,514	\$24.08	\$24.17	\$298.68	\$300.97	98.3%	97.2%
Combine Rent Revenue	N/A	\$18,870	N/A	\$1,788	N/A	\$0.30	N/A	\$3.62	0.0%	1.2%
Other Revenue	\$9,476	\$23,562	\$3,159	\$2,787	\$0.42	\$0.39	\$5.23	\$4.71	1.7%	1.6%
<b>Total Revenue</b>	<b>\$550,987</b>	<b>\$844,329</b>	<b>\$183,662</b>	<b>\$185,090</b>	<b>\$24.50</b>	<b>\$24.86</b>	<b>\$303.91</b>	<b>\$309.29</b>	100.0%	100.0%
Labor (paid and unpaid)	\$113,870	\$155,928	\$37,957	\$34,111	\$5.06	\$4.57	\$62.81	\$56.41	20.7%	18.4%
Travel	\$20,989	\$29,354	\$6,996	\$6,277	\$0.93	\$0.85	\$11.58	\$10.54	3.8%	3.4%
Fuel and Lubrication	\$98,231	\$141,615	\$32,744	\$31,630	\$4.37	\$4.21	\$54.18	\$52.20	17.8%	16.9%
Repair and Maintenance	\$61,055	\$81,742	\$20,352	\$18,937	\$2.72	\$2.55	\$33.68	\$31.63	11.1%	10.3%
Insurance	\$28,038	\$46,512	\$9,346	\$10,221	\$1.25	\$1.38	\$15.46	\$17.28	5.1%	5.5%
Telephone and Utilities	\$6,389	\$10,177	\$2,130	\$2,320	\$0.28	\$0.30	\$3.52	\$3.74	1.2%	1.2%
Other Expenses	\$28,642	\$55,989	\$9,547	\$11,870	\$1.27	\$1.50	\$15.80	\$18.92	5.2%	6.0%
Market Depreciation	\$85,700	\$126,358	\$28,567	\$28,256	\$3.81	\$3.88	\$47.27	\$48.20	15.6%	15.6%
Interest on Assets (assigned)	\$64,626	\$98,715	\$21,542	\$21,793	\$2.87	\$3.02	\$35.65	\$37.81	11.7%	12.2%
<b>Total Expense</b>	<b>\$507,540</b>	<b>\$746,390</b>	<b>\$169,180</b>	<b>\$165,416</b>	<b>\$22.57</b>	<b>\$22.27</b>	<b>\$279.94</b>	<b>\$276.72</b>	92.1%	89.6%
<b>Total Operating Profit</b>	<b>\$43,447</b>	<b>\$97,939</b>	<b>\$14,482</b>	<b>\$19,675</b>	<b>\$1.93</b>	<b>\$2.59</b>	<b>\$23.96</b>	<b>\$32.57</b>		
<b>Effective Interest Rate</b>	7.00%	6.75%								
<b>Debt-to-Asset Ratio (end of year)</b>	32.4%	42.1%					Insurance as percent of equipment value =>	3.3%	3.4%	
<b>Return on Assets</b>	11.3%	13.2%								
<b>Return on Equity (based on IS)</b>	13.5%	xxx	==== Operating profit + interest charged on equity divided by beginning of year equity.							
<b>Return on Equity (based on BS)</b>	9.3%	xxx	==== Change in balance sheet equity divided by the beginning of year equity.							
<b>Expense/\$100 Revenue</b>	\$92.11	\$89.87								



U.S. Custom Harvesters Inc.



Note: Some reported values were modified from those reported on the survey due to arithmetic and other data entry errors.

**BALANCE SHEETS PAGE (schedule D)**

Happy Harvesters Inc.  
Box 999  
Wheat Country, KS 99999

**Balance sheet for custom harvesting business only, 2005 (read the footnotes)**

<b>ASSETS (market value)</b>			<b>LIABILITIES &amp; OWNER EQUITY</b>		
	beginning <b>01/01/05</b>	end <b>12/31/05</b>		beginning <b>01/01/05</b>	end <b>12/31/05</b>
	\$	\$		\$	\$
<b>Current Assets</b>			<b>Current Liabilities</b>		
Cash on hand & in checking	11,500	26,435	Accounts payable	1,500	2,250
Savings, bonds, stocks, etc.	17,000	21,150	Short term loans (due within 1 yr.)		
Accounts receivable	1,200	1,000	principal outstanding	11,500	15,600
			accrued interest	284	385
Supply inventories	5,000	6,200	Other current liabilities (specify)	0	0
Other current assets (specify)	0	0			
<b>D1. TOTAL CURRENT ASSETS</b>	<b>34,700</b>	<b>54,785</b>	<b>D4. TOTAL CURRENT LIABILITIES</b>	<b>13,284</b>	<b>18,235</b>
<b>Non-current Assets</b>			<b>Non-current Liabilities</b>		
Combines (from A1+B1, A2+B2)	527,350	550,650	Long term loans (due beyond 1 yr.)		
Non-combine equipment (from C1, C2)	275,310	340,690	principal outstanding	282,000	301,500
Market value of business real estate (i.e., office, storage bldgs., etc.)	50,000	50,000	accrued interest	2,608	2,788
			Other non-current liabilities (specify)	0	0
<b>D2. TOTAL NON-CURRENT ASSETS</b>	<b>852,660</b>	<b>941,340</b>	<b>D5. TOTAL NON-CURRENT LIABILITIES</b>	<b>284,608</b>	<b>304,288</b>
<b>D3. TOTAL CUST. HARV. ASSETS (D1+D2)</b>	<b>887,360</b>	<b>996,125</b>	<b>D6. TOTAL CUST. HARV. LIABILITIES (D4+D5)</b>	<b>297,891</b>	<b>322,523</b>
			<b>D7. TOTAL CUST. HARV. NET WORTH (D3-D6)</b>	<b>589,469</b>	<b>673,603</b>
			Change in equity =====>		84,134
<b>TOTAL EQUITY (custom harvesting and outside businesses)</b>				01/01/05	12/31/05
Investments in other businesses (such as a farm) and non-business investments (such as your residence). Report only the NET investment, which is assets less liabilities (net worth), for these investments:			D8.	145,000	152,000
Overall equity or net worth for whole business (D7+D8)			D9.	734,469	825,603
			Change in equity =====>		91,134

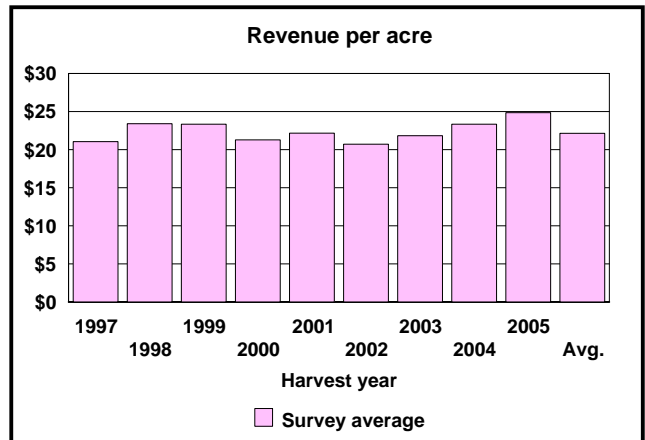
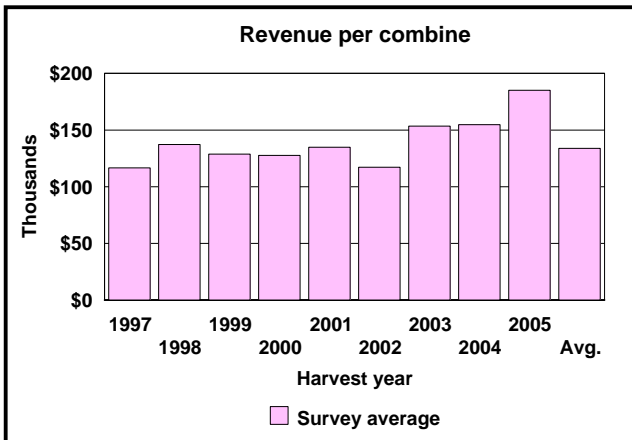
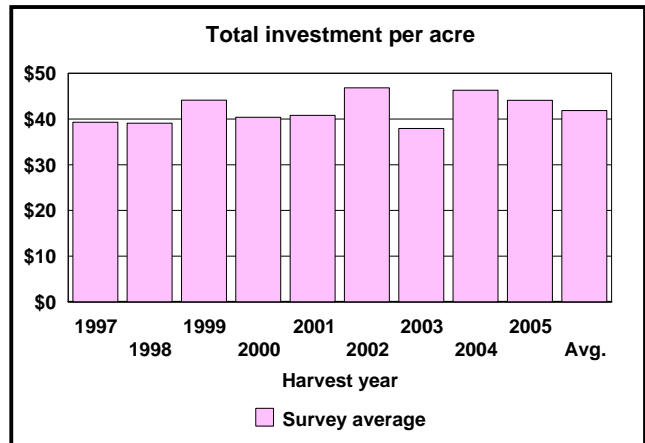
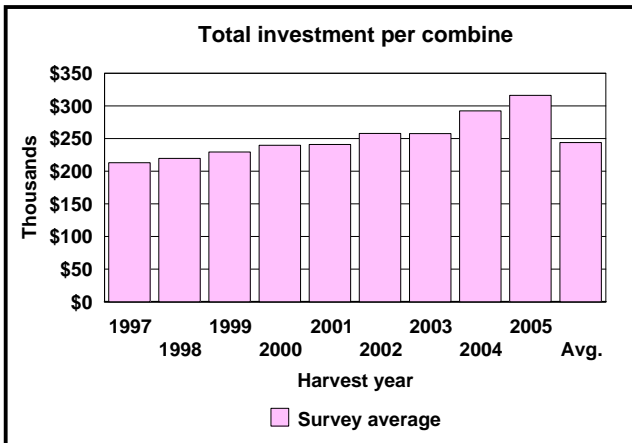
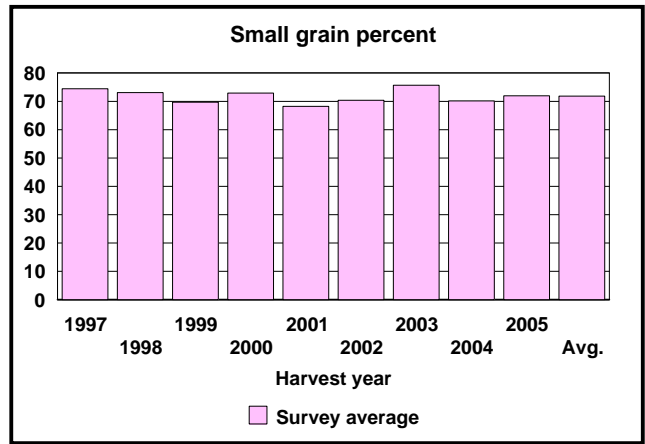
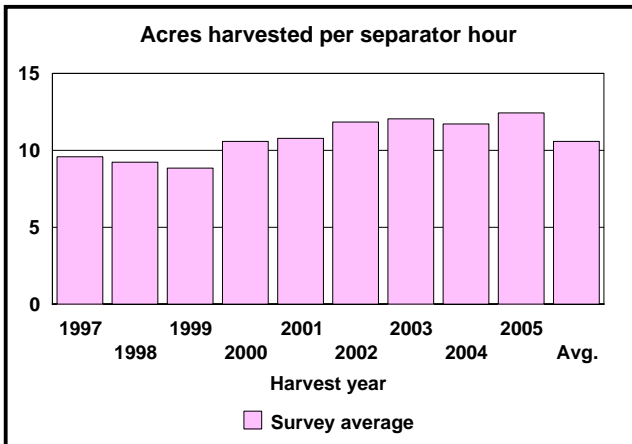
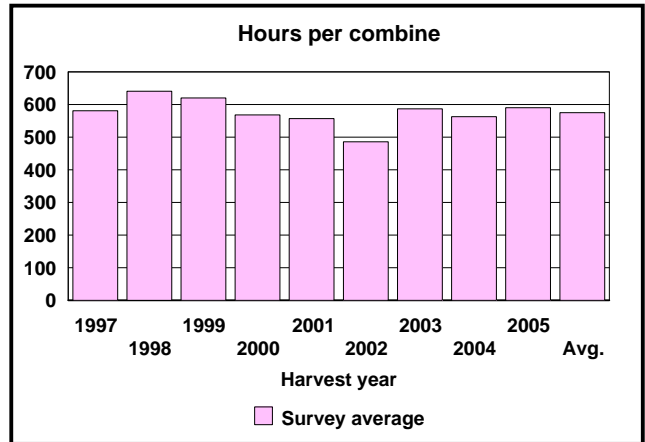
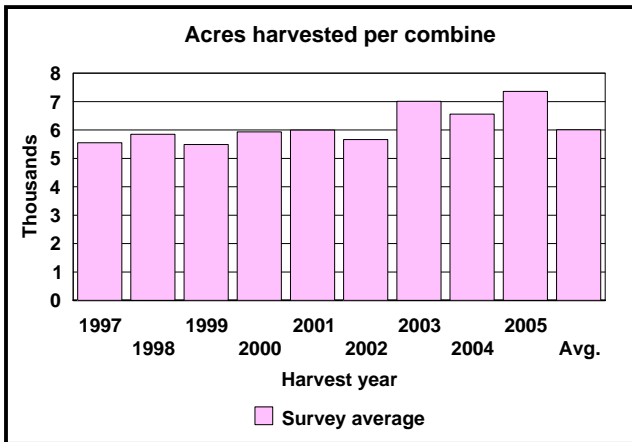


U.S. Custom Harvesters Inc.

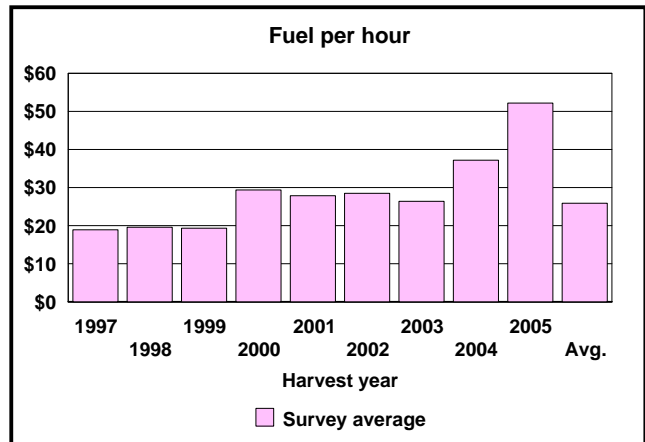
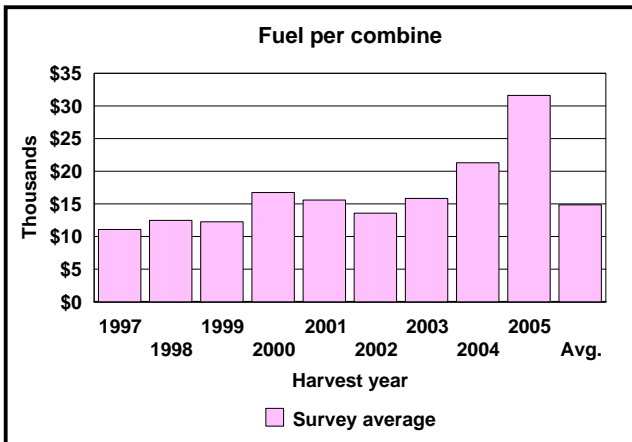
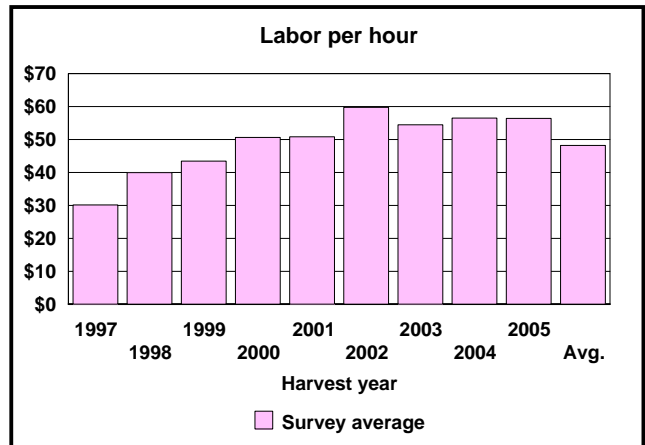
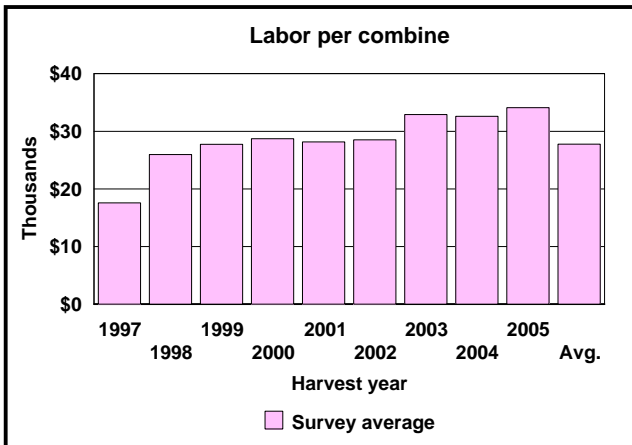
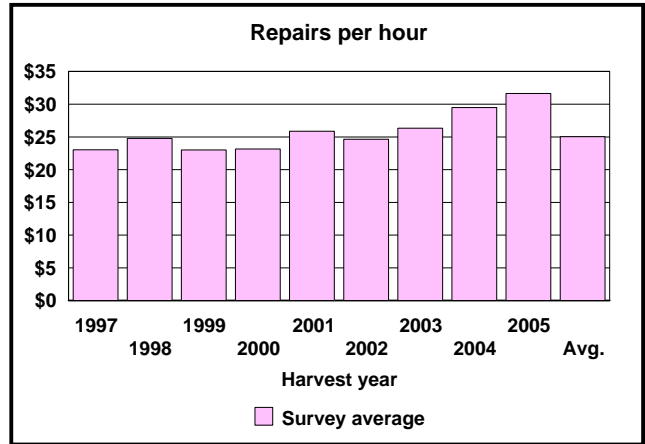
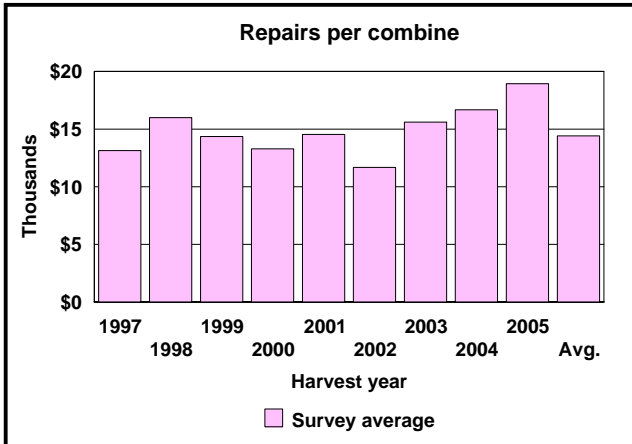
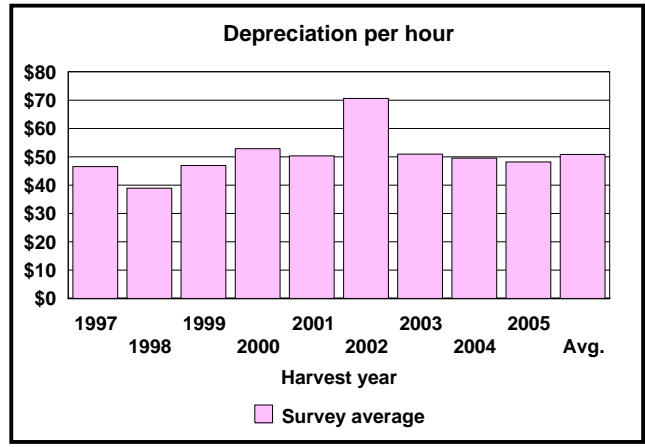
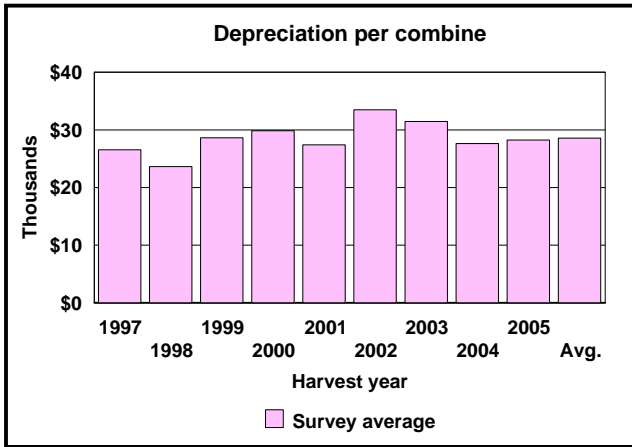
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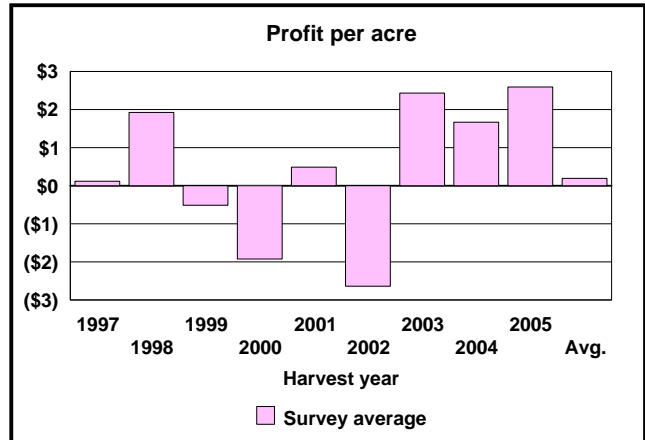
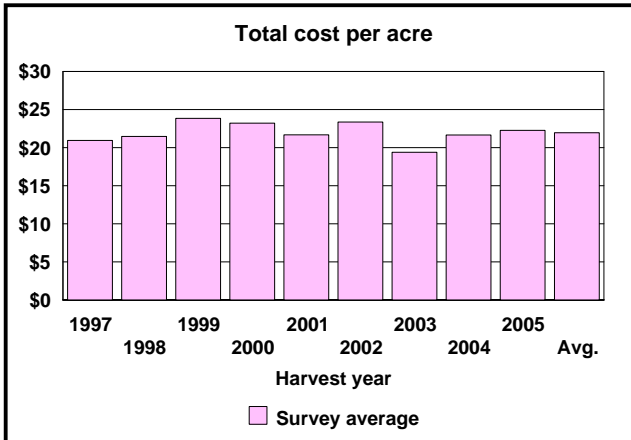
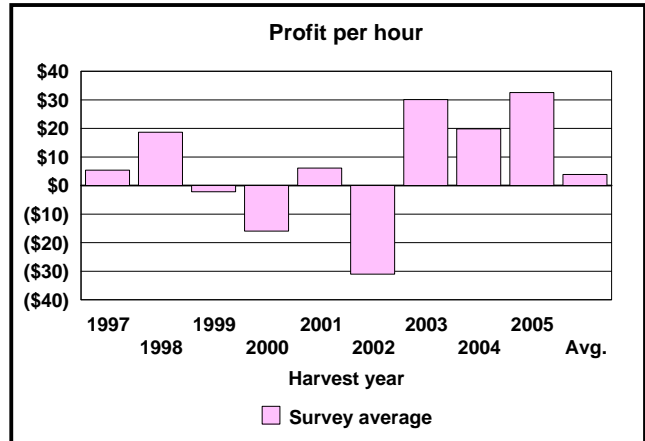
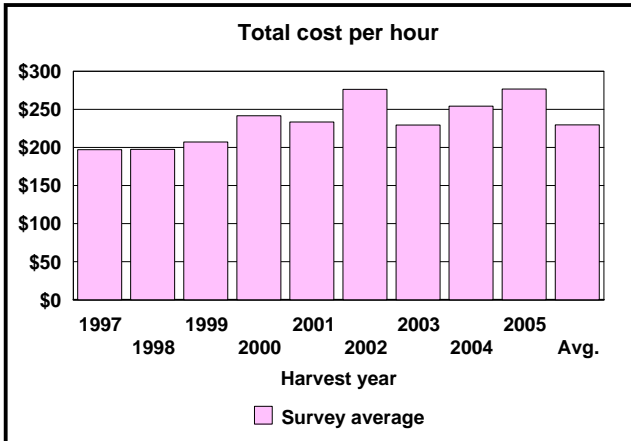
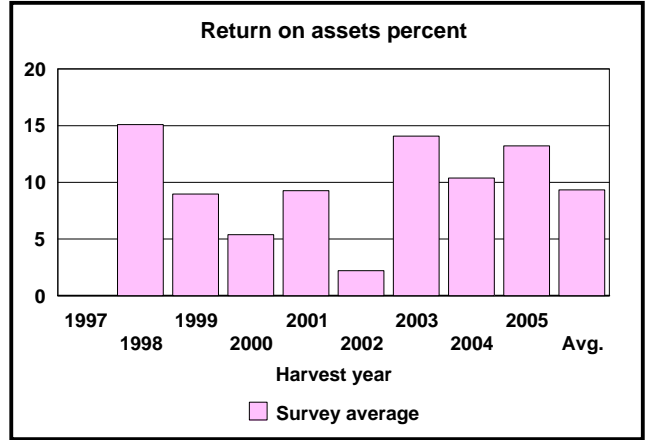
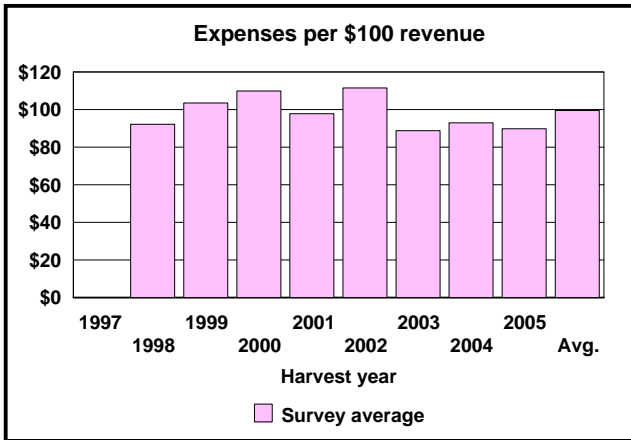
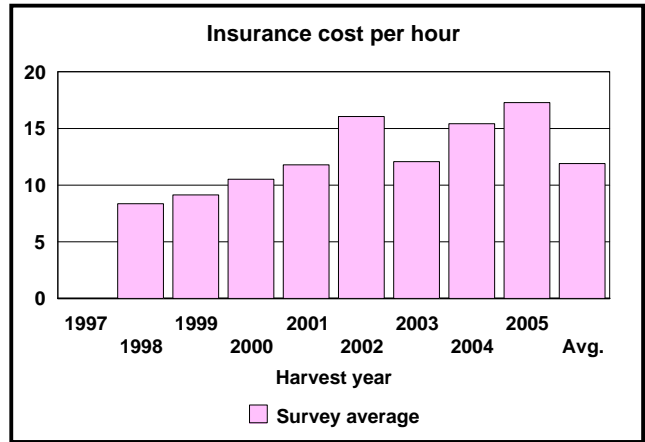
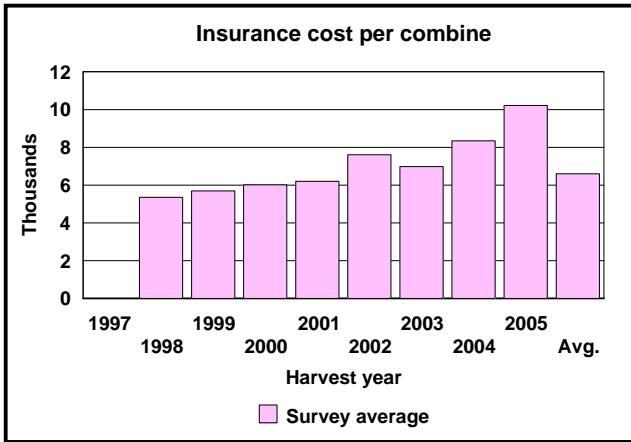
Historical Trends of Key Variables -- Individual harvester vs survey average



Historical Trends of Key Variables -- Individual harvester vs survey average



Historical Trends of Key Variables -- Individual harvester vs survey average





# 2005 Harvest Year Report for USCHI's Custom Harvester Analysis and Management Program (CHAMP)

Kevin Dhuyvetter and Terry Kastens  
Agricultural Economists  
AgAnalysis+ and  
Kansas State University

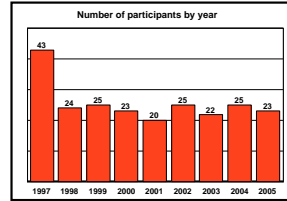
kcd@ksu.edu  
tkastens@ksu.edu  
www.agmanager.info



1

## CHAMP: a survey based program Over the years . . .

### • Participation



### • Repeat members

- 22 of 23 2005 members participated in 2004
- 10 members have participated all 9 years

2

## CHAMP: Over the years . . .

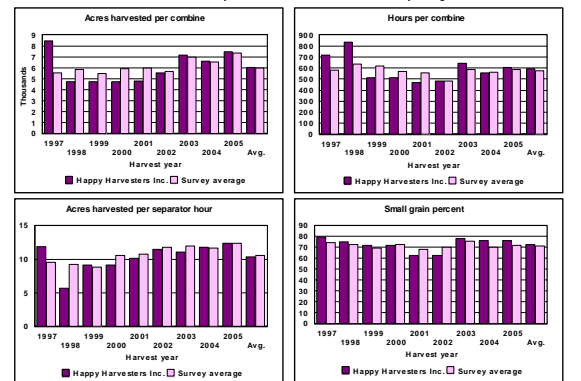
### • Continually seek ways to improve analysis

- Learning curve associated with filling out forms
- Better understanding of economic principles
- Prior year asset values and balance sheet
- Developed RevenueTracker.xls spreadsheet

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Custom Harvester Analysis and Management Program (CHAMP) 2005 Harvest Year Individual Firm Report												
Value	Survey Average		Survey Avg.		Firm		Survey Avg.		Firm		Survey Avg.	
	Value	Value	Value per Combine	Value per Acre	Value per Hour	Value per Acre	Value per Hour	Value per Acre	Value per Hour	Value per Acre	Value per Hour	
Number of Machines Operated	3.0	4.08	---	---	---	---	---	---	---	---	---	
Value of Combines	\$445,000	\$84,042	\$148,333	\$137,844	\$19,791	\$19,055	\$245,455	\$242,728	---	---	---	
Value of Platforms	\$94,000	\$196,798	\$31,333	\$43,807	\$4,181	\$6,022	\$51,855	\$74,822	---	---	---	
Value of Other Equipment	\$208,000	\$503,523	\$125,667	\$118,866	\$13,710	\$14,423	\$168,688	\$205,471	---	---	---	
Value of Other Assets	\$110,000	\$72,001	\$36,667	\$15,750	\$4,891	\$2,111	\$60,637	\$38,068	---	---	---	
Total Assets	\$957,000	\$1,436,352	\$310,000	\$316,346	\$40,566	\$44,409	\$327,855	\$343,121	---	---	---	
Total Acres Covered	22,488	34,153	7,496	7,358	1.0	1.0	12.40	12.44	---	---	---	
Combine/Hect Acres	N/A	1,468	N/A	121	N/A	0.020	---	---	---	---	---	
Small Grains Percent	76.3	72.0	---	---	---	---	---	---	---	---	---	
Total Separator Hours in 2005	1,813	2,721	604	591	0.081	0.082	77.8%	75.1%	---	---	---	
<b>INCOME AND EXPENSE</b>												
Harvest Revenue	\$541,511	\$811,697	\$180,504	\$	\$34.08	\$24.17	\$298.88	\$300.97	\$66.76	\$72.76	97.2%	
Combine/Hect Revenue	N/A	\$18,870	N/A	\$	N/A	\$0.20	\$61	\$54.62	0.07%	1.2%	---	
Other Revenue	\$6,478	\$23,562	\$3,159	\$	\$0.42	\$0.39	\$5.23	\$4.71	1.7%	1.6%	---	
Total Revenue	\$550,989	\$844,329	\$183,663	\$	\$4.50	\$24.86	\$303.91	\$305.29	100.0%	100.0%	---	
Labor (paid and unpaid)	\$113,870	\$155,028	\$37,957	\$34,111	\$5.08	\$4.57	\$62.81	\$56.41	20.7%	18.4%	---	
Taxes	\$20,988	\$29,264	\$6,096	\$6,277	\$0.53	\$0.85	\$11.58	\$10.54	3.8%	3.4%	---	
Fuel and Lubrication	\$98,231	\$141,815	\$32,744	\$31,630	\$4.37	\$4.21	\$54.18	\$52.20	17.8%	16.9%	---	
Repair and Maintenance	\$61,055	\$81,762	\$22,352	\$18,337	\$2.72	\$2.55	\$33.68	\$31.63	11.1%	10.3%	---	
Insurance	\$28,038	\$46,512	\$9,346	\$10,221	\$1.25	\$1.38	\$15.46	\$17.28	5.1%	5.5%	---	
Telephone and Utilities	\$6,389	\$10,177	\$2,130	\$2,320	\$0.28	\$0.30	\$3.52	\$3.74	1.2%	1.2%	---	
Other Expense	\$28,842	\$55,489	\$9,547	\$11,819	\$1.27	\$1.50	\$15.80	\$18.92	5.2%	6.0%	---	
Market Depreciation	\$85,700	\$126,358	\$28,567	\$28,256	\$3.81	\$3.88	\$47.27	\$48.20	15.6%	15.6%	---	
Interest on Assets (assgnmt)	\$64,428	\$88,715	\$21,542	\$21,793	\$2.67	\$3.02	\$36.65	\$37.81	11.7%	12.2%	---	
Total Expense	\$507,540	\$746,390	\$169,180	\$165,416	\$22.57	\$22.27	\$279.14	\$276.72	92.1%	89.6%	---	
Total Operating Profit	\$43,447	\$107,939	\$14,482	\$19,675	\$1.93	\$2.59	\$23.96	\$32.57	---	---	---	
Effective Interest Rate	7.00%	6.75%	---	---	---	---	---	---	---	---	---	
Debt-to-Asset Ratio (end of year)	32.4%	42.1%	---	---	---	---	---	---	---	---	---	
Return on Assets	11.2%	12.2%	---	---	---	---	---	---	---	---	---	
Return on Equity (based on BE)	13.5%	xxx	---	---	---	---	---	---	---	---	---	
Return on Equity (based on RE)	9.3%	xxx	---	---	---	---	---	---	---	---	---	
Expense/100 Revenue	\$92.11	\$88.67	---	---	---	---	---	---	---	---	---	

## Historical Trends of Key Variables - Individual harvester vs survey average

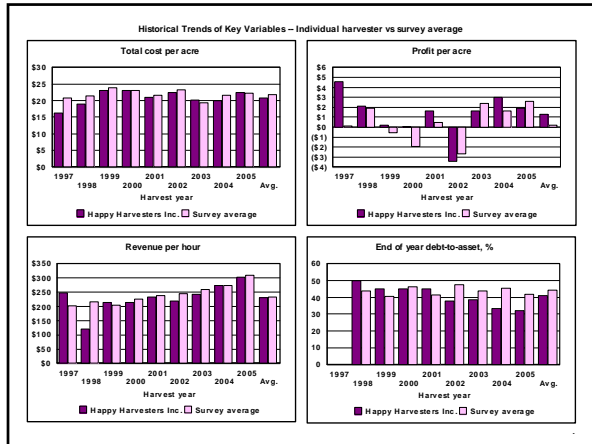


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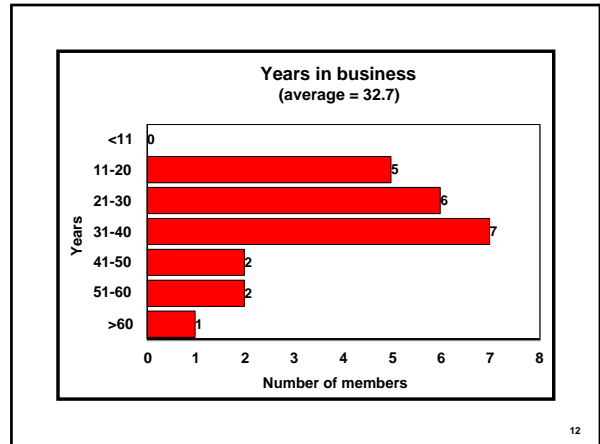
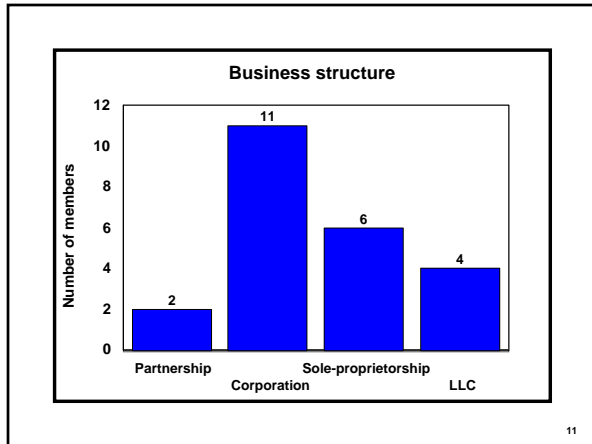
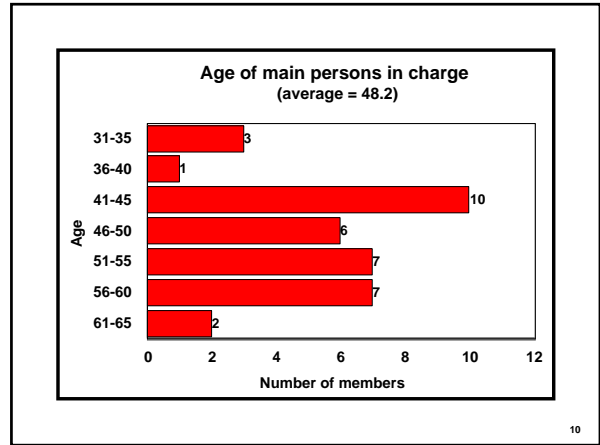
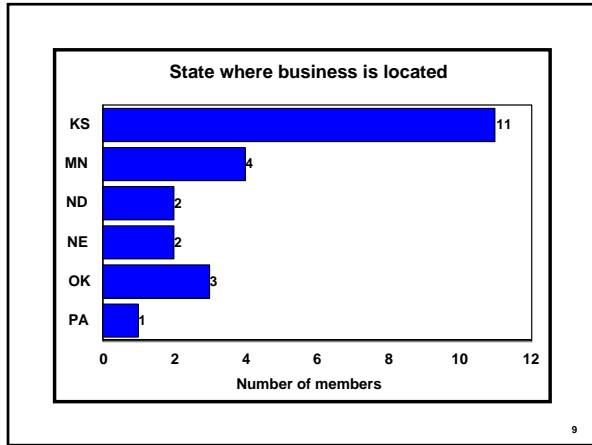
BALANCE SHEETS PAGE (schedule D)			
Balance sheet for custom harvesting business only, 2005 (read the footnotes)			
<b>ASSETS (market value)</b>		<b>LIABILITIES &amp; OWNER EQUITY</b>	
beginning	and	beginning	and
01/01/05	12/31/05	01/01/05	12/31/05
Current Assets		Current Liabilities	
Cash on hand & in checking	\$	Accounts payable	\$
Savings, bonds, stocks, etc.	11,000	26,435	1,500
Accounts receivable	17,000	21,150	Short term loans (due within 1 yr.)
Supply inventories	5,000	6,200	principal outstanding
Other current assets (specify)	0	0	accrued interest
D1. TOTAL CURRENT ASSETS	34,700	54,785	D4. TOTAL CURRENT LIABILITIES
Non-current Assets		Non-current Liabilities	
Combines (from A1-A3), A2-A20	527,350	550,650	Long term loans (due beyond 1 yr.)
Non-combine equipment (from C1, C2)	275,510	349,690	principal outstanding
Market value of business real estate (i.e., office, storage bldgs., etc.)	50,000	50,000	accrued interest
D2. TOTAL NON-CURRENT ASSETS	852,860	949,340	D5. TOTAL NON-CURRENT LIABILITIES
D3. TOTAL CUST. HARV. ASSETS (D1+D2)	887,560	996,125	D6. TOTAL CUST. HARV. LIABILITIES (D4+D5)
			D7. TOTAL CUST. HARV. NET WORTH (D3-D6)
			Change in equity
<b>TOTAL EQUITY (custom harvesting and outside businesses)</b>			84,134
Investments in other businesses (such as a farm) and non-business investments (such as your residence)			01/01/05
Report only the NET investment, which is assets less liabilities (net worth), for these investments			12/31/05
Overall equity or net worth for whole business (D7+D8)			D8. 145,000
			152,000
			D9. 734,469
			825,603
			Change in equity
			91,134

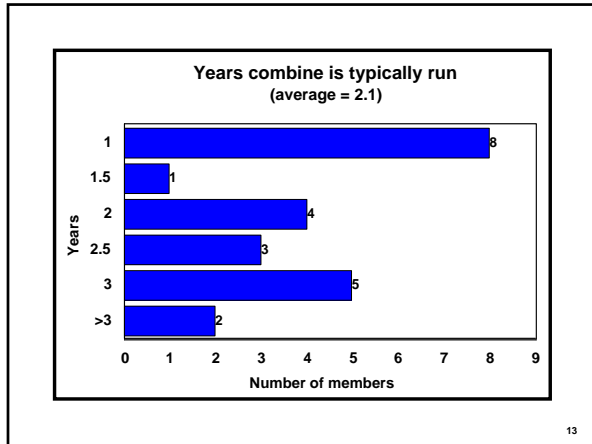
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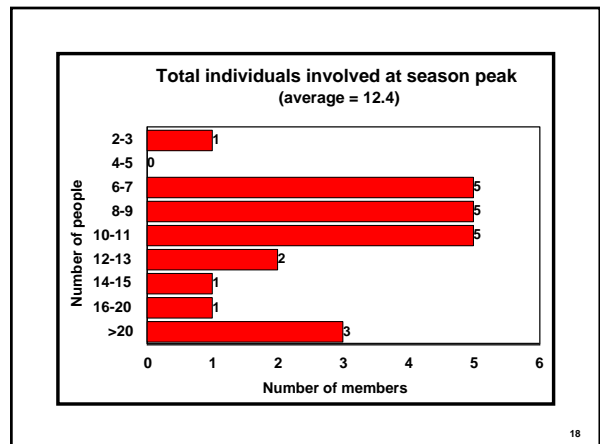
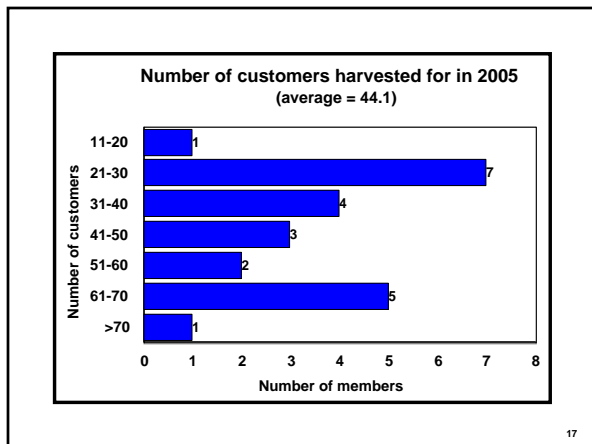
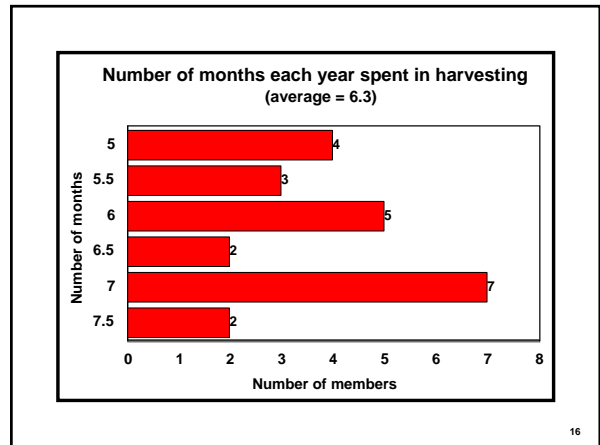
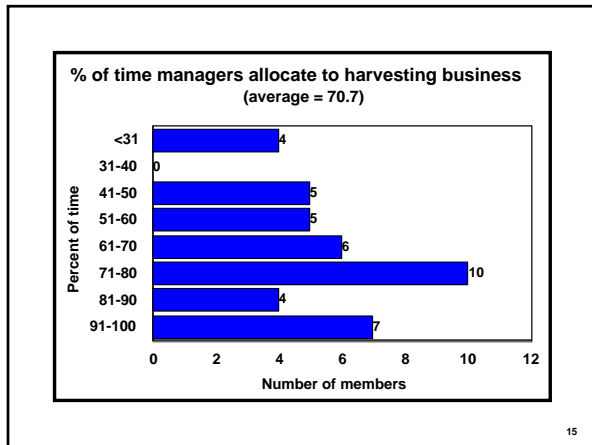


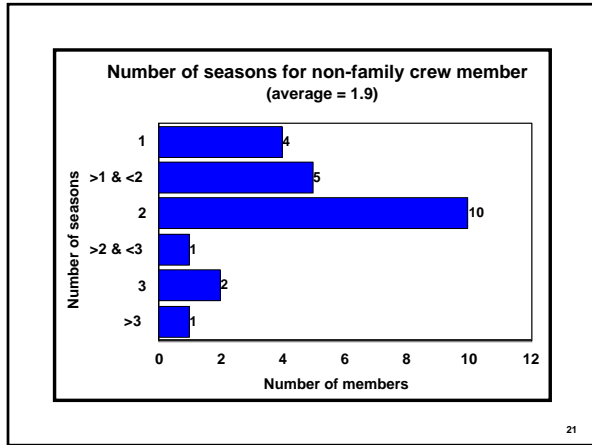
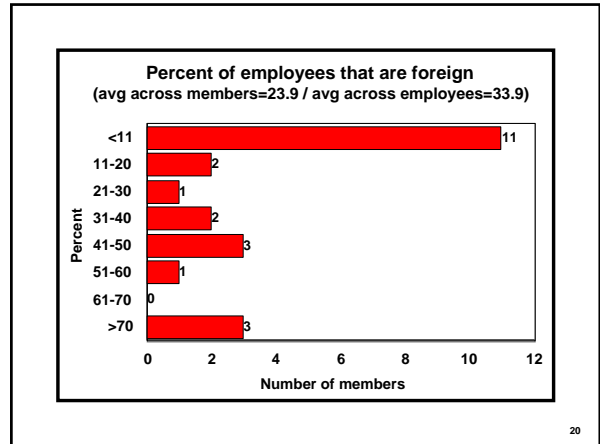
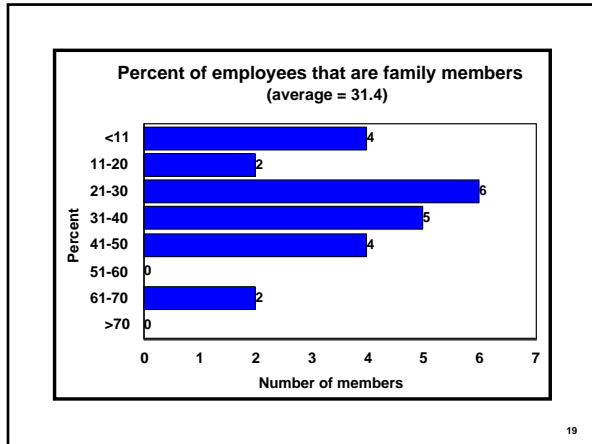
- ### General Information
- Location
  - Age of manager
  - Business structure
  - Years in business
  - Age and number of combines
  - Relative importance of business
  - People involved in business
  - Number of customers
  - Was it a good year?
    - 39% thought it a good year (4% thought bad)





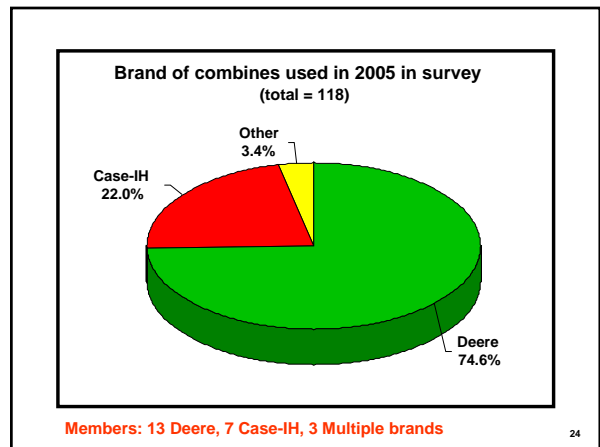
- Miscellaneous Information**
- 15 run new combines
  - 6 run used combines
  - 2 runs both
  - 16 of 23 (69.6%) have sideline businesses
    - 12 involved in farming/ranching
    - 10 involved in trucking
    - 3 involved in other businesses
- 14

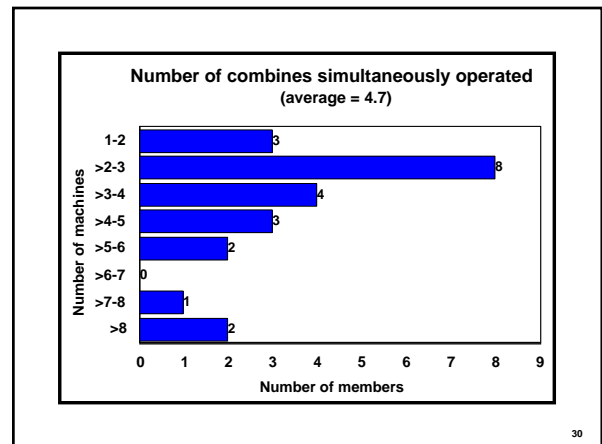
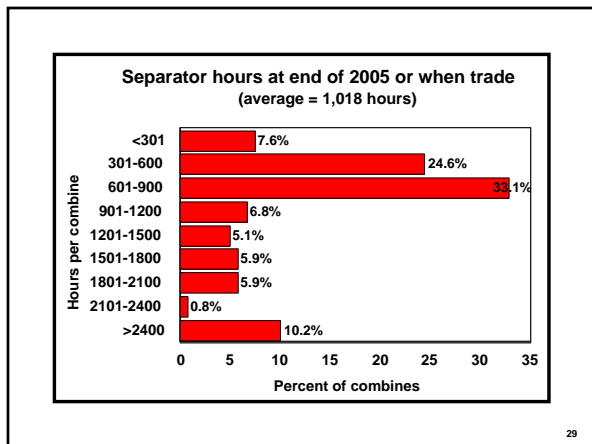
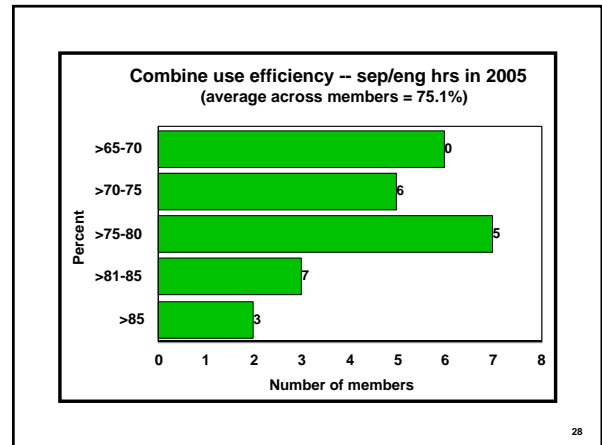
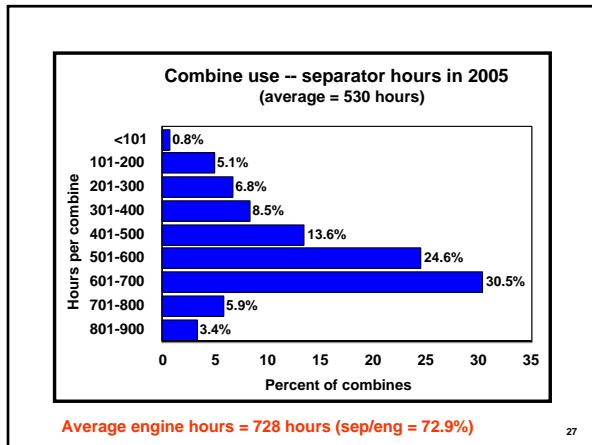
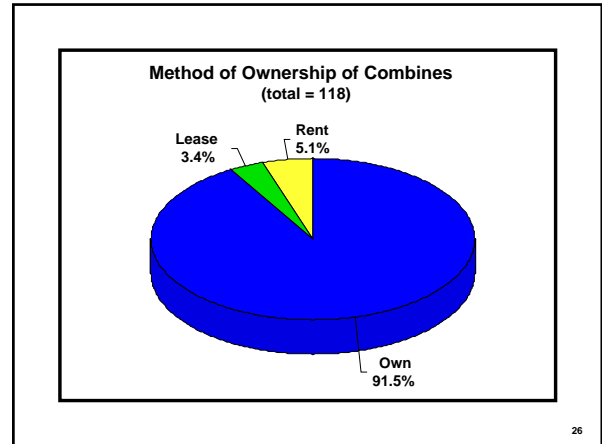
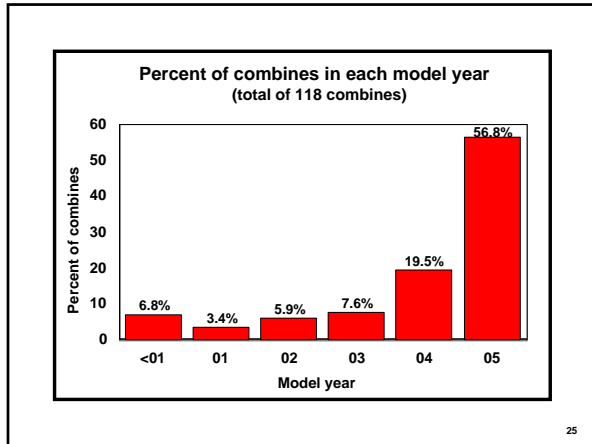


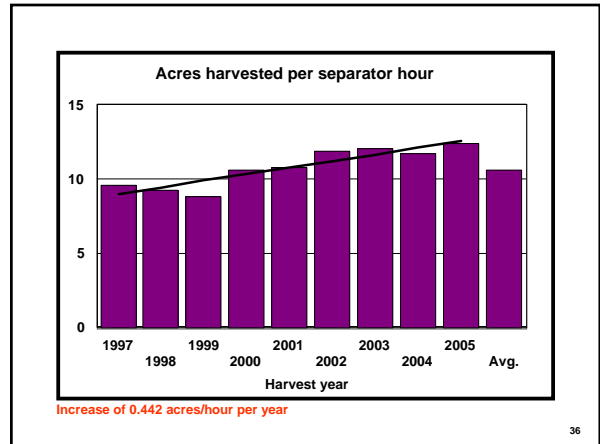
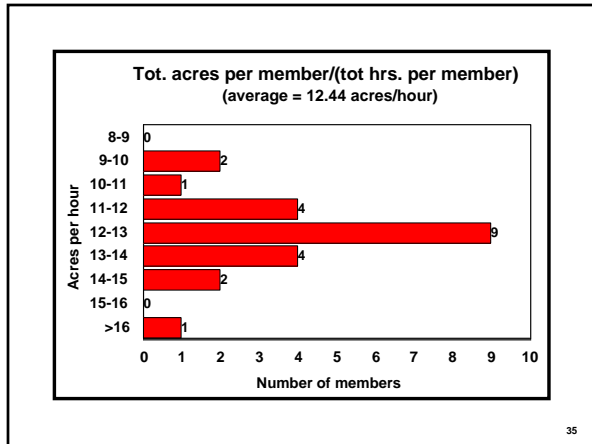
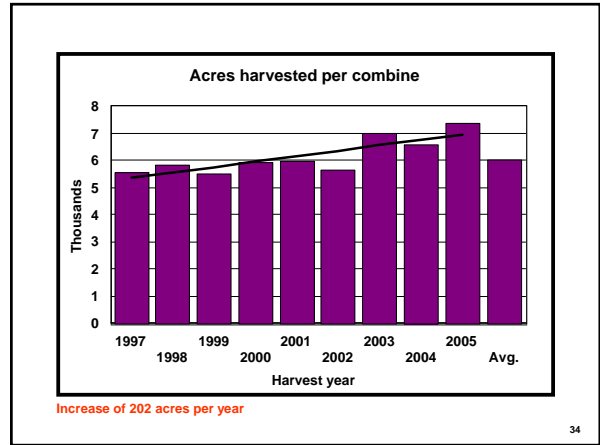
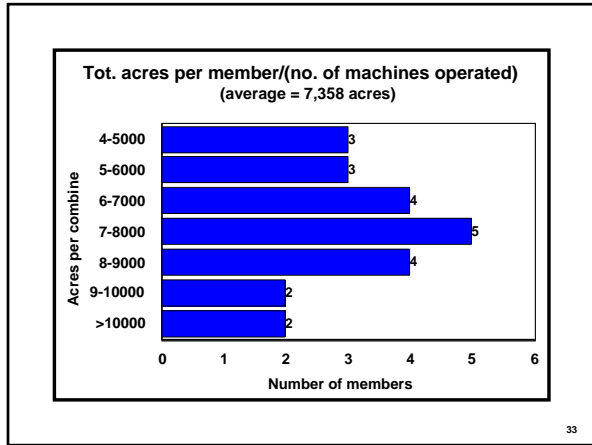
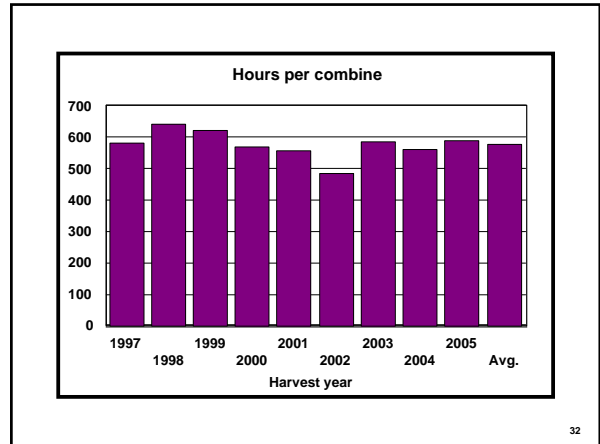
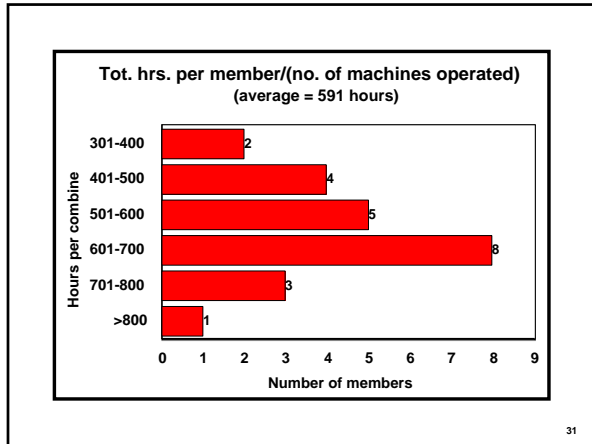


- More Miscellaneous Information**
- Employee breakdown (season peak)
    - Family employees average was 31.4%
    - Foreign employees: avg across members 23.9%, 33.9% of total employees
    - Average employees/combine was 2.76 (min=2.14, max=4.00)
  - 17 of 23 finance their combines through dealers/manufacturers
  - 14 of 23 get combine insurance through dealer/major manufacturer
  - Average interest rate was 6.75%
    - 2004 5.94%; 2003 6.31%; 2002 6.55%; 2001 7.66%; 2000 9.32%
    - Minimum in 2005 = 4.65%
    - Maximum in 2005 = 9.50%
- 22

- Combine Information**
- Brand
  - Model year
  - Own, lease, or rent
  - Headers
  - Hours used (separator and engine)
  - Auxiliary equipment
  - Beginning and end of season values
- 23





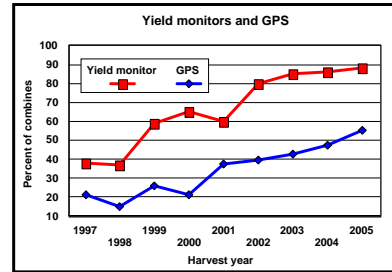


### Combine Headers & Equipment (118 combines)

- Rigid 48.3% 30.0 ft.
- Draper 51.7% 34.5 ft.
- Flex head 62.7% 30.0 ft.
- Corn head 57.6% 9.3 rows
- Row crop head 21.2% 8.4 rows
- Pickup 61.9%

37

### Combine Auxiliary Equipment (118 combines)



- Members providing maps – 47.8%
  - For providers, this % of customers mapped – 5.7%

38

### Grain Truck Information (141 total)

- Average year 1992.2  
(2004 1992.3; 2003 1991.8; 2002 1991.2; 2001 1989.2; 2000 1989.7)
- % Tandems 34.8%
- % Semis 63.1%
- % owned 98%
- Avg. mi. in 2004 (102 total) 15,949  
(2004 12433; 2003 12,982; 2002 13,549; 2001 12,692; 2000 19,589)
- Avg. miles on truck at end of year  
– (70 total): 486,221  
(2004 473,299; 2003 454,461; 2002 552,128; 2001 558,707; 2000 513,162)

39

### Equipment depreciation

#### Market depreciation (% drop in value)

	2005	2004	2003	2002	2001	2000	1999
• Combines	10.3	13.3	14.4	14.0	14.7	15.1	16.1
• Headers/equip	6.9	5.0	7.5	7.9	5.1	7.4	9.1
• Trucks	0.4	4.0	7.2	11.2	11.0	12.1	5.9

40

### Revenue Information

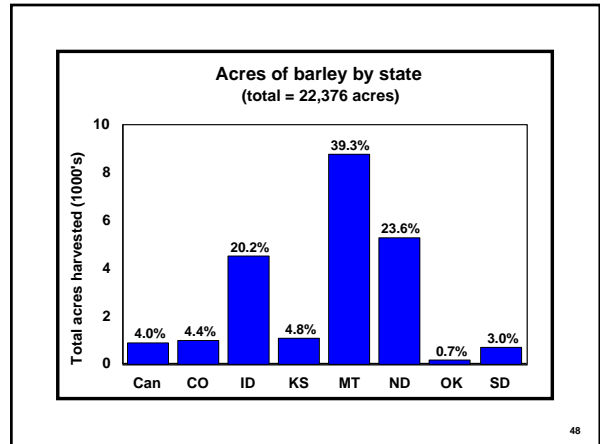
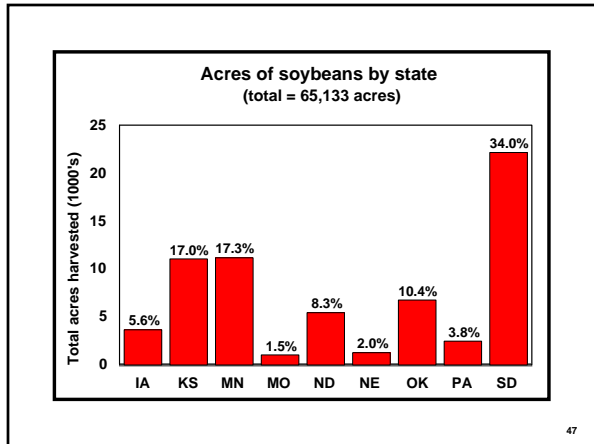
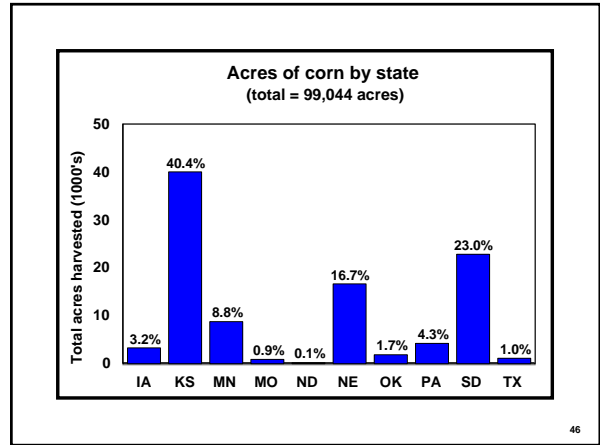
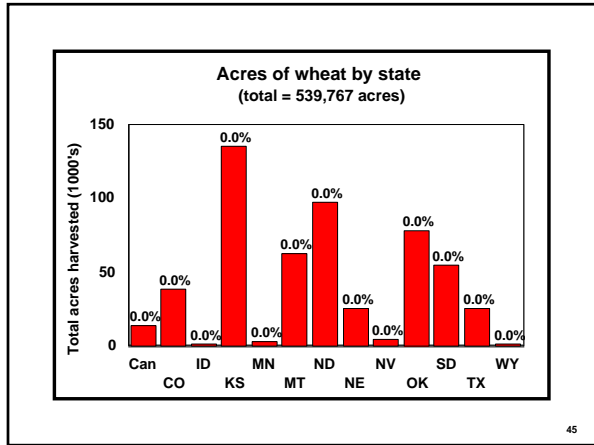
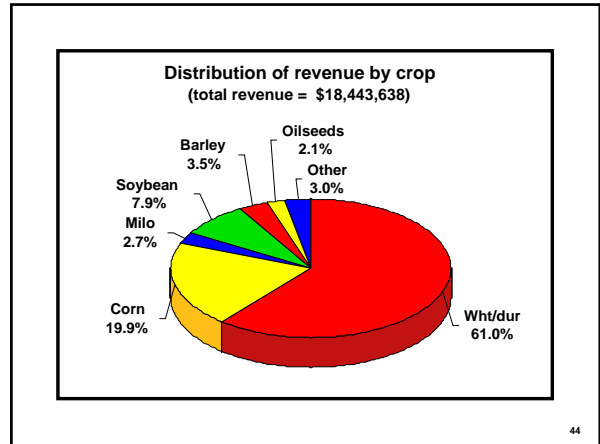
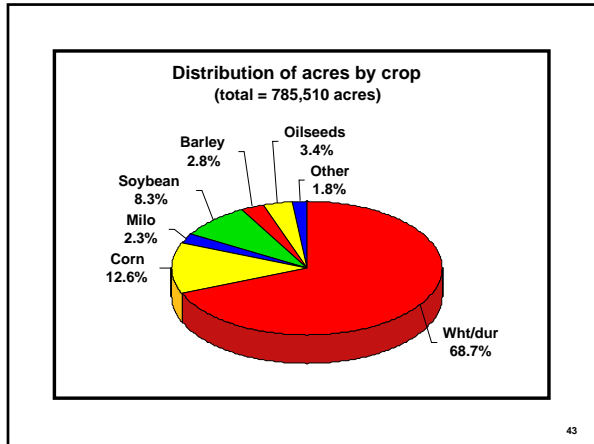
- Acres harvested
- Crops harvested
  - small grains vs. other
- Harvest states
- Percent hauled to farm
- Combine vs. trucking revenue

41

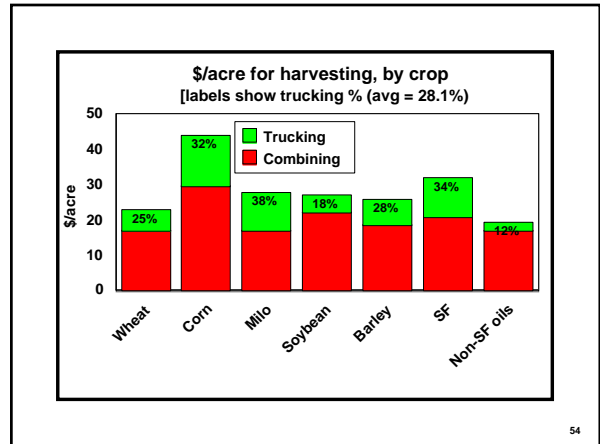
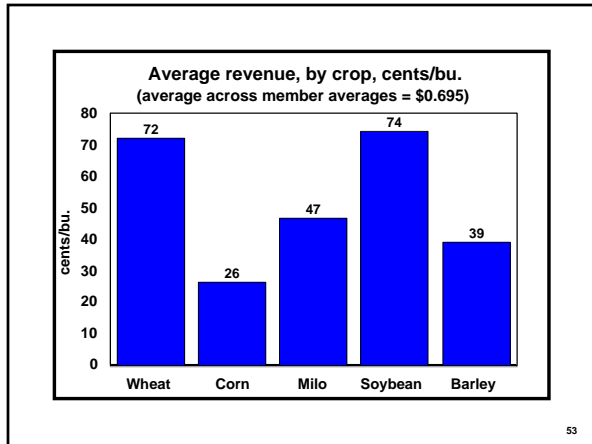
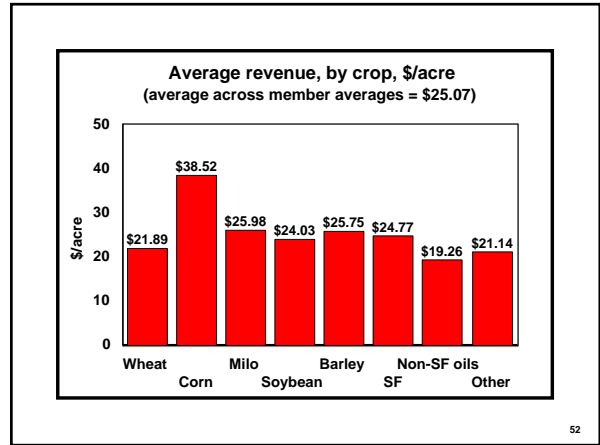
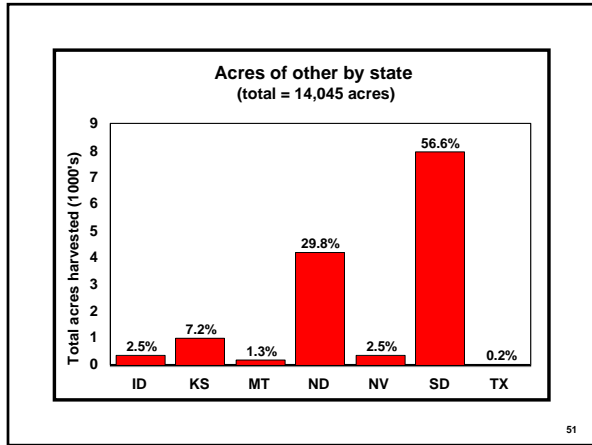
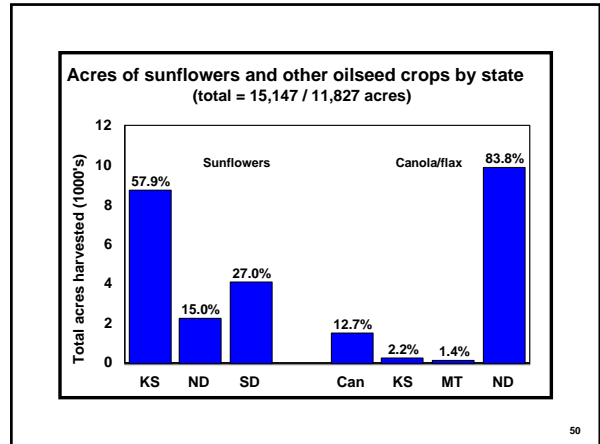
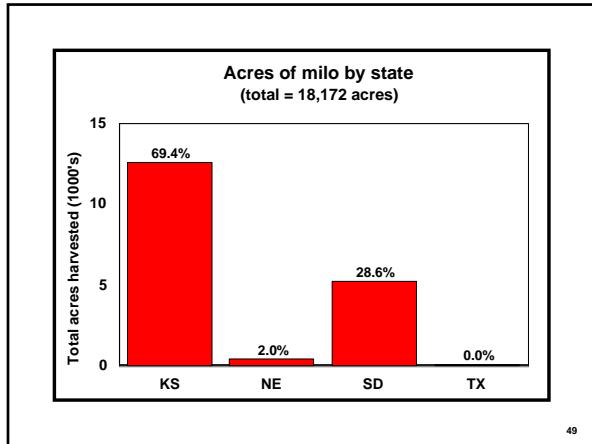
### Acreage Information

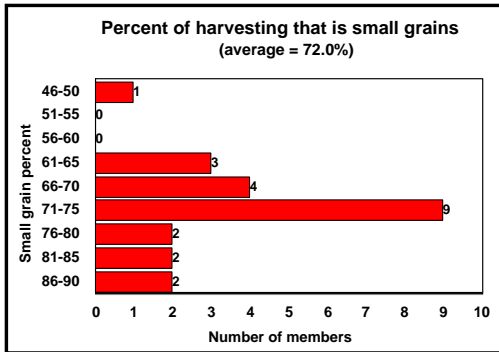
- Total-- 785,510 acres
- Small grains-- 562,852 acres (71.7%)
  - Wheat, durum, barley, oats
- Other-- 222,658 acres (28.3%)
  - canola, corn, edible beans, flax, lentils, milo, mustard, peas, pinto beans, popcorn, soybeans, sunflowers, rye, grass

42

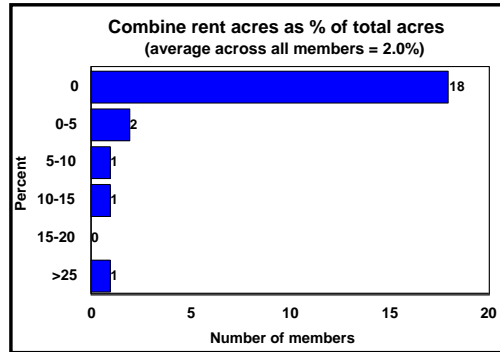




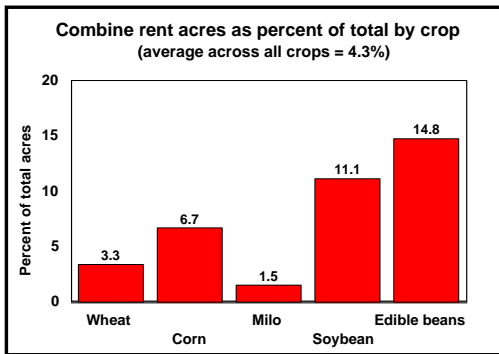




55



56

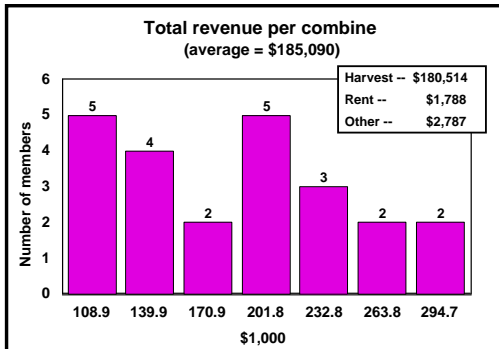


57

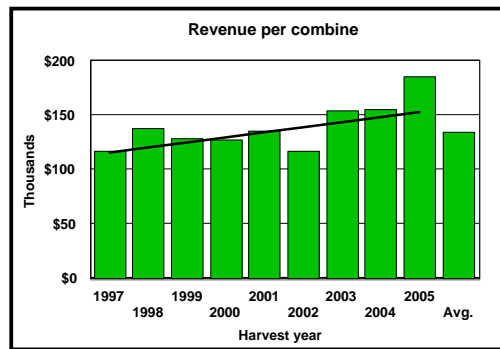
### Revenue Information

- Harvest
  - Combine income
  - Trucking income
- Combine rental
- Other

58

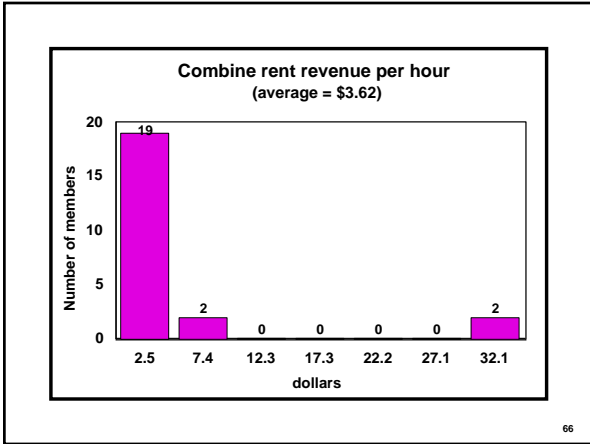
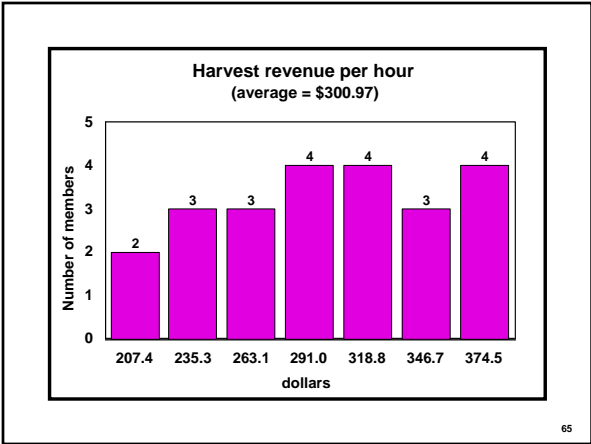
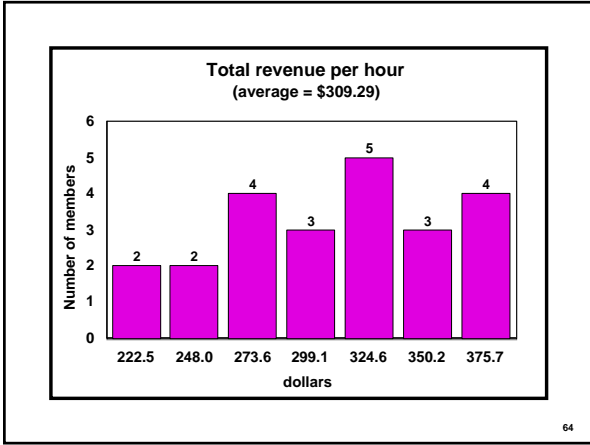
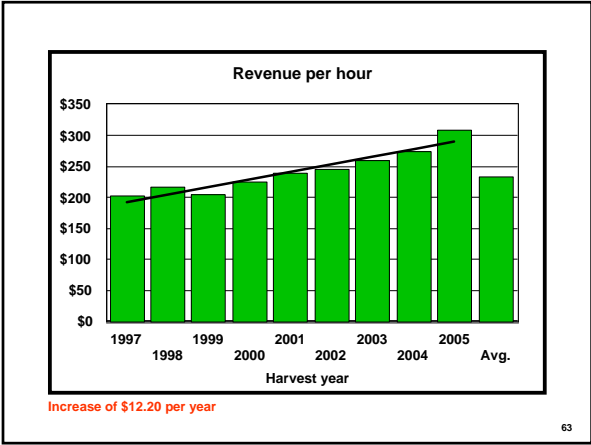
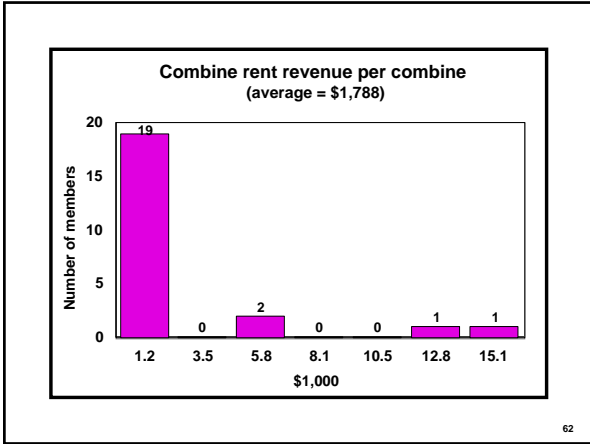
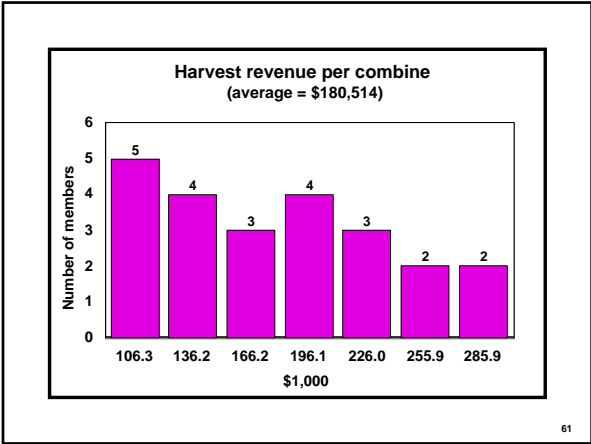


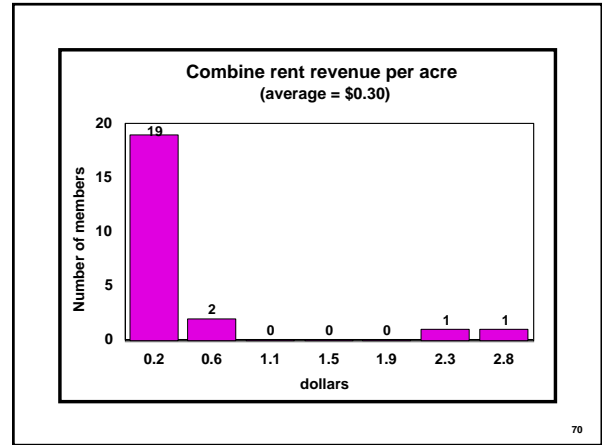
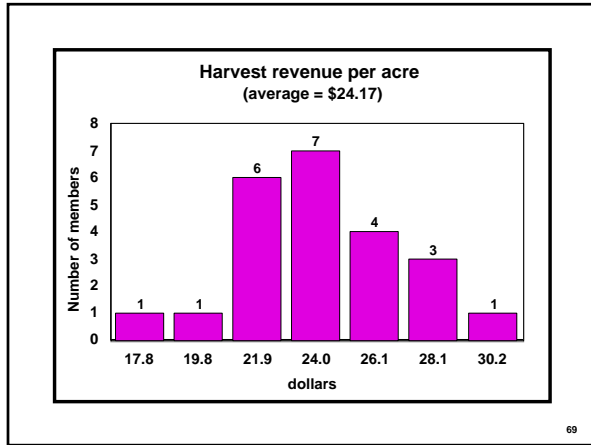
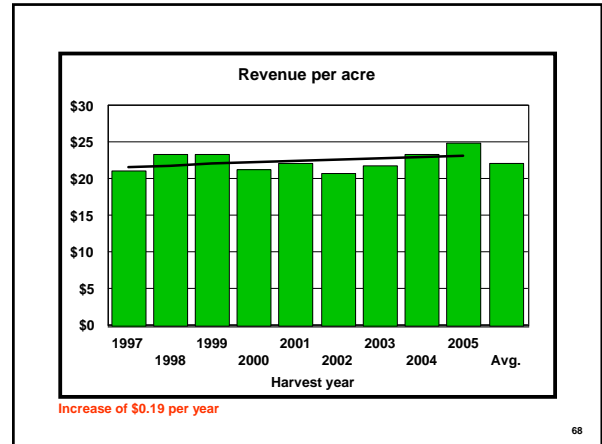
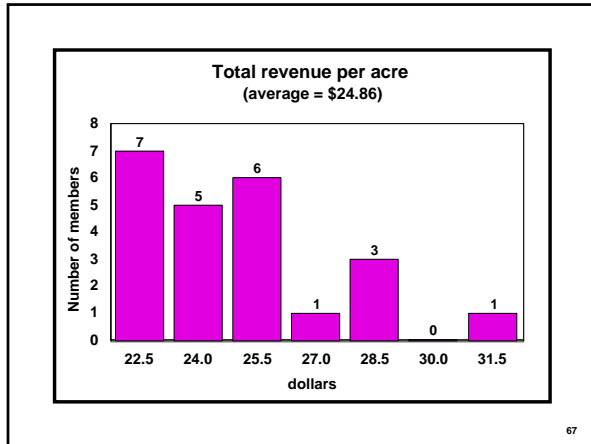
59



Increase of \$4,624 per year

60



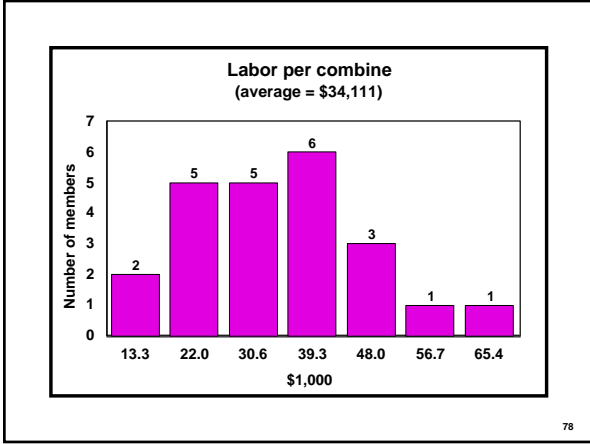
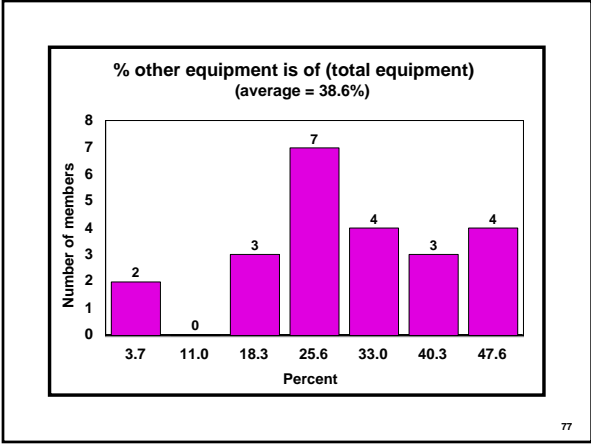
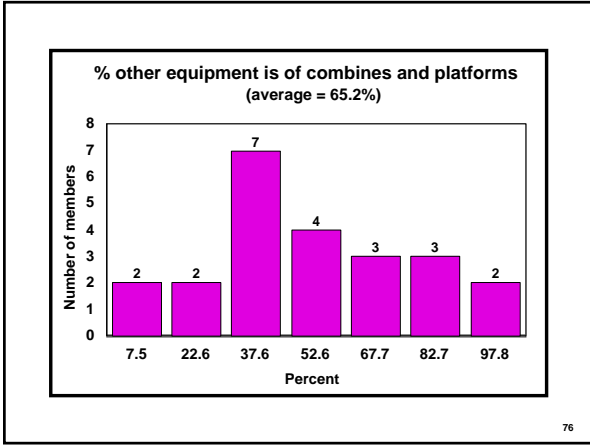
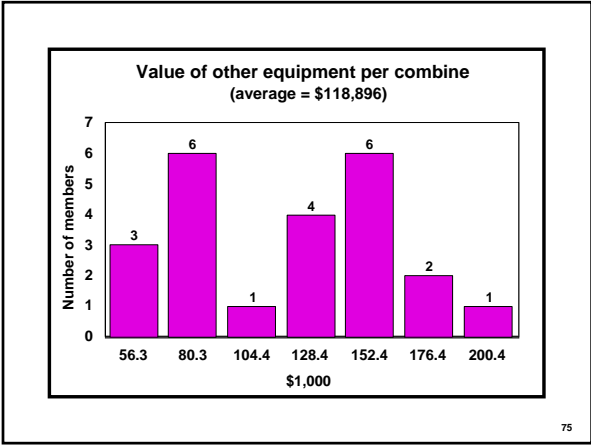
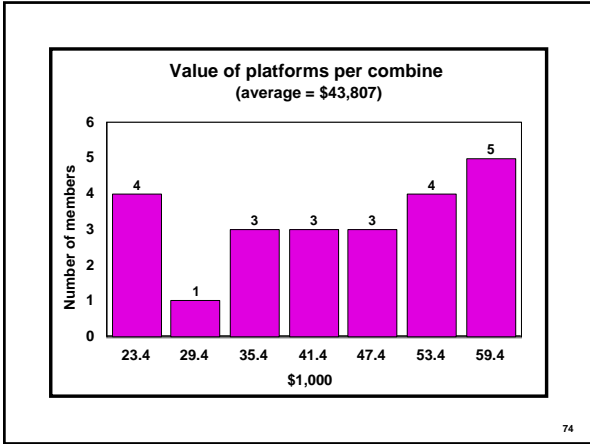
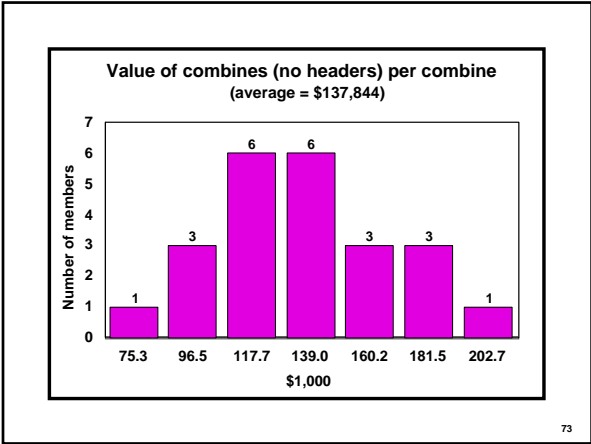


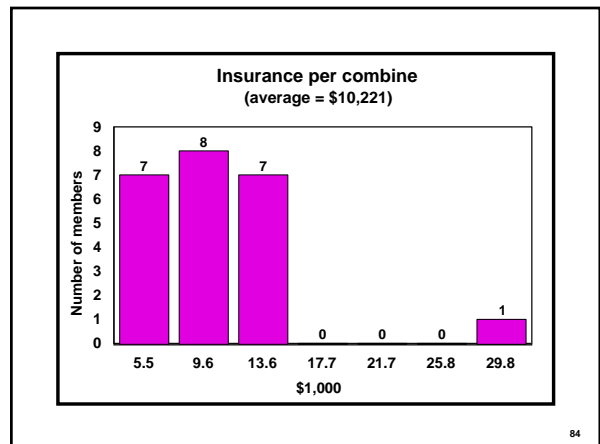
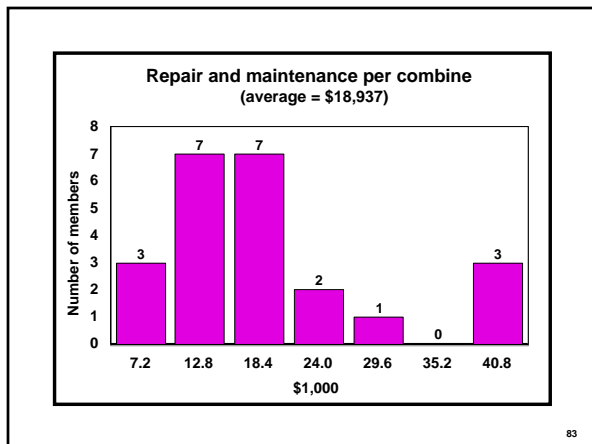
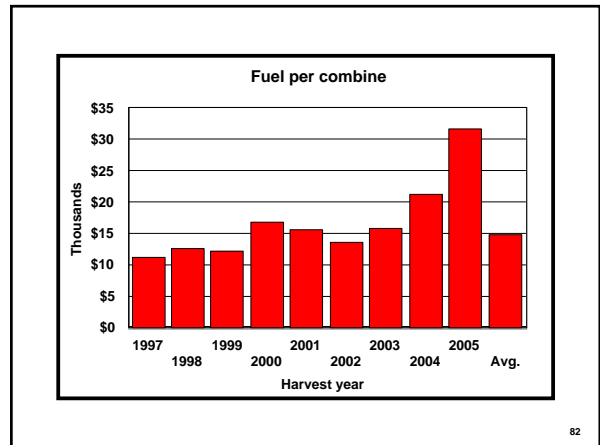
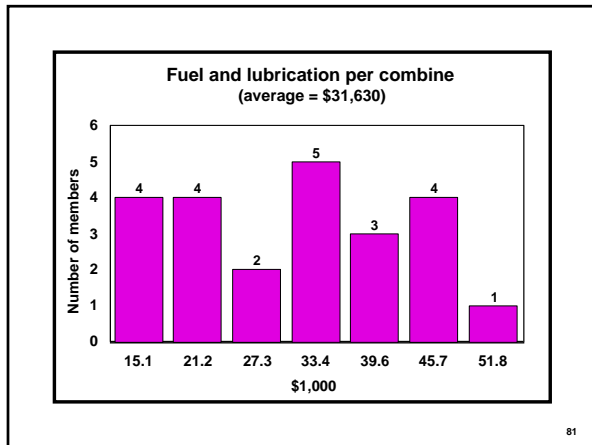
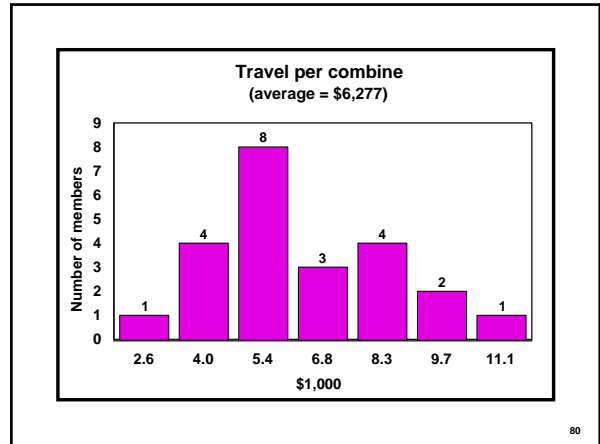
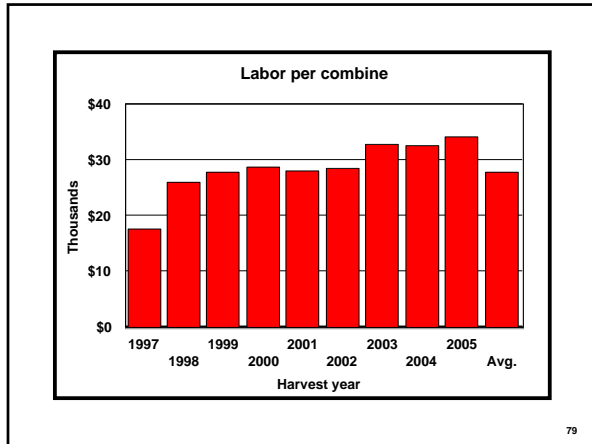
- Operating Expense Information**
- Labor (paid and unpaid)
  - Travel
  - Fuel and Lubrication
  - Repair and Maintenance
  - Insurance
  - Telephone and Utilities
  - Other Expenses (prop tax, tags/permits, hire, rent/lease)
  - Market Depreciation
  - Interest on Assets (assigned)
- 71

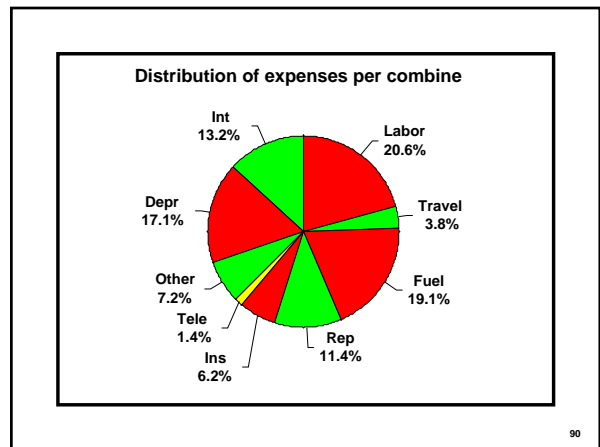
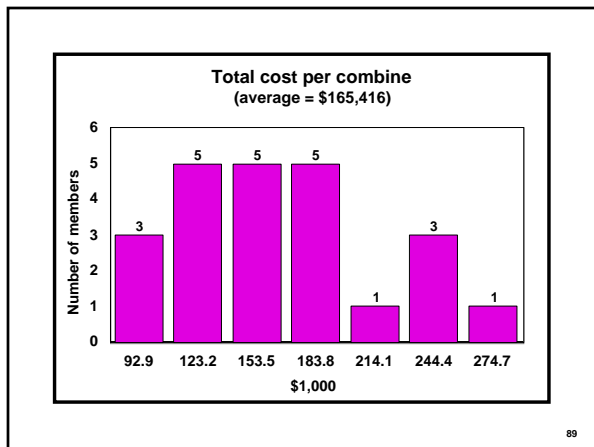
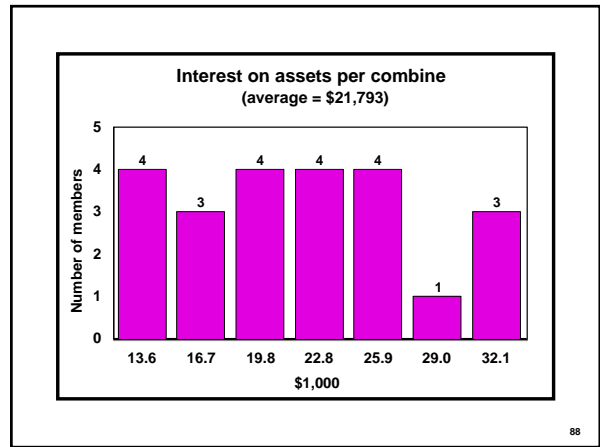
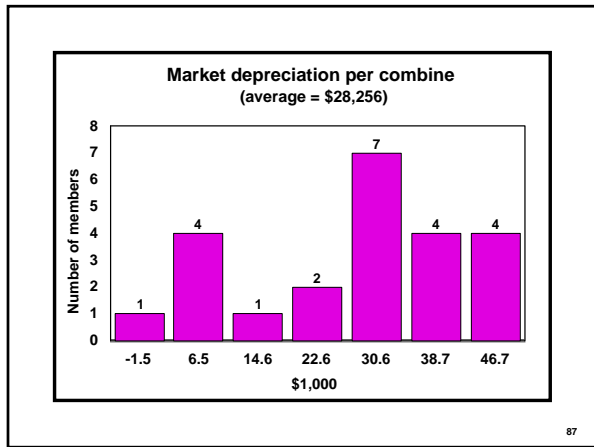
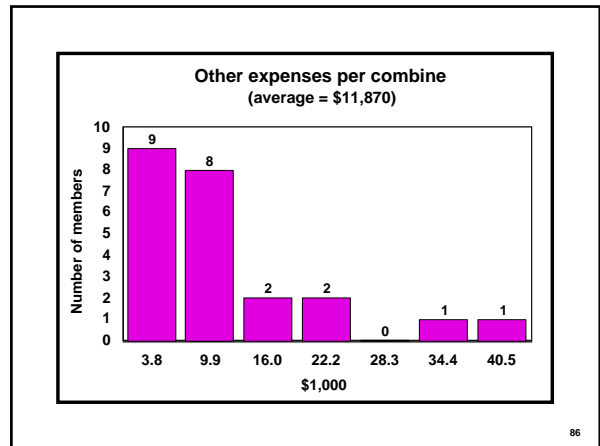
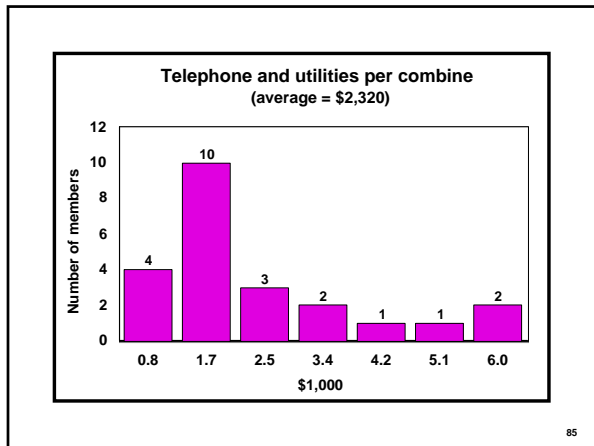
**Value of Assets per Combine Operated**

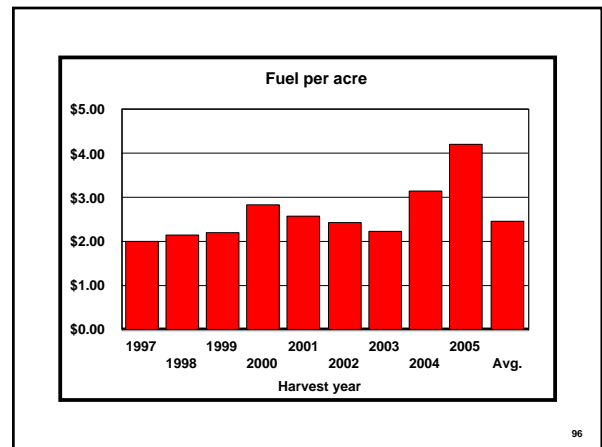
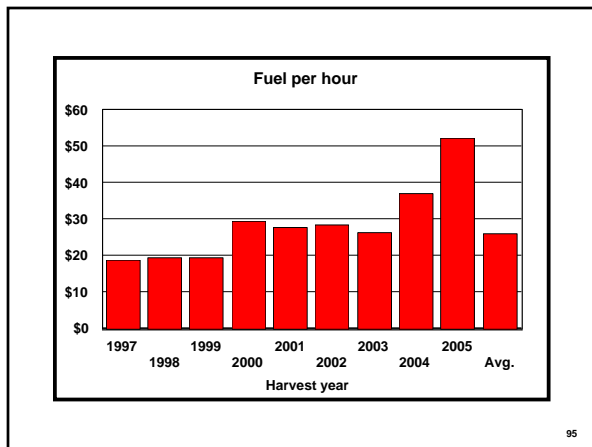
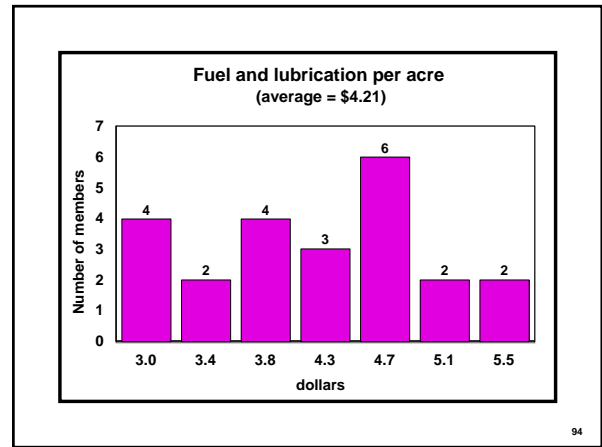
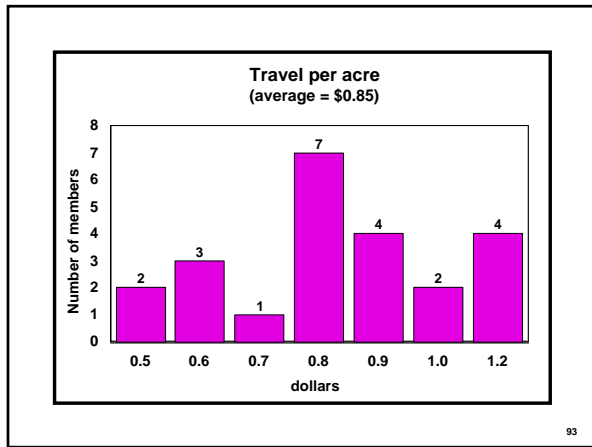
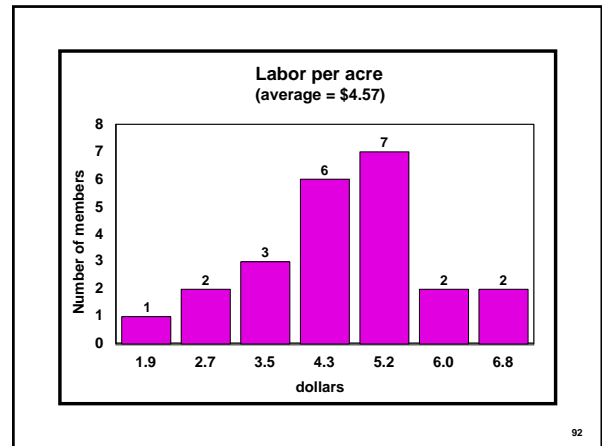
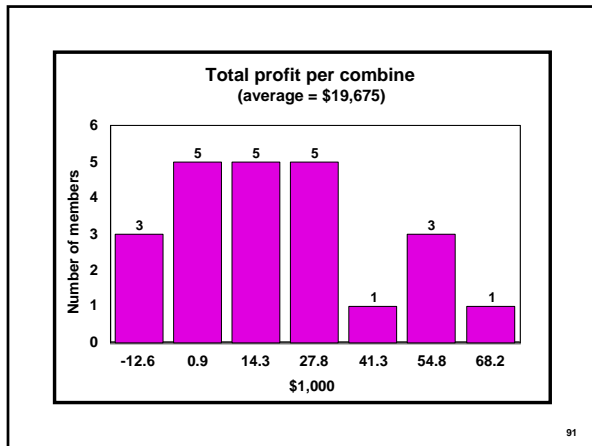
• Combine	\$137,844
• Platforms	\$43,807
• Other equipment (trucks, etc)	\$118,896
<b>Sub Total</b>	<b>\$300,547</b>
• Other assets (balance sheet)	\$15,799
<b>TOTAL</b>	<b>\$316,346</b>

72

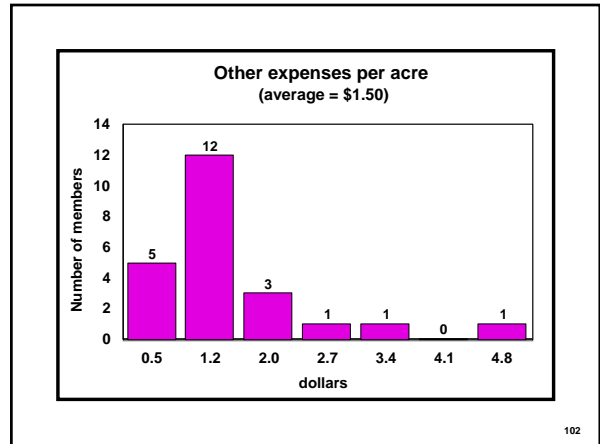
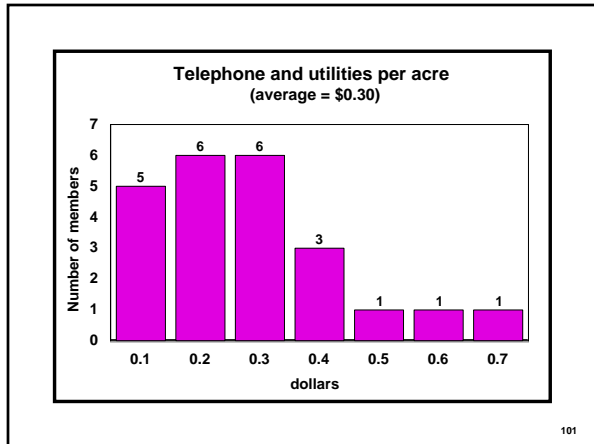
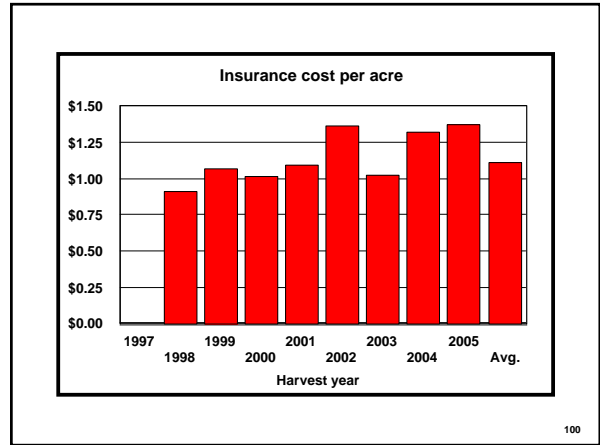
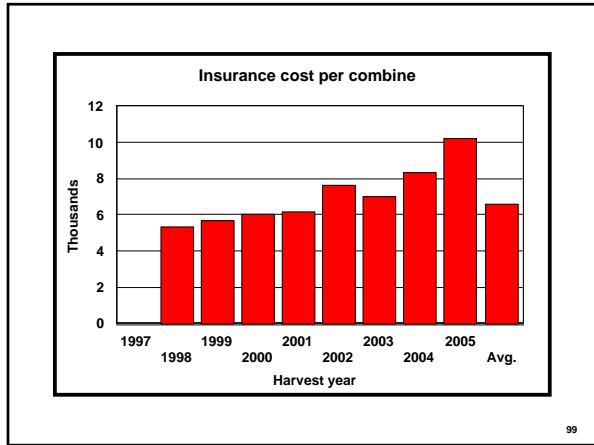
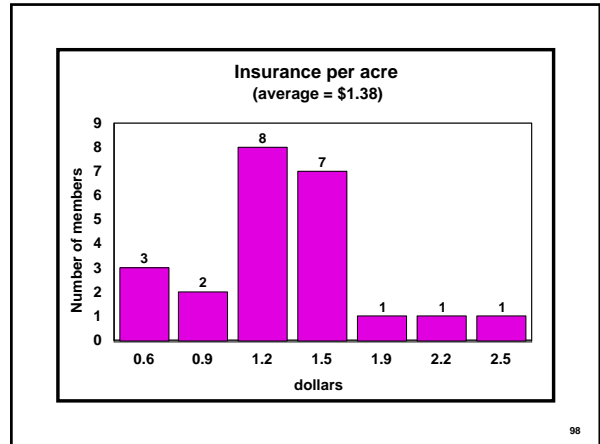
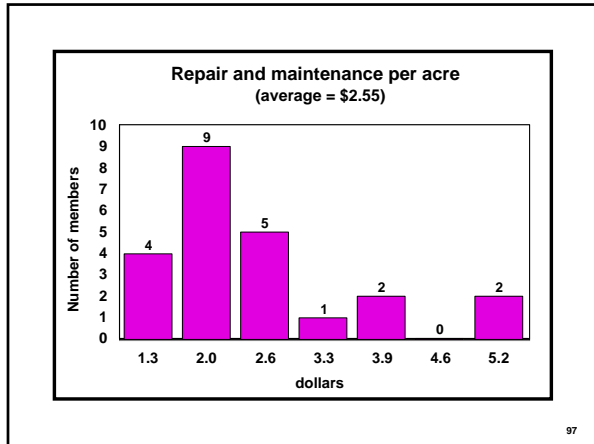


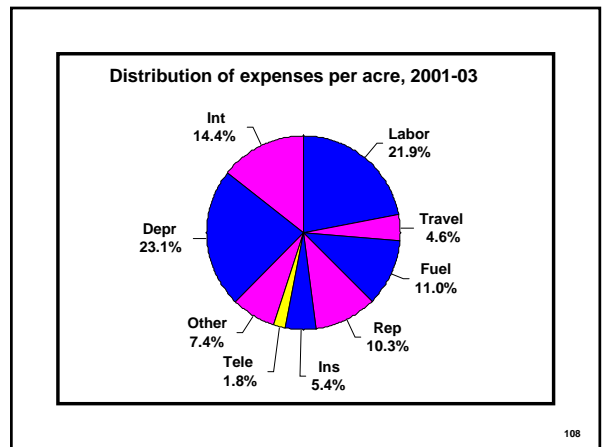
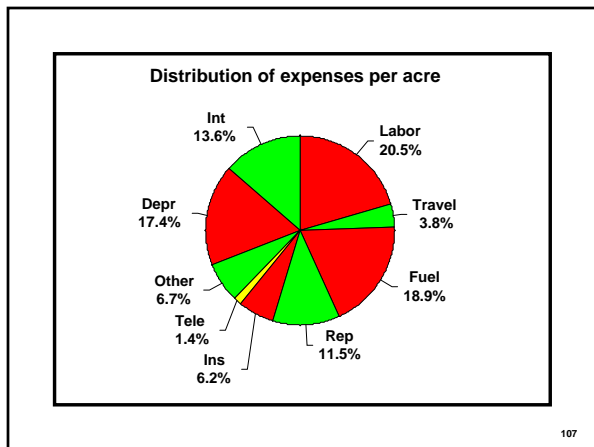
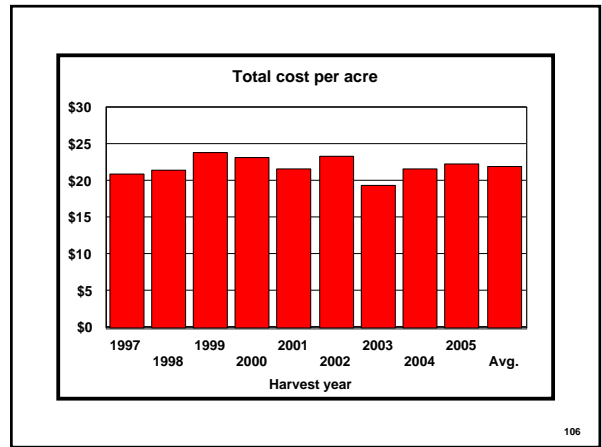
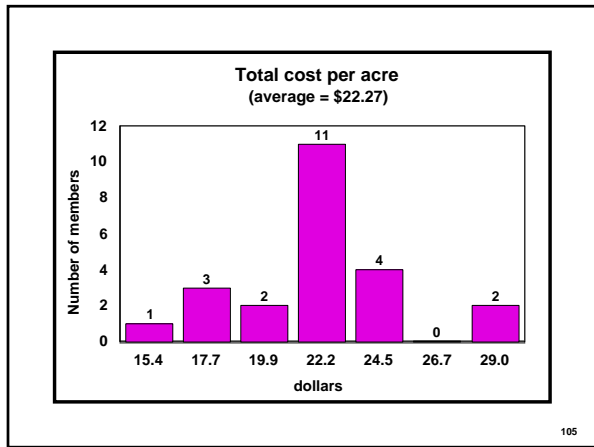
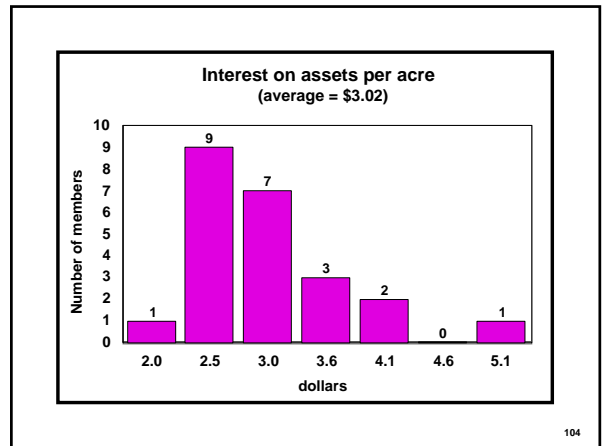
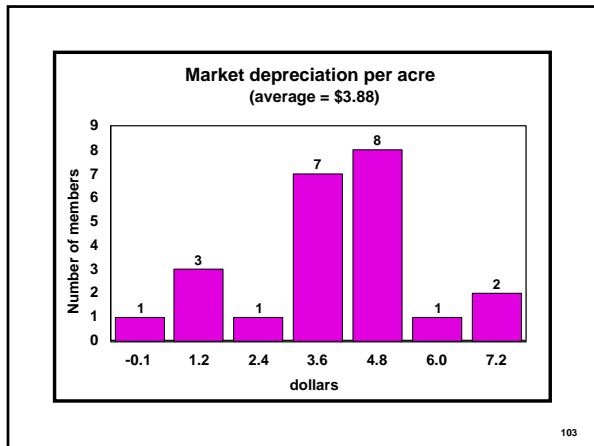


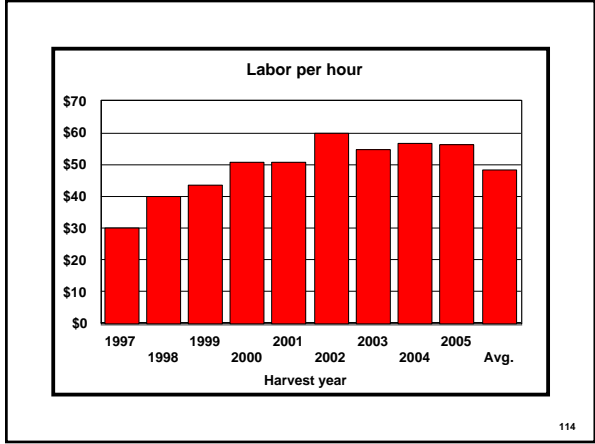
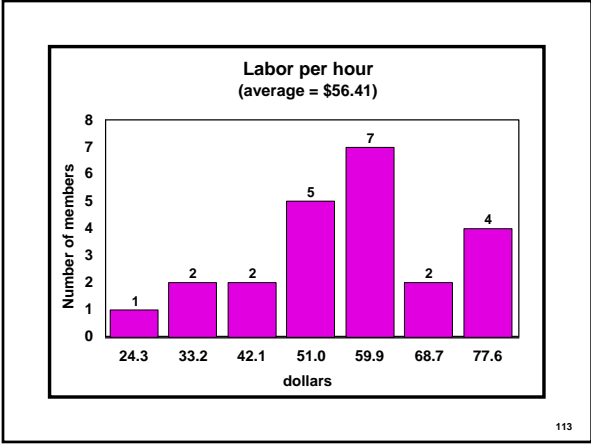
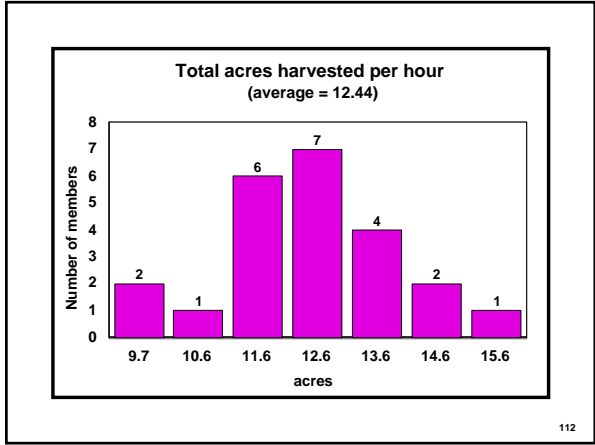
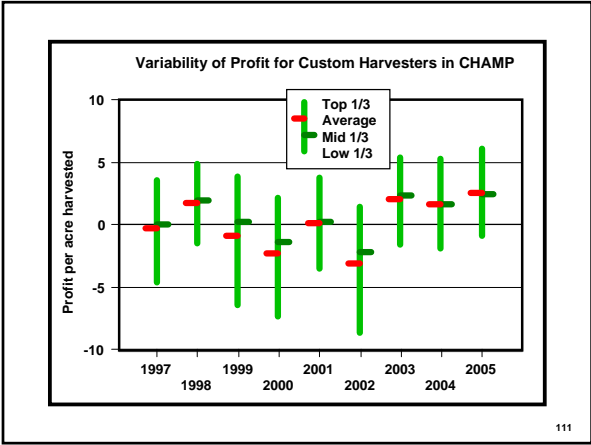
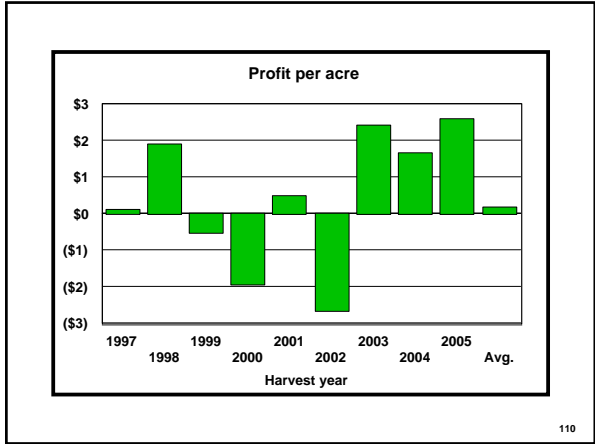
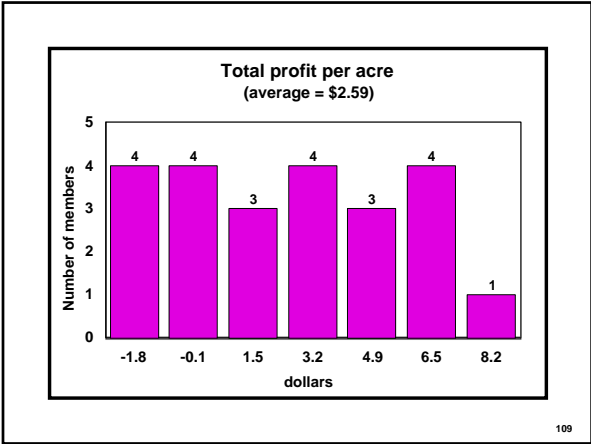


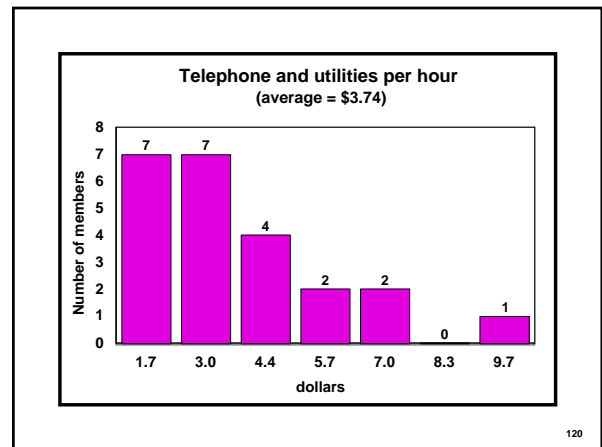
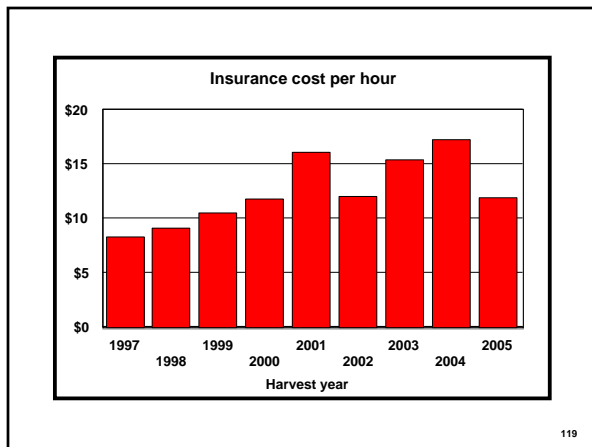
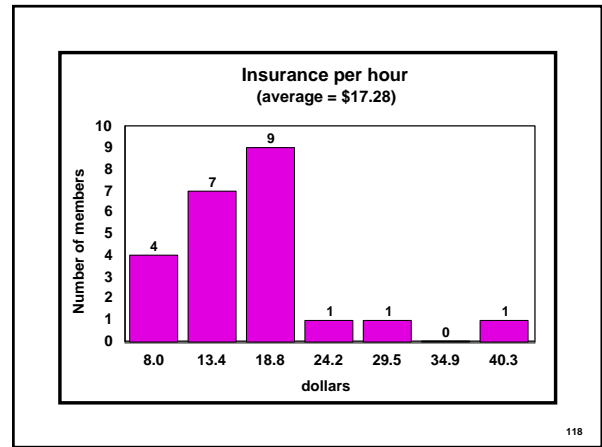
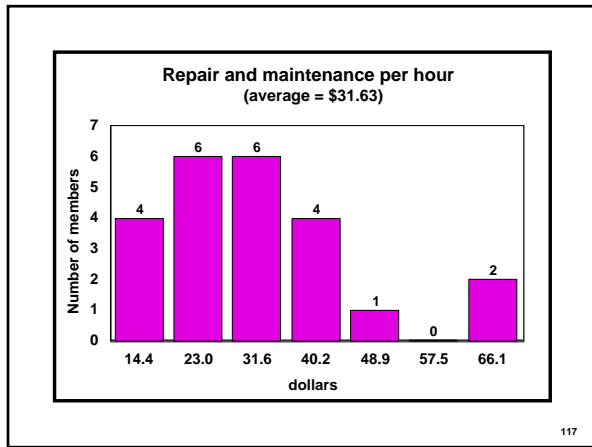
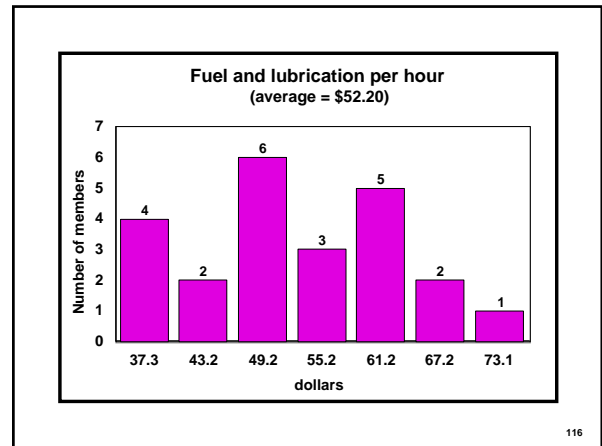
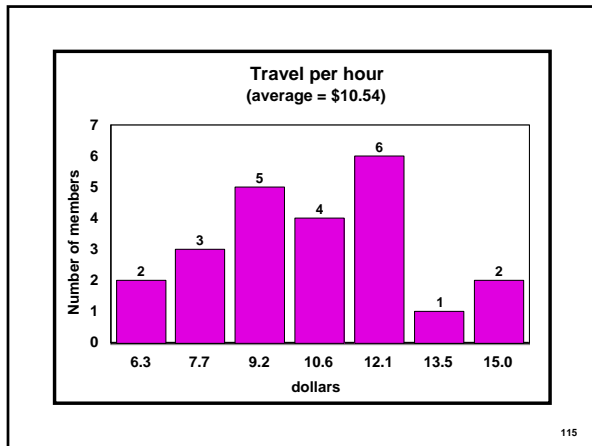


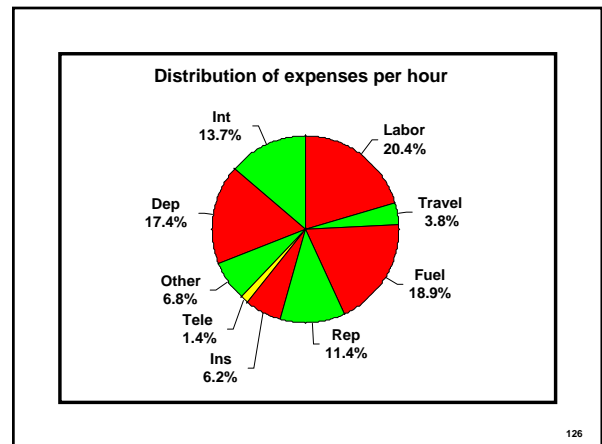
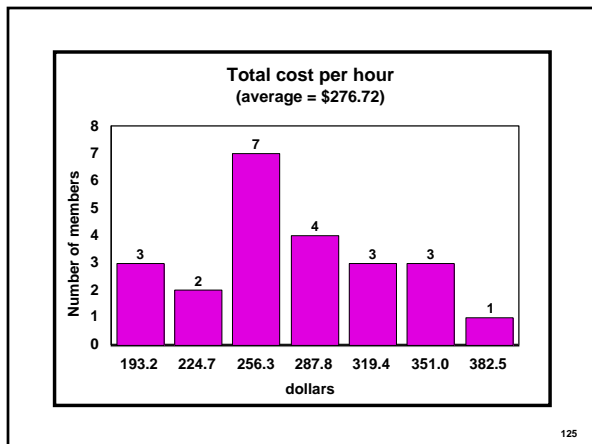
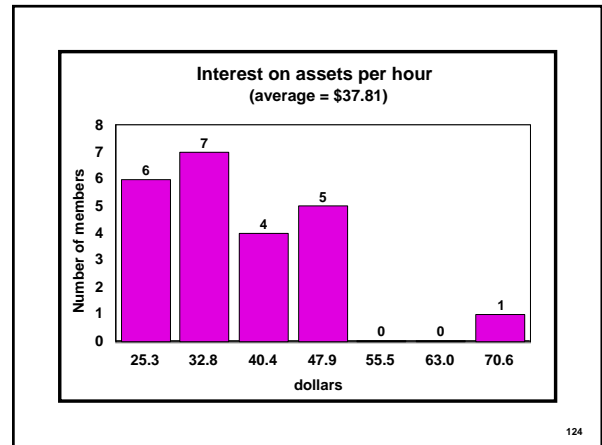
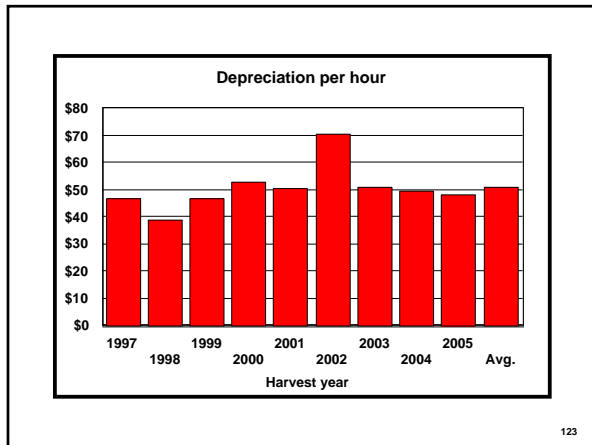
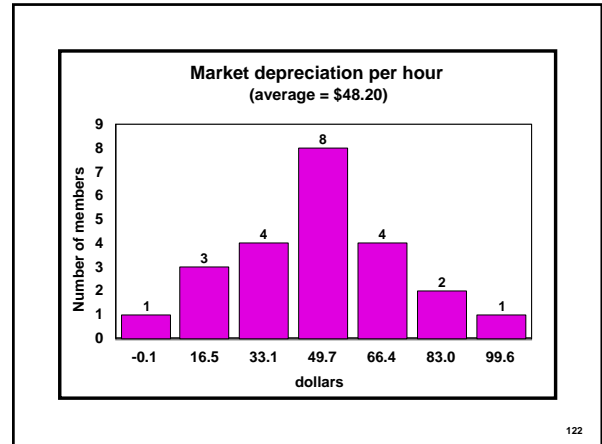
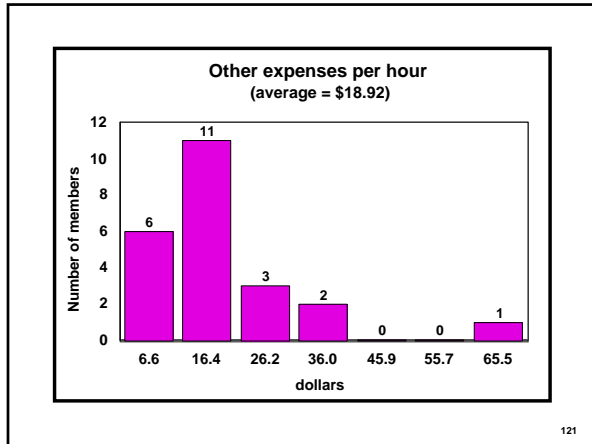


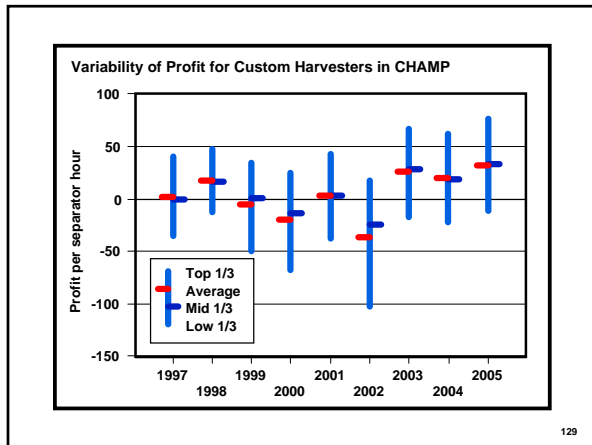
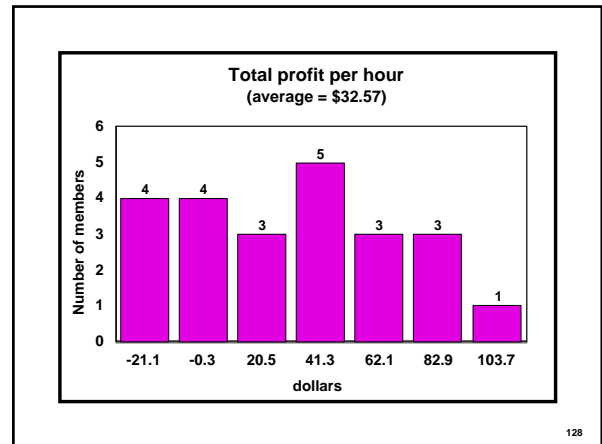
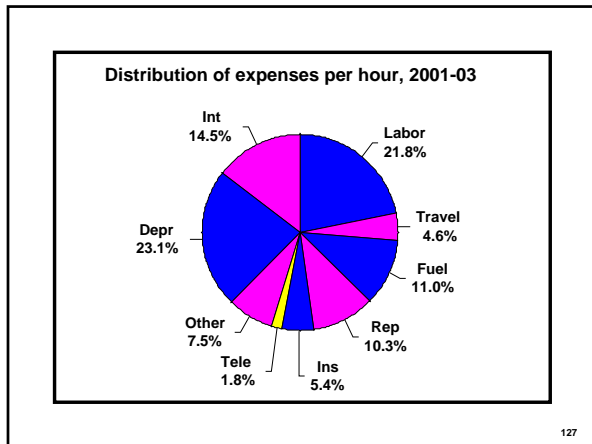












### Survey Average Income and Expense

INCOME AND EXPENSE	\$/Combine	\$/Acre	\$/Hour
Harvest Revenue	\$180,514	\$24.17	\$300.97
Combine Rent Revenue	\$1,788	\$0.30	\$3.62
Other Revenue	\$2,787	\$0.39	\$4.71
<b>Total Revenue</b>	<b>\$185,090</b>	<b>\$24.86</b>	<b>\$309.29</b>
Labor (paid and unpaid)	\$34,111	\$4.57	\$56.41
Travel	\$6,277	\$0.85	\$10.54
Fuel and Lubrication	\$31,630	\$4.21	\$52.20
Repair and Maintenance	\$18,937	\$2.55	\$31.63
Insurance	\$10,221	\$1.38	\$17.28
Telephone and Utilities	\$2,320	\$0.30	\$3.74
Other Expenses	\$11,870	\$1.50	\$18.92
Market Depreciation	\$28,256	\$3.88	\$48.20
Interest on Assets (assigned)	\$21,793	\$3.02	\$37.81
<b>Total Expense</b>	<b>\$165,416</b>	<b>\$22.27</b>	<b>\$276.72</b>
<b>Total Operating Profit</b>	<b>\$19,675</b>	<b>\$2.59</b>	<b>\$32.57</b>

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### Profit and Financial Ratios

- Profit = revenue- expense
- Debt to assets (D/A) =  $\frac{\text{total liabilities}}{\text{total assets}}$
- Return on Assets (ROA) =  $\frac{\text{profit} + \text{interest}}{\text{average assets}}$

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### Financial Ratios

- Return on Equity from income statement (ROE--- IS) =  $\frac{\text{profit} + \text{interest on equity}}{\text{average equity}}$
- Return on Equity from balance sheet (ROE--- BS) =  $\frac{\text{change in equity}}{\text{beginning equity}}$

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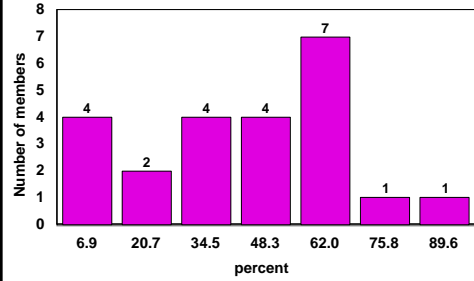
## Expense Ratio

a measure of financial efficiency

- Expense Ratio (ER) =  $\frac{\text{total expense}}{\text{total revenue}}$

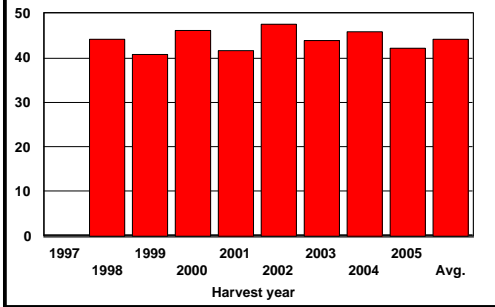
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Debt-to-assets (end of year)  
(average = 42.1%)



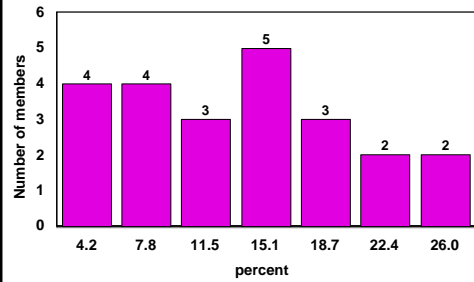
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End of year debt-to-asset, %



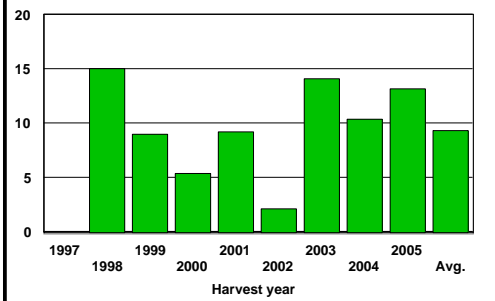
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Return on assets  
(average = 13.2%)



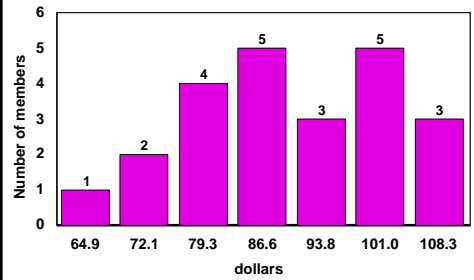
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Return on assets percent

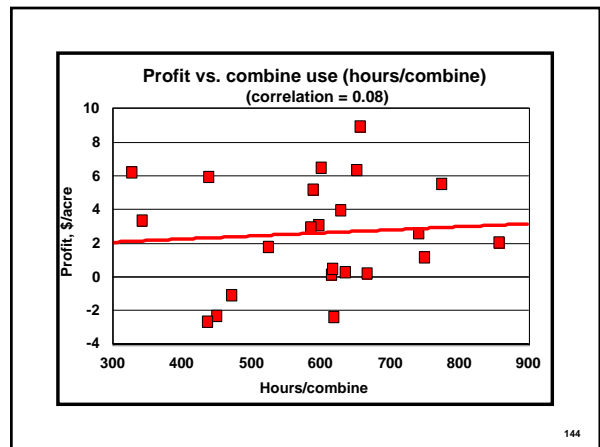
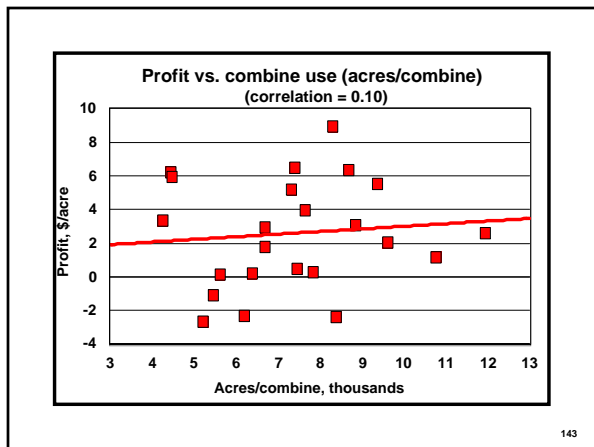
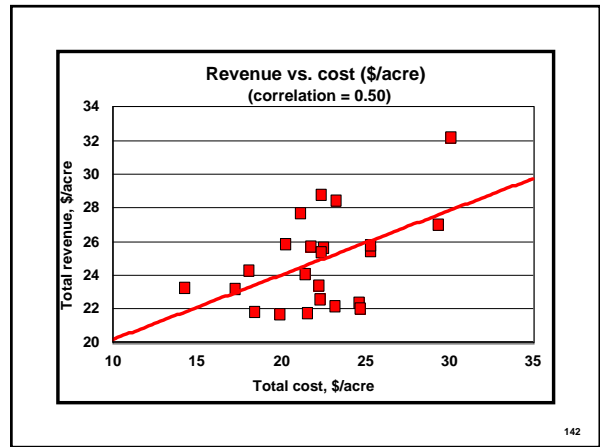
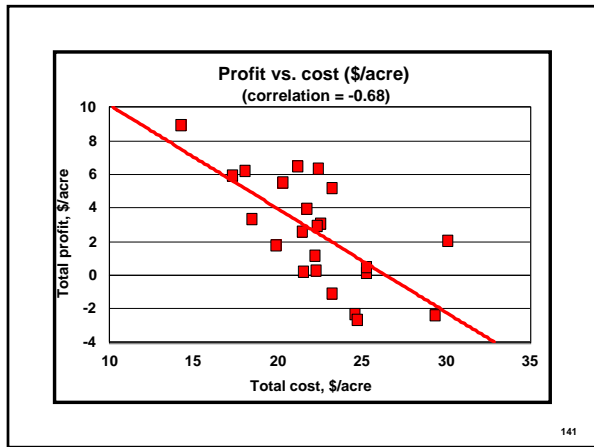
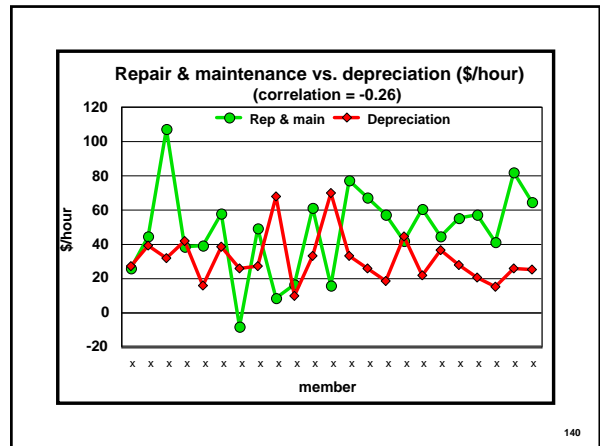
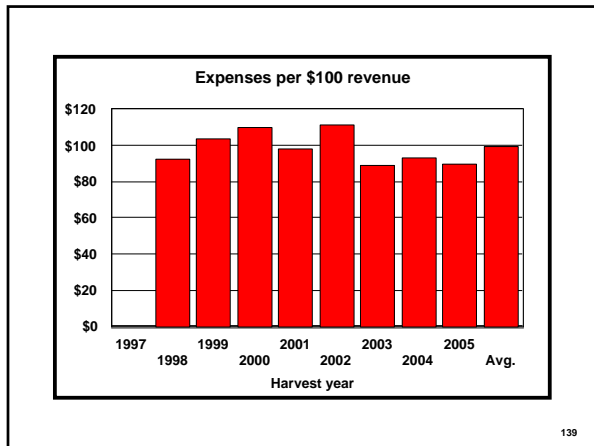


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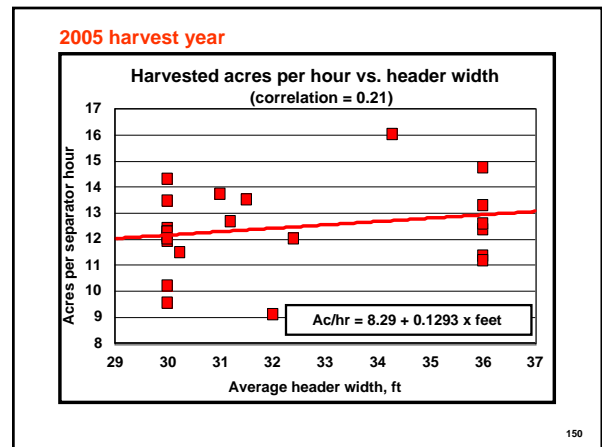
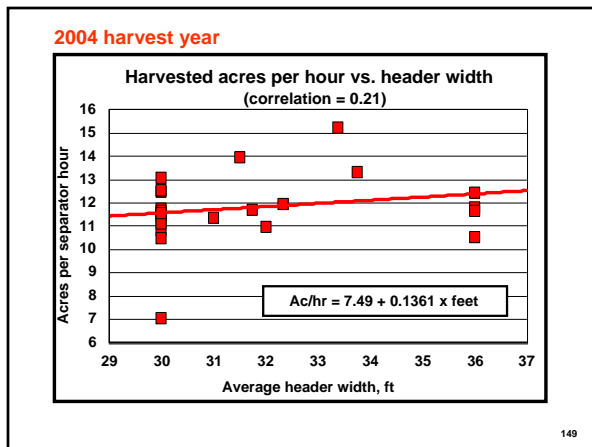
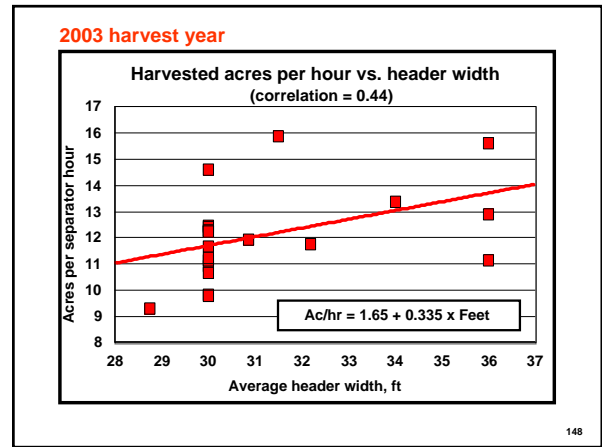
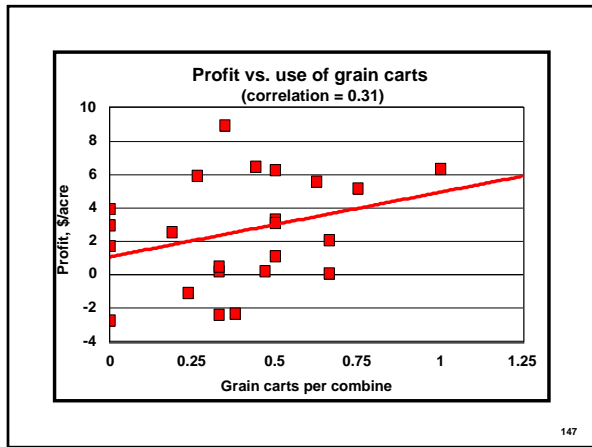
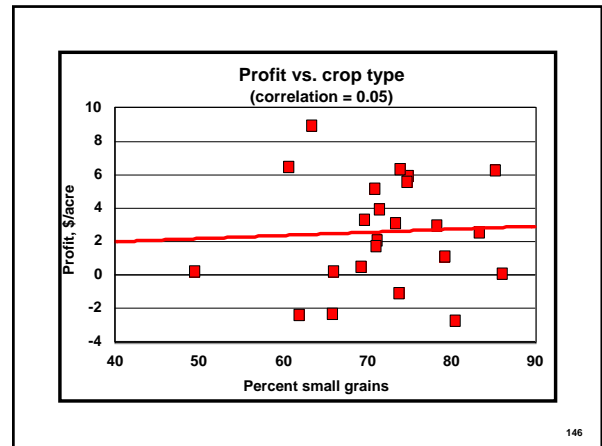
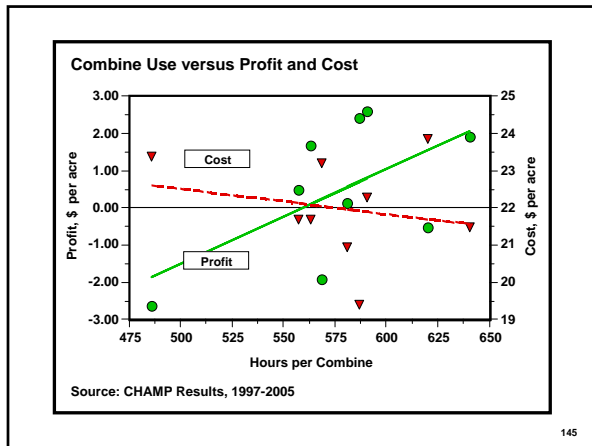
Expenses per \$100 revenue  
(average = \$89.87)

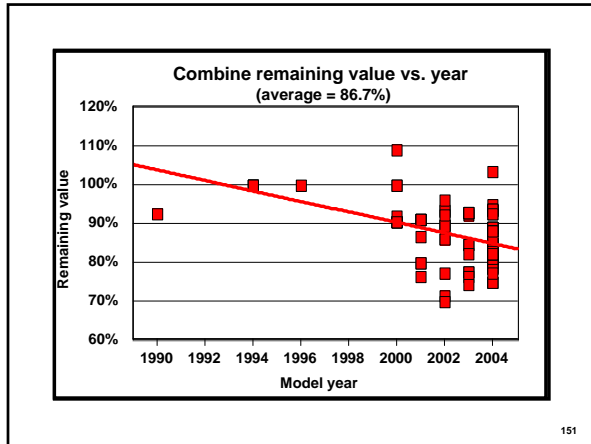


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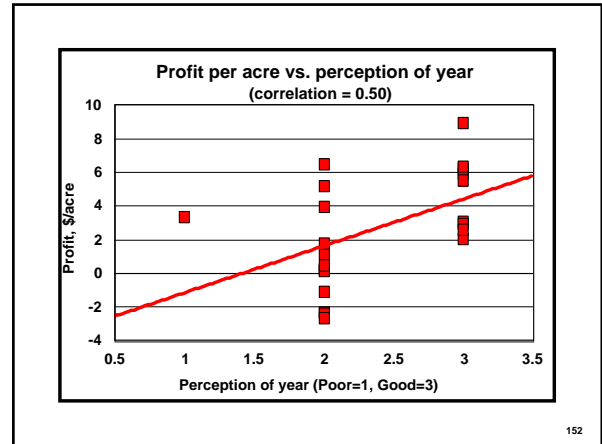








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### Summary

- On average, 2005 was a good year
- Of 9 years analyzed, 2005 was:
  - most profitable year ever
  - highest acres harvested/combine (and hour)
  - highest revenue per combine, hour, and acre
  - highest fuel and insurance cost per acre
- Considerable variability between firms
  - 19 of 23 firms were profitable in 2005
  - (16/23 in 2004; 17/22 in 2003; 6/21 in 2002; 11/20 in 2001; 9/22 in 2000)

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### Questions???

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