2003 Harvest Year Report

for USCHI's

Custom Harvester Analysis and Management Program (CHAMP)

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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.

A formal CHAMP guidance or advisory committee was established by USCHI in 1998. The advisory committee's main role is 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 serves as an important link between CHAMP membership and the overall USCHI membership in general, and USCHI's governing committee in particular. More specifically, the CHAMP committee helps 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.

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. Starting with the 2000 harvest year, through payment of $8,700, John Deere has underwritten the fixed costs associated with the CHAMP program. Since then, and for 2003, CHAMP member fees were $225 each. USCHI covered $75 of the $225 – for CHAMP members who are also USCHI members. Although Deere and

USCHI financially support CHAMP, to ensure confidentiality, completed surveys are only viewed by Dhuyvetter and Kastens.

Survey Results

CHAMP members were asked to provide detailed production and financial information, some 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 2003, 21 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 advisory committee efforts to improve previous years' surveys, and because many surveys are completed by repeat members (10 members participated in all 7 years and only 1 was totally new in 2003), 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

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 each firm's profit per acre 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 2003 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.

CHAMP members in 2003 were located in 6 states, with most (12) in Kansas. The average age of the "main persons in charge" was 46.6 years, which was an average of 39 people (because some of the 21 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.

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

Of the 21 2003 members, 2 operated as a partnership, 3 as an LLC, 5 as a sole-proprietorship, and 11 as a corporation. Firms appear well established, with an average number of years in business of 29.5.

Most (13 of 21) members indicated they typically run their combines 1 or 2 years. Twelve members indicated they typically run new combines, 8 run used combines, and 1 runs either or both of new and used.

In addition to custom harvesting, a majority of members (14 of 21) have sideline businesses. Farming/ranching was a sideline for 10 of the members, 9 were involved in trucking, and 3 had some other sideline business (do not add to 14 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. On average, 24.6% of the meals are from a restaurant rather than home-prepared. On average, across the 39 "main persons in charge," managers indicate they allocate 70.9% of their time to the custom harvesting business. Many (44%) of the managers indicated they spent more than 80% of their time in their harvesting businesses; 13% were so-employed less than half time.

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

In 2003, harvesting firms spent 6.1 months in actual harvesting on average, with 8 firms spending 7 months. The number of customers serviced by a CHAMP member ranged from 15 to 97, and averaged 42.7.

At the harvest season peak, member harvesters employ 11.1 individuals on average, with the most common number indicated to be between 6-7 or 10-11 people. Of the total season-peak individuals, 31.6% were family members. On average, the typical non-family employee stays with a harvester for 1.8 seasons, with the most frequent response being 2 seasons.

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

The question regarding whether members split their machines was dropped in 2003. Most (71%) finance their combines through the dealer or manufacturer; 71% get their combine insurance the same way. With a minimum of 4.1% and a maximum of 12.0%, the average reported interest rate on loans in 2003 was 6.31%.

Table 5

	% that split machines	% that finance combines through dealer or manufacturer	average reported interest rate
1997	NA	NA	NA
1998	52%	76%	8.90%
1999	40%	76%	8.94%
2000	50%	77%	9.32%
2001	60%	70%	7.66%
2002	58%	81%	6.55%
2003	NA	71%	6.31%

Combine Information

The second page of the 2003 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 14.4% across the 82 owned combines used in 2003.

John Deere made up 65.6% of the 90 combines used for harvest in 2003, with 30.0% for Case-IH, and 4.4% for all other brands. More than half (58.9%) of the combines were of model year 2002 or newer. A large majority (91.1%) of combines were owned rather than rented (8.9%) or leased (0.0%).

Table 6

	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%

Of the 90 combines used in 2003, 81.1% had yield monitors, and 40.0% had GPS-equipped yield monitors (the chaff spreader question was dropped in 2003). 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, from a new question asked in 2003, only 6 (28.6%) of the members provide *any* yield maps for their customers, and, of those that did provide yield maps, they provided for only 8.1% of their customers, on average.

Table 7

	% of combines with chaff spreaders	% of combines with yield monitors	% of combines with yield monitors with GPS
1997	82.0%	38.0%	21.0%
1998	82.6%	37.0%	15.2%
1999	84.2%	54.9%	25.6%
2000	84.7%	55.3%	27.1%
2001	93.3%	60.0%	37.3%
2002	91.5%	78.8%	39.8%
2003	NA	81.1%	40.0%

The typical combine was used for 574 separator hours (761 engine hours, a new question in 2003) and had 1161 hours on the separator hourmeter at the end of 2003 or when it was traded if traded during the year (table 8). The average separator-to-engine hours ratio across the 90 combines was 75.5%, but that ratio varied widely among combines (61.0% to 85.5%). 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.

Table 8

	separator hours per combine this year	separator hours on combine at end of year	combines simulta-neously operated	separator hours per combine simulta-neously operated
1997	585	1156	3.5	581
1998	577	1106	3.2	641
1999	524	975	4.2	603
2000	559	1146	3.6	577
2001	502	1263	3.3	551
2002	458	805	4.9	473
2003	574	1161	4.1	588

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.

In 2003, on average across the 21 CHAMP members, the number of combines simultaneously operated was 4.1. Using the total combine separator hours accumulated during 2003 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 21 members) in 2003 was 588 separator hours, and ranged from 244 to 863 (table 8); the average engine hours calculated this way was 772 and the average separator-to-engine hours ratio was 76.3% (ranging from 66.7% to 84.7%).

Average acres covered per combine in 2003 was 7052 (table 9), the highest acres covered number in the last 7 years. Relative to prior years' CHAMP reports, 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 12.10, which was again a record harvest speed. Favorable harvesting weather is a primary reason for this surge in harvest "efficiency" over previous years. However, ever larger combines and the increased use of 36' headers also contributed. As always, wide variability across members prevails,

with 3 members averaging between 9 and 10 acres per hour and 2 in the 15 to 16 range. Of course, these differences are also partly due to the types of crops harvested – some crops naturally require slower travel speeds.

Table 9

	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

Platform Information

The third page of the CHAMP survey sought information on the "additional" combine headers/platforms used by harvesters (one standard grain platform was included with each combine on the Combine Page). Average annual depreciation on 184 platforms was 7.5% (table 10).

Of the 90 combines that tallied more than zero hours, 57.8% had flex heads, 63.3% had cornheads, 5.6% had draper or "extra" platforms, 22.2% had row crop heads, and 63.3% had pickup heads.

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.

Table 10

	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%

Table 11

	% 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%

Trucks and Supporting Equipment

The fourth page of the 2003 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 1991.8 (12.2 years old at the end of 2003 given model years are tied to a January 1 purchase), the 116 grain trucks reported by members were much older than the combines, and just slightly older (0.4 years) than trucks reported in 2002 (table 12). Tandem-axle trucks made up 42% of the 116, triple-axle trucks were 2%, and semis were 56%. Over time, the increased use of semis rather than tandem axle trucks is quite apparent.

Members owned 94% of their grain trucks as opposed to leasing or renting. On average where reported, 12,982 miles were put on each truck during the 2003 harvest season. At the end of 2003, the average odometer reading was 454,461, which was down from values reported in 2001 and 2002. 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 12

	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%

Reported grain truck values were used to estimate market depreciation, which averaged 7.2% across the 109 trucks where those values were reported (table 13). The depreciation on trucks of 7.2% was only half of the 14.4% depreciation reported on combines. These values were much closer together the previous three years (see tables 6 and 13).

Table 13

	% 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%

Crops Harvested and Revenue Generated

The annual survey solicits information on the number of fields, 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, 2003 CHAMP members harvested 619,904 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 75.8% of the total acres harvested. At 445,993 acres, wheat & durum made up the majority (71.9%) of all crop acres harvested. Although wheat acres comprised 71.9% of total harvested crop acres, the revenue share for wheat, at 66.0%, was somewhat smaller (table 14). That is because other crops often garner more revenue per acre than wheat – likely because they are more expensive to harvest.

Across the states, Kansas had the most acres harvested for wheat, corn, milo, and sunflowers. But Montana had the most barley, North Dakota had the most canola, and South Dakota had the most soybeans. The strong Kansas showing for fall crops is likely partly due to the large number of CHAMP members located in Kansas in 2003. 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, peas, flax, mustard, safflower, lentils, alfalfa seed, popcorn, and triticale each were listed as being harvested by at least one firm.

Table 14

	% 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

Within 2003, or across 2003 and previous years, acres per field by crop did not reveal any obviously explainable differences. Acres per field by state is a little more interesting, with South Dakota standing out as having the largest fields at 328 acres (this high average was heavily influenced by a couple of extremely large fields). Across all member reports the average field size was 129.9 acres (table 14).

For some custom harvesters, renting combines to others is an important source of revenue – and likely becoming more important over time. 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 it's components of harvest revenue, combine rent revenue, and other revenue. Table 15 shows the average across the CHAMP members for each of these values in 2002 and 2003 and comparable values, where available or where they can be computed, from prior years.

Table 15

	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

As reported in table 15, over all member reports for all crops, the average total revenue received per covered acre in 2003 was $22.01, making it close to the 7-year average of $21.97. But, as noted, 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 15, 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 $22.01 value in table 15 upwards to reflect what it would be expected to be in the absence of renting

out combines, it likely would only rise to about $22.35/acre. 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.

Because of the higher yields associated with corn, especially irrigated corn, that crop always holds a special place in revenue benchmarking. At $33.87 (table 16), 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 22¢/bu, is the lowest revenue crop. The average revenue across all major crops was 54.3¢/bu (major crops here are defined as wheat, durum, barley, corn, milo, and soybeans).

Table 16

	$/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¢

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 26.5% of total harvesting revenue. Among traditional crops, at 38%, 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 87.2%.

Table 17

	% 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%

Where hauling destination percent was indicated, among all bushels of all crops, 31.3% of hauled grain was hauled to the farm. Thus, most of the grain was likely hauled to commercial elevators instead. When destination of hauling was segregated by crop, oats, barley, and non-sunflower oil crops involved the greatest portions hauled to the farm. When segregated by state, northern states typically have greater portions hauled to the farm than do states such as Kansas and Oklahoma. That seems reasonable in that northern states rely more on on-farm storage than do states closer to export terminals (75% of grain storage capacity in ND is on-farm versus 33% in KS). It should be noted that some crops and some states did not involve many harvesters. Thus, the observed “hauled to farm” percentages may merely be due to particular customer traits rather than to reliable generalizations.

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 76.5% small grains, there is substantial variability among firms – ranging from 61% for 1 firm to 88% 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 used an imputed investment interest expense equal to 6.31% of the value of all custom harvesting assets. This was the average interest rate reported by members. As in 1998-2002, 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 are likely paid from revenue as they are incurred. For convenience, table 18 reports information that was reported in table 5.

Table 18

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

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 (6.31%) has already been assigned. Thus, profit is the return above "all costs plus the 6.31% 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.

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 6.31% 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.

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 can also 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 19 shows two such ratios over time for the CHAMP program, ROA and ER, and again includes interest rate for convenience.

Table 19

	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%

It would be difficult to construe table 19 as anything but negative for the typical custom harvester. Only two years (1998 and 2003) stood out as being 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. All in all, the table indicates that the typical harvesting firm has been losing equity over time. Fortunately, 2003 stands out as a good year, on average, after four tough years in a row.

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 more total assets per combine operated than the average CHAMP member ($283,333 vs. $276,643), but given more assets, unexpectedly lower market depreciation ($30,198 vs. $31,249). Its repair and maintenance cost per combine were slightly higher than that of the average member ($16,073 vs. $15,881). Even though the example firm generated over $2,200 more revenue per combine than the average member ($157,752 vs. $155,488), profit was below average due to costs per

combine of almost $6,000 higher than the average member. At 7,193 acres harvested and 646 separator hours per combine, this firm covers more ground in more time than the average member, which had 7,052 acres and 588 hours per combine. Also, at 11.14 acres per hour, it was less efficient by that measure than the average firm at 12.10. Overall, at a profit of $1.64/acre, this firm was near the survey average profit, which was a profit of $2.44/acre. Despite that, this firm had a return on assets that was 2.8 percentage points below the survey average.

On average, members have $116,338 invested in each combine they operate, $26,312 in additional platforms, and $104,006 in supporting equipment for each combine they operate. On average, supporting equipment is valued at 74.0% of the combined value of combines and platforms, or 41.6% 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 20 shows that the average profit per acre in 2003 was $2.44. Like table 19, this table indicates that 2003 was one of the best years profit-wise for CHAMP members in the last seven years. A 7-year average per acre profit of -$0.33 is implied by these values. In the long run, the average is expected to be $0, implying either a relatively bad group of 7 years for harvesters, or perhaps that the custom harvesting industry is still downsizing in an attempt to match up supply of custom harvesting with demand for it.

Table 20

	profit, $/acre
1997	-$0.09
1998	$1.80
1999	-$1.27
2000	-$2.27
2001	$0.12
2002	-$3.05
2003	$2.44
7-year avg	-$0.33

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) and 2003 ($2.44) were perceived to be very good years for many harvesters.

Depending upon how you examine them, a number of cost categories saw meaningful decreases in 2003 over 2002. For example, market depreciation ($1.82/acre drop), interest ($0.79/acre drop), labor ($0.64/acre drop) and insurance ($0.27/acre drop). On the other hand, repair costs increased by $0.16 per acre. It is interesting to note that, with the exception of market depreciation and interest, most cost categories *increased* on a per combine basis from 2002 to 2003. However, because of the intensive use of combines in 2003, both in terms of acres and hours, the per acre and per hour costs were lower in all categories except repairs (which isn't surprising given the intensity of use). Thus, even though harvesters spent almost $7,000 more in expenses per combine in 2003 compared to 2002, the additional revenue they generated (over $50,000 more per combine than in 2002) more than offset these higher costs leading to the significantly higher profit ($2.44/acre vs. -$3.05/acre).

Though 2003 probably went down as a tremendous year for many harvesters, for many it is simply a year to try and "catch up" what they have lost the last several years. While 2002 saw debt-to-assets ratios rise substantially (46.3% in 2002 compared to 40.5% in 2001), harvesters have been able to decrease the debt-to-asset ratios to a more manageable 41.9% at the end of 2003.

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 2003, the correlation of interest was 0.11, supporting the idea that firms that are low cost operators in terms of repair & maintenance are also 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 2003, displays a correlation of -0.890. Clearly, lower costs lead to higher profits in a competitive business such as custom harvesting – and especially in 2003. However, at a given cost per acre, profit per acre still varies as much as $5, indicating that revenue must vary. The graph of revenue vs. cost per acre 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 2003 (correlations of -0.27 and -0.34 for acres/combine and hours/combine, respectively). This is not consistent with previous years, where that correlation (profit vs. acres/combine) was 0.10 in 2002, 0.49 in 2001, and 0.30 in 2001. But, on average over time, it appears the relationship between profitability and combine use is positive.

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 indicating there was essentially no correlation between profitability and the crops harvested (once again providing support that harvesters may be adjusting their charges to better reflect their costs).

Given the increased use in 36' headers, an interesting questions 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 reveals that, on average, harvesters with 36' headers are harvesting more acres per hour than harvesters with 30' headers. For each foot increase in header width there is a corresponding increase in acres/separator hour of 0.335. Assuming a harvester with a 30' header cuts 11.8 acres/separator hour, then based on the relationship observed in 2003, we would expect a harvester with a 36' header to cut 13.8 acres/hour [11.8 + 0.335*(36-30)]. This represents a 17% increases which is slightly below the 20% increase in header width.

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. However, as always, 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 2003, 3 of 21 (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, 3.8% (7.4% in 2002) of the acres harvested by CHAMP combines were while they were being rented out to someone else. Likely a reason for this decline in the number of machines rented out was because of the "good year" that allowed harvesters to keep their machines busy themselves throughout much of the harvest season.

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 average 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.

Questions about the CHAMP program may be directed to:

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Custom Harvester Analysis and Management Program (CHAMP)
2003 Harvest Year
Individual Firm Report

Happy Harvesters Inc.
Box 999
Wheat Country, KS 99999

	Firm Value	Survey Average Value	Firm Value per Combine	Survey Avg. of Value per Combine	Firm Value per per Acre	Survey Avg. of Value per per Acre	Firm Value per per Hour	Survey Avg. of Value per per Hour
Number of Machines Operated	3.0	4.09	-----	-----	-----	-----	-----	-----
Value of Combines	$375,000	$477,660	$125,000	$116,338	$17.38	$17.20	$193.60	$204.79
Value of Platforms	$90,000	$107,256	$30,000	$26,312	$4.17	$3.89	$46.46	$45.51
Value of Other Equipment	$310,000	$419,037	$103,333	$104,006	$14.37	$15.03	$160.04	$180.76
Value of Other Assets	$75,000	$123,207	$25,000	$29,987	$3.48	$4.62	$38.72	$54.34
Total Assets	$850,000	$1,127,160	$283,333	$276,643	$39.39	$40.75	$438.82	$485.40
Total Acres Covered	21,579	29,519	7,193	7,052	1.0	1.0	11.14	12.10
Combine Rent Acres	500	1,118	167	131	0.023	0.018	-----	-----
Small Grains Percent	78.4	76.5	-----	-----	-----	-----	Combine Efficiency	
Total Fields Harvested*	154	226	51.3	56.8	140.1	150.8	sep hrs/engine hrs	
Total Separator Hours in 2003	1,937	2,460	646	588	0.090	0.084	74.8%	76.3%

JOHN DEERE

U.S. Custom Harvesters Inc.

INCOME AND EXPENSE									% of Total Revenue Firm	% of Total Revenue Survey Avg.
Harvest Revenue	$465,240	$621,613	$155,080	$150,034	$21.56	$21.34	$240.19	$254.68	98.3%	97.0%
Combine Rent Revenue	$4,167	$11,380	$1,389	$1,328	$0.19	$0.18	$2.15	$2.08	0.9%	0.8%
Other Revenue	$3,850	$13,777	$1,283	$4,126	$0.18	$0.49	$1.99	$6.05	0.8%	2.2%
Total Revenue	$473,257	$646,769	$157,752	$155,488	$21.93	$22.01	$244.32	$262.82	100.0%	100.0%
Labor (paid and unpaid)	$101,588	$134,631	$33,863	$32,024	$4.71	$4.46	$52.45	$53.04	21.5%	20.3%
Travel	$18,322	$23,706	$6,107	$5,861	$0.85	$0.84	$9.46	$9.96	3.9%	3.8%
Fuel and Lubrication	$53,945	$66,652	$17,982	$16,145	$2.50	$2.26	$27.85	$26.83	11.4%	10.3%
Repair and Maintenance	$48,218	$64,182	$16,073	$15,881	$2.23	$2.24	$24.89	$26.78	10.2%	10.2%
Insurance	$27,038	$31,594	$9,013	$7,756	$1.25	$1.09	$13.96	$12.98	5.7%	5.0%
Telephone and Utilities	$9,488	$9,881	$3,163	$2,493	$0.44	$0.35	$4.90	$4.11	2.0%	1.6%
Other Expenses	$32,863	$44,697	$10,954	$11,071	$1.52	$1.47	$16.97	$17.63	6.9%	6.7%
Market Depreciation	$92,755	$128,006	$30,918	$31,249	$4.30	$4.29	$47.89	$50.35	19.6%	19.5%
Interest on Assets (assigned)	$53,651	$71,145	$17,884	$17,461	$2.49	$2.57	$27.70	$30.64	11.3%	11.7%
Total Expense	$437,868	$574,495	$145,956	$139,941	$20.29	$19.56	$226.05	$232.30	92.5%	88.9%
Total Operating Profit	$35,389	$72,274	$11,796	$15,546	$1.64	$2.44	$18.27	$30.51		

Debt-to-Asset Ratio (end of year)	38.7%	41.9%	
Return on Assets	10.5%	13.3%	
Return on Equity (based on IS)	13.1%	xxx	<=== Operating profit + interest charged on equity divided by beginning of year equity.
Return on Equity (based on BS)	9.4%	xxx	<=== Change in balance sheet equity divided by the beginning of year equity.
Expense/$100 Revenue	$92.52	$88.87	

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* Value used per acre for Total Fields Harvested represents the average field size in acres.

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)

Balance sheet for custom harvesting business only, 2003 (read the footnotes)

Happy Harvesters Inc.
Box 999
Wheat Country, KS 99999

ASSETS (market value)	beginning 01/01/03	end 12/31/03
Current Assets	$	$
Cash on hand & in checking	4,600	6,850
Savings, bonds, stocks, etc.	14,300	15,800
Accounts receivable	2,800	3,600
Supply inventories	3,600	4,500
Other current assets (specify)	0	0
D1. TOTAL CURRENT ASSETS	25,300	30,750
Non-current Assets		
Combines (from A1+B1, A2+B2)	503,000	437,350
Non-combine equipment (from C1, C2)	315,000	289,800
Market value of business real estate (i.e., office, storage bldgs., etc.)	45,000	50,000
D2. TOTAL NON-CURRENT ASSETS	863,000	777,150
D3. TOTAL CUST. HARV. ASSETS (D1+D2)	888,300	807,900

LIABILITIES & OWNER EQUITY		beginning 01/01/03	end 12/31/03
Current Liabilities		$	$
Accounts payable		1,200	2,200
Short term loans (due within 1 yr.)			
	principal outstanding	15,300	12,750
	accrued interest	377	314
Other current liabilities (specify)		0	0
D4. TOTAL CURRENT LIABILITIES		16,877	15,264
Non-current Liabilities			
Long term loans (due beyond 1 yr.)			
	principal outstanding	305,000	295,000
	accrued interest	2,820	2,728
Other non-current liabilities (specify)		0	0
D5. TOTAL NON-CURRENT LIABILITIES		307,820	297,728
D6. TOTAL CUST. HARV. LIABILITIES (D4+D5)		324,697	312,992
D7. TOTAL CUST. HARV. NET WORTH (D3-D6)		563,603	494,908
	Change in equity =====>		(68,695)

JOHN DEERE

U.S. Custom Harvesters Inc.

TOTAL EQUITY (custom harvesting and outside businesses)

		01/01/03	12/31/03
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.	120,000	130,000
Overall equity or net worth for whole business (D7+D8)	D9.	683,603	624,908
	Change in equity =====>		(58,695)

In balance sheet above, except for D8 and D9, values are those assigned to ONLY the CUSTOM HARVESTING BUSINESS. If you run multiple businesses within your overall business, without tracking assets and liabilities accordingly, you will need to prorate proper values to the custom harvesting business.
All values are market values, not income tax basis values.

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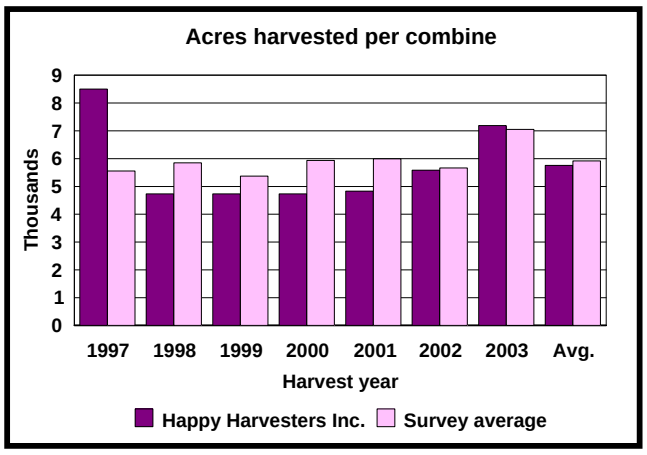
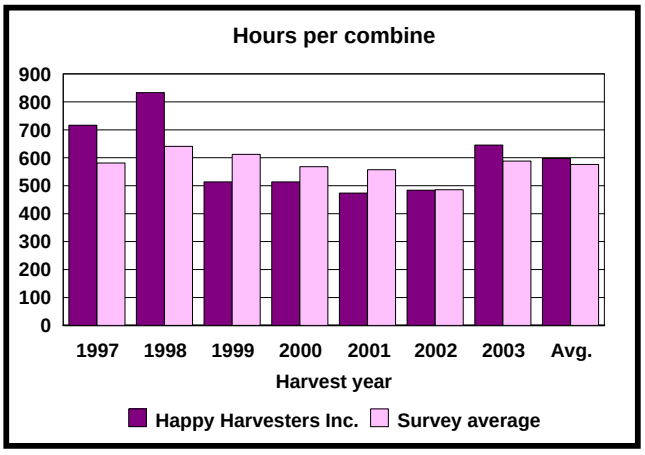
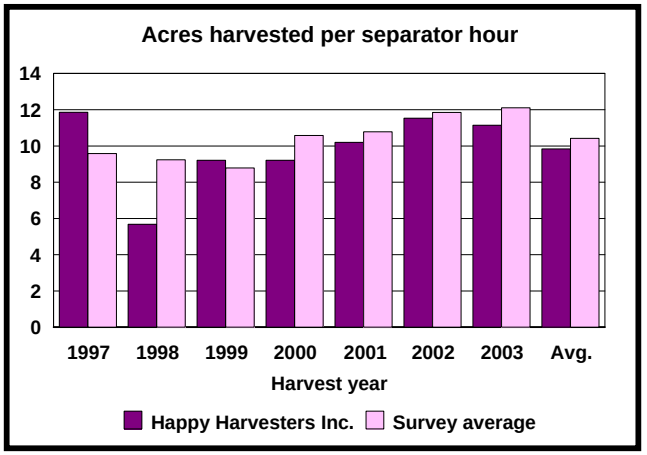
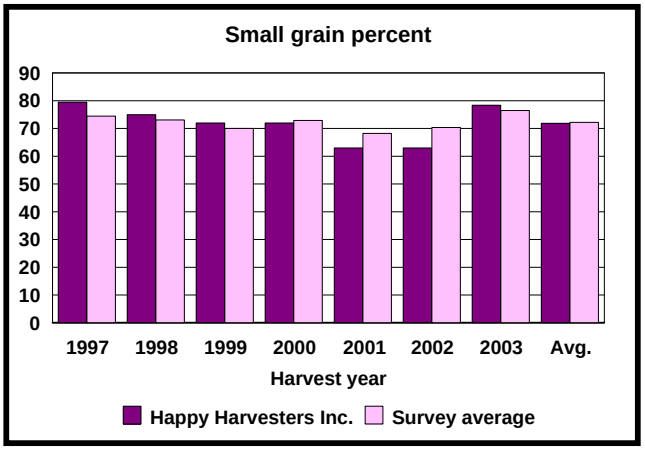
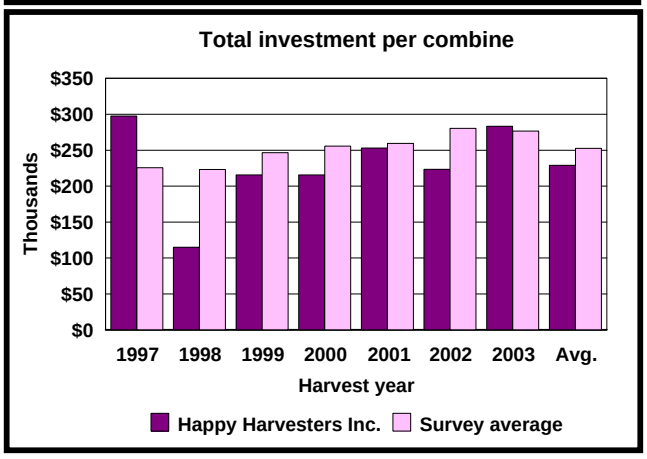
Historical Trends of Key Variables -- Individual harvester vs survey average

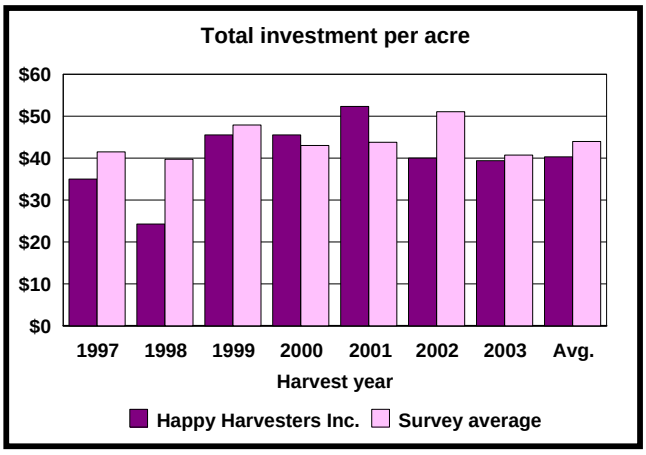


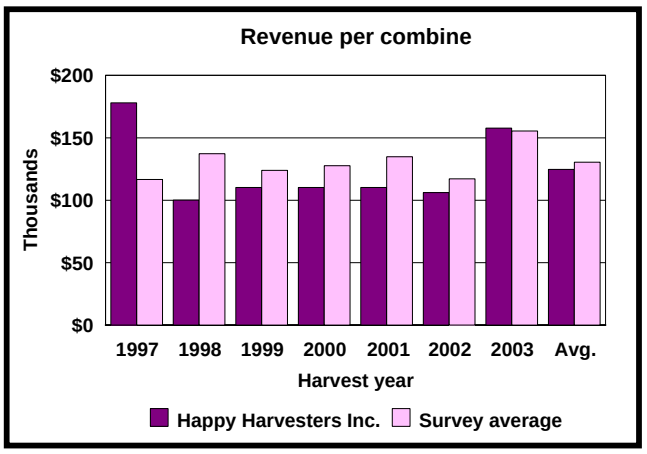


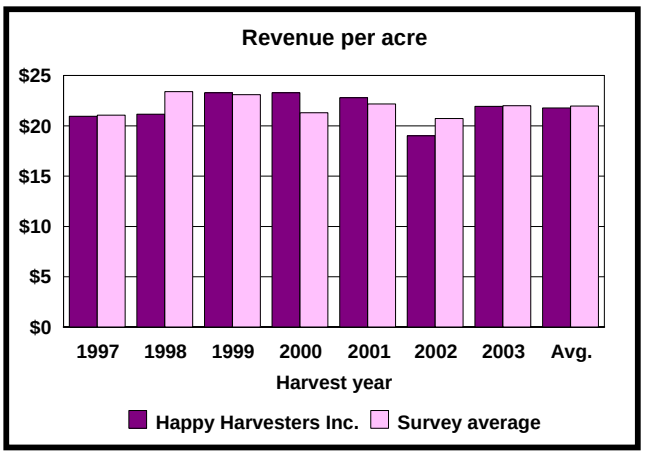




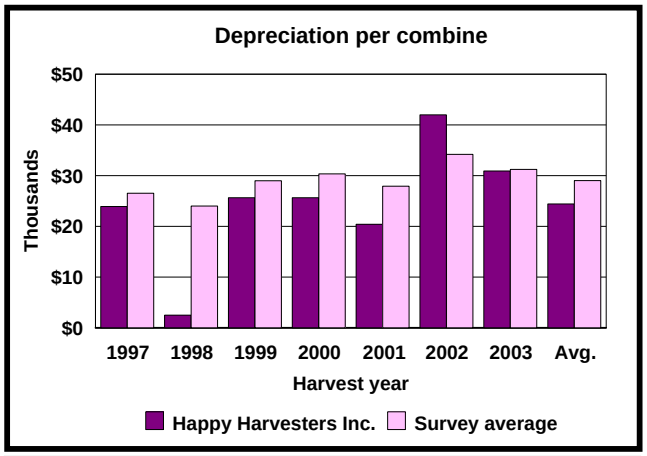


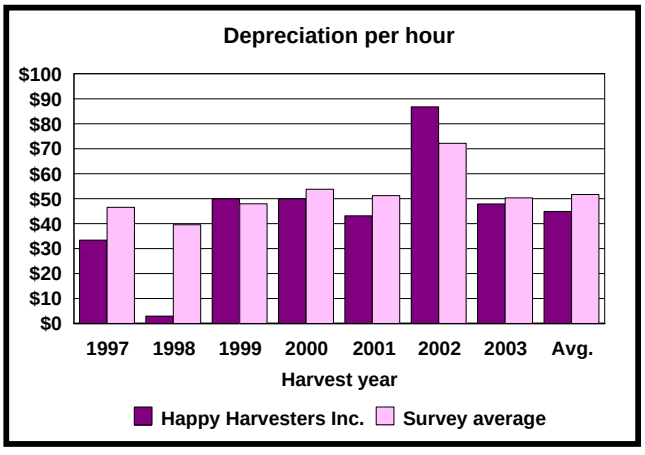


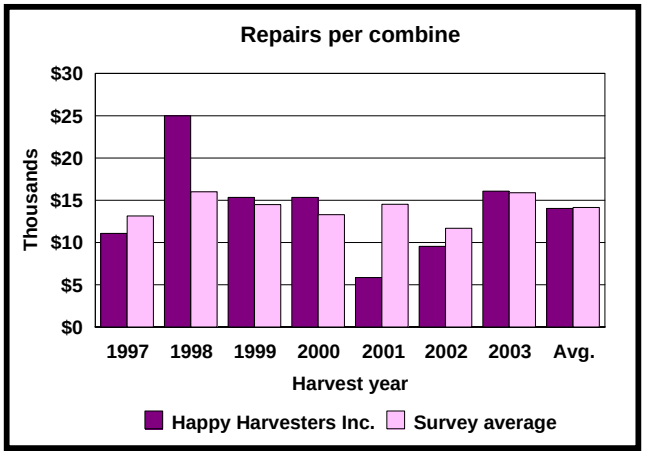


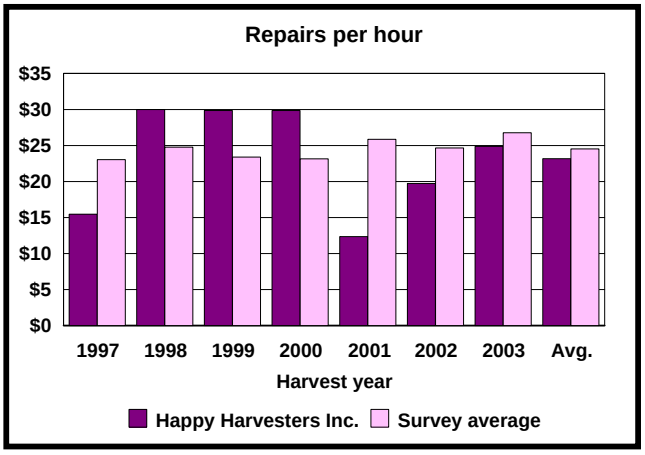


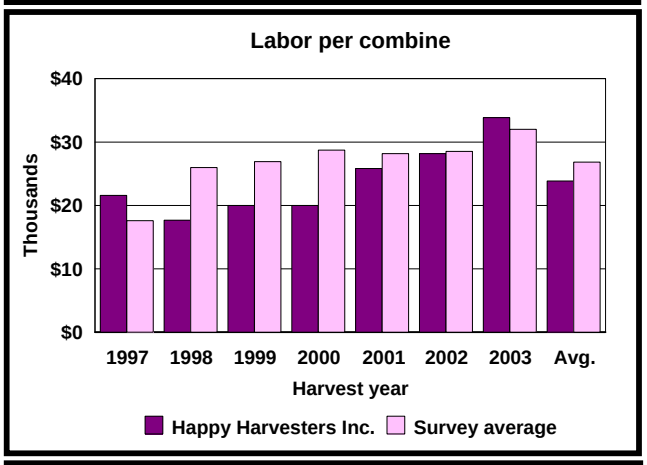
Historical Trends of Key Variables -- Individual harvester vs survey average

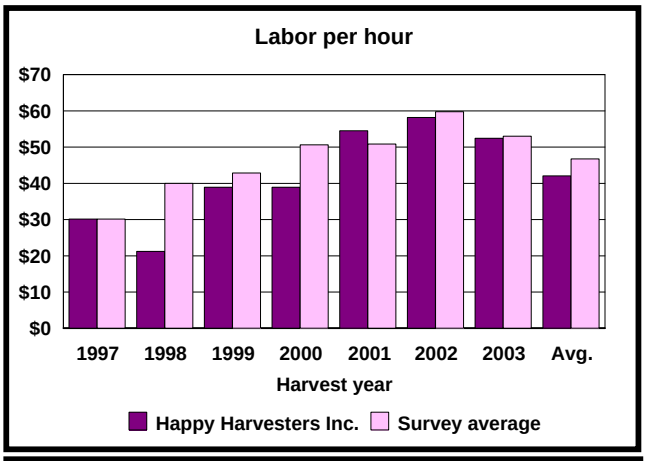


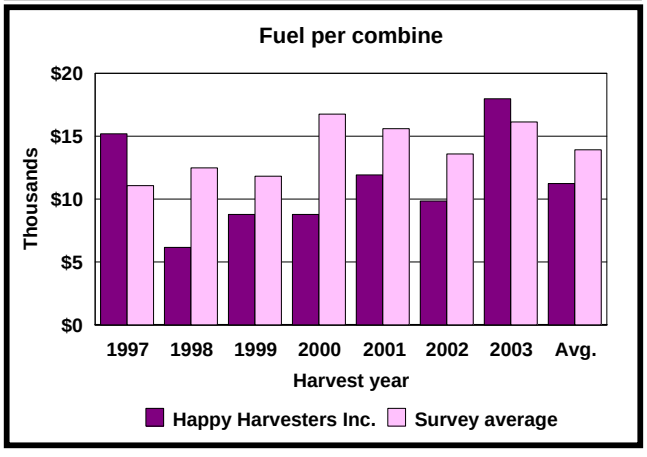


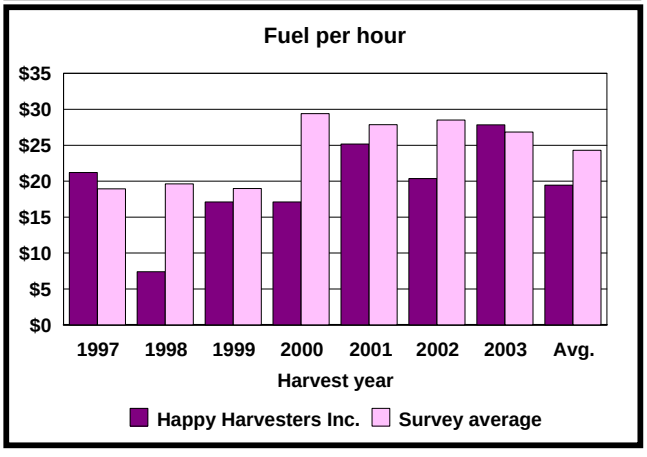












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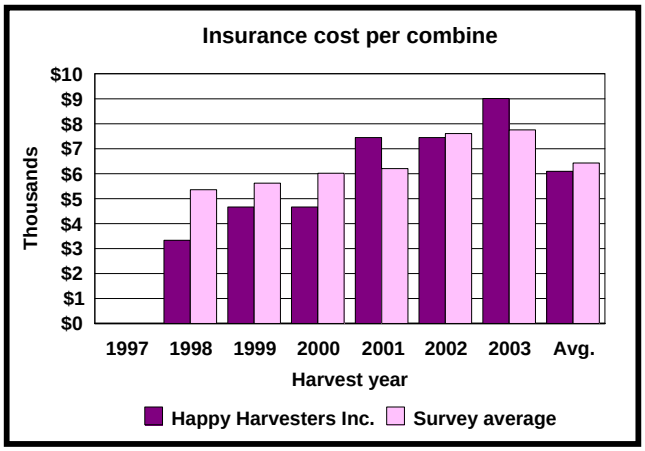

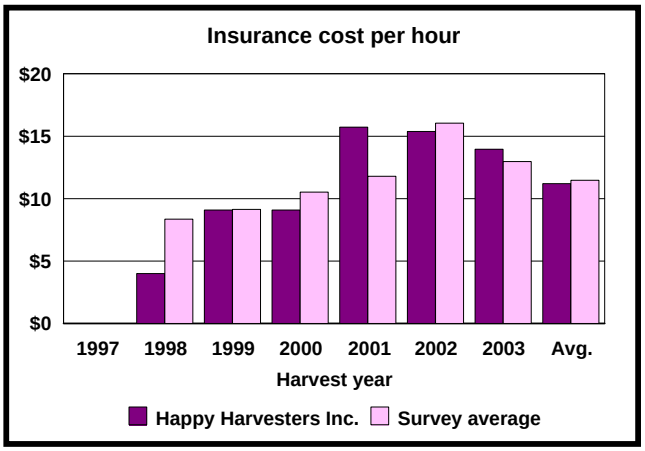

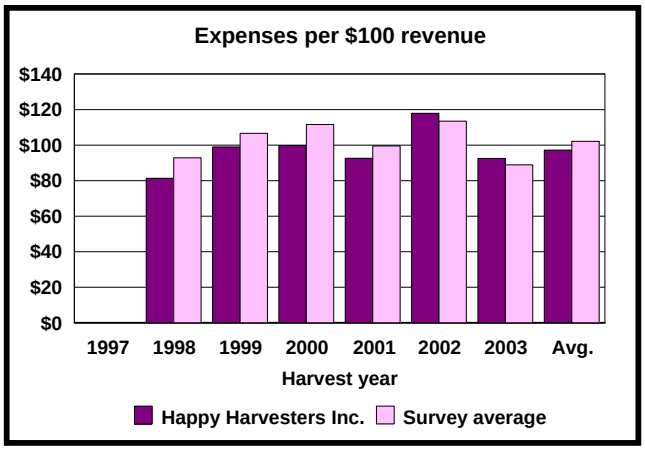

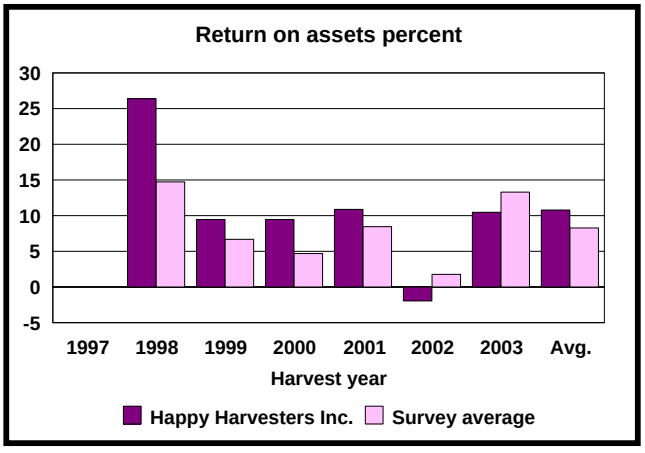

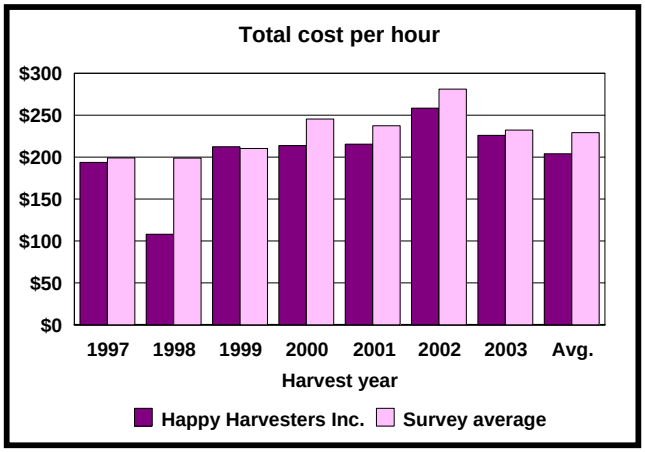

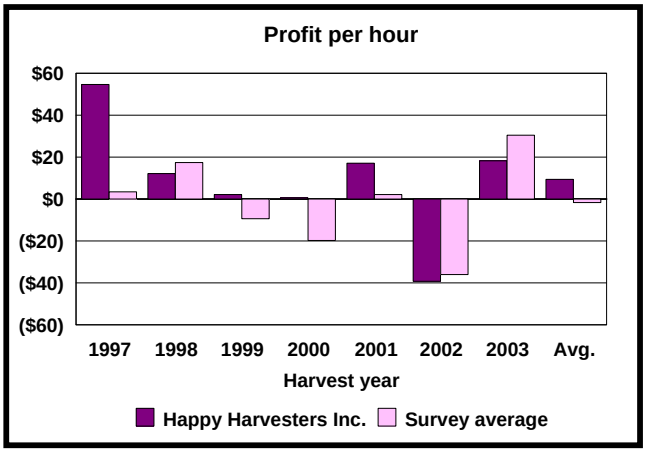

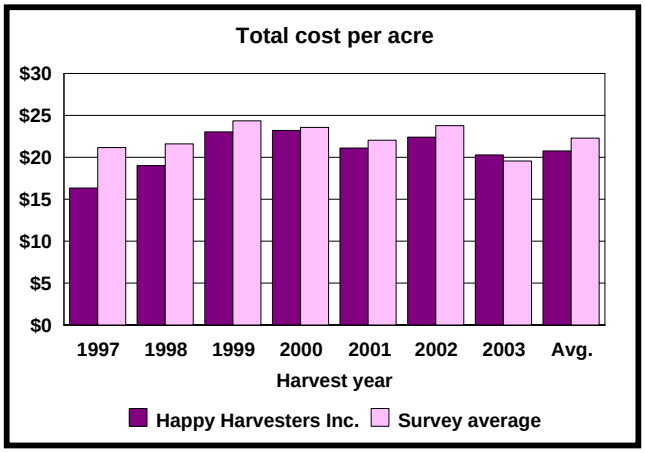

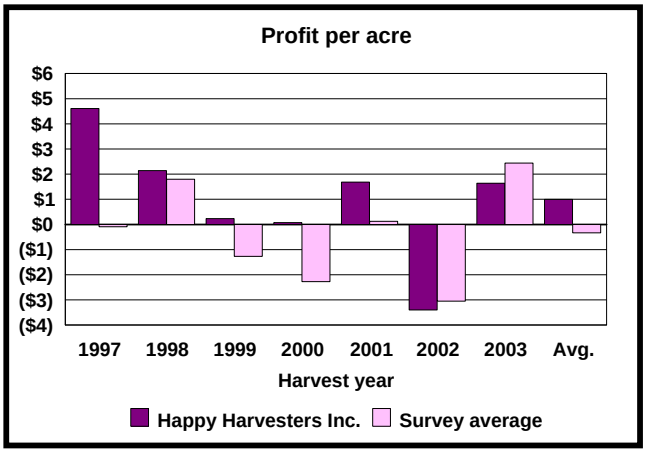

2003 Harvest Year Report for USCHI's Custom Harvester Analysis and Management Program (CHAMP)

Kevin Dhuyvetter and Terry Kastens
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AgAnalysis+ and
Kansas State University

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U.S. Custom Harvesters Inc. AgAnalysis+ JOHN DEERE

CHAMP: Over the years . . .

- Participation 97 08: 43, 25, 25, 23, 20, 24, 21
- Repeat members
  - 20 of 21 2003 members were in in 2002
  - 10 members have participated all 7 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

Custom Harvester Analysis and Management Program (CHAMP)
2003 Harvest Year
Individual Firm Report

Happy Harvesters Inc.
Box 999
Wheat Country, KS 99999

	Firm Value	Survey Average Value	Firm Value per Combine	Survey Avg. of Value per Combine	Firm Value per per Acre	Survey Avg. of Value per per Acre	Firm Value per per Hour	Survey Avg. of Value per per Hour
Number of Machines Operated	3.0	4.09	-----	-----	-----	-----	-----	-----
Value of Combines	$375,000	$477,660	$125,000	$116,338	$17.38	$17.20	$193.60	$204.79
Value of Platforms	$90,000	$107,256	$30,000	$26,312	$4.17	$3.89	$46.46	$45.51
Value of Other Equipment	$310,000	$419,037	$103,333	$104,006	$14.37	$15.03	$160.04	$180.76
Value of Other Assets	$75,000	$123,207	$25,000	$29,987	$3.48	$4.62	$38.72	$54.34
Total Assets	$850,000	$1,127,160	$283,333	$276,643	$39.39	$40.75	$438.82	$485.40
Total Acres Covered	21,579	29,519	7,193	7,052	1.0	1.0	11.14	12.10
Combine Rent Acres	500	1,118	167	131	0.023	0.018	-----	-----
Small Grains Percent	78.4	76.5	-----	-----	-----	-----	Combine Efficiency	
Total Fields Harvested*	154	226	51.3	56.8	140.1	150.8	sep hrs/engine hrs	
Total Separator Hours in 2003	1,937	2,460	646	588	0.090	0.084	74.8%	76.3%

U.S. Custom Harvesters Inc.

INCOME AND EXPENSE									% of Total Revenue Firm	% of Total Revenue Survey Avg.
Harvest Revenue	$465,240	$621,613	$155,080	$150,034	$21.56	$21.34	$240.19	$254.68	98.3%	97.0%
Combine Rent Revenue	$4,167	$11,380	$1,389	$1,328	$0.19	$0.18	$2.15	$2.08	0.9%	0.8%
Other Revenue	$3,850	$13,777	$1,283	$4,126	$0.18	$0.49	$1.99	$6.05	0.8%	2.2%
Total Revenue	$473,257	$646,769	$157,752	$155,488	$21.93	$22.01	$244.32	$262.82	100.0%	100.0%
Labor (paid and unpaid)	$101,588	$134,631	$33,863	$32,024	$4.71	$4.46	$52.45	$53.04	21.5%	20.3%
Travel	$18,322	$23,706	$6,107	$5,861	$0.85	$0.84	$9.46	$9.96	3.9%	3.8%
Fuel and Lubrication	$53,945	$66,652	$17,982	$16,145	$2.50	$2.26	$27.85	$26.83	11.4%	10.3%
Repair and Maintenance	$48,218	$64,182	$16,073	$15,881	$2.23	$2.24	$24.89	$26.78	10.2%	10.2%
Insurance	$27,038	$31,594	$9,013	$7,756	$1.25	$1.09	$13.96	$12.98	5.7%	5.0%
Telephone and Utilities	$9,488	$9,881	$3,163	$2,493	$0.44	$0.35	$4.90	$4.11	2.0%	1.6%
Other Expenses	$32,863	$44,697	$10,954	$11,071	$1.52	$1.47	$16.97	$17.63	6.9%	6.7%
Market Depreciation	$92,755	$128,006	$30,918	$31,249	$4.30	$4.29	$47.89	$50.35	19.6%	19.5%
Interest on Assets (assigned)	$53,651	$71,145	$17,884	$17,461	$2.49	$2.57	$27.70	$30.64	11.3%	11.7%
Total Expense	$437,868	$574,495	$145,956	$139,941	$20.29	$19.56	$226.05	$232.30	92.5%	88.9%
Total Operating Profit	$35,389	$72,274	$11,796	$15,546	$1.64	$2.44	$18.27	$30.51		
Debt-to-Asset Ratio (end of year)	38.7%	41.9%								
Return on Assets	10.5%	13.3%								
Return on Equity (based on IS)	13.1%	xxx	<----	Operating profit + interest charged on equity divided by beginning of year equity.						
Return on Equity (based on BS)	9.4%	xxx	<----	Change in balance sheet equity divided by the beginning of year equity.						
Expense/$100 Revenue	$92.52	$88.87								

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* Value used per acre for Total Fields Harvested represents the average field size in acres.
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)

Balance sheet for custom harvesting business only, 2003 (read the footnotes)

Happy Harvesters Inc.
Box 999
Wheat Country, KS 99999

ASSETS (market value)	beginning 01/01/03 $	end 12/31/03 $
Current Assets		
Cash on hand & in checking	4,600	6,850
Savings, bonds, stocks, etc.	14,300	15,800
Accounts receivable	2,800	3,600
Supply inventories	3,600	4,500
Other current assets (specify)	0	0
D1. TOTAL CURRENT ASSETS	25,300	30,750
Non-current Assets		
Combines (from A1+B1, A2+B2)	503,000	437,350
Non-combine equipment (from C1, C2)	315,000	289,800
Market value of business real estate (i.e., office, storage bldgs., etc.)	45,000	50,000
D2. TOTAL NON-CURRENT ASSETS	863,000	777,150
D3. TOTAL CUST. HARV. ASSETS (D1+D2)	888,300	807,900

LIABILITIES & OWNER EQUITY	beginning 01/01/03 $	end 12/31/03 $
Current Liabilities		
Accounts payable	1,200	2,200
Short term loans (due within 1 yr.)		
principal outstanding	15,300	12,750
accrued interest	377	314
Other current liabilities (specify)	0	0
D4. TOTAL CURRENT LIABILITIES	16,877	15,264
Non-current Liabilities		
Long term loans (due beyond 1 yr.)		
principal outstanding	305,000	295,000
accrued interest	2,820	2,728
Other non-current liabilities (specify)	0	0
D5. TOTAL NON-CURRENT LIABILITIES	307,820	297,728
D6. TOTAL CUST. HARV. LIABILITIES (D4+D5)	324,697	312,992
D7. TOTAL CUST. HARV. NET WORTH (D3-D6)	563,603	494,908
Change in equity ======>		(68,695)

TOTAL EQUITY (custom harvesting and outside businesses)

	01/01/03	12/31/03
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. 120,000	130,000
Overall equity or net worth for whole business (D7+D8)	D9. 683,603	624,908
Change in equity ======>		(58,695)

In balance sheet above, except for D8 and D9, values are those assigned to ONLY the CUSTOM HARVESTING BUSINESS. If you run multiple businesses within your overall business, without tracking assets and liabilities accordingly, you will need to prorate proper values to the custom harvesting business. All values are market values, not income tax basis values.

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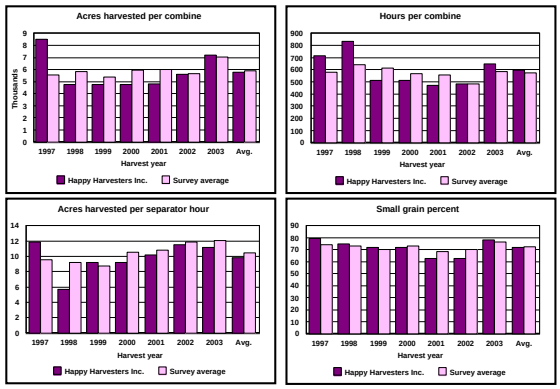
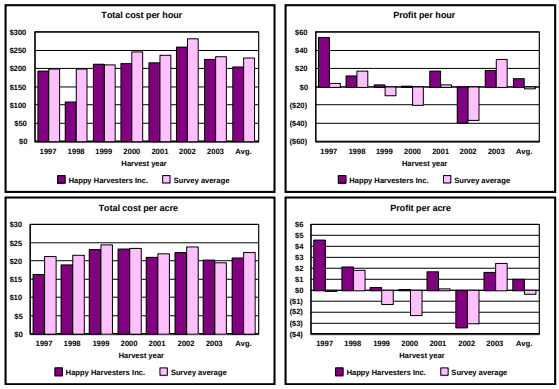
Historical Trends of Key Variables -- Individual harvester vs survey average

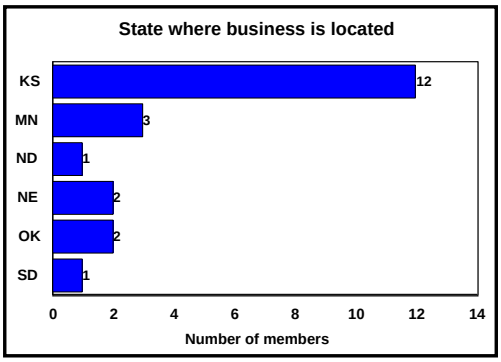


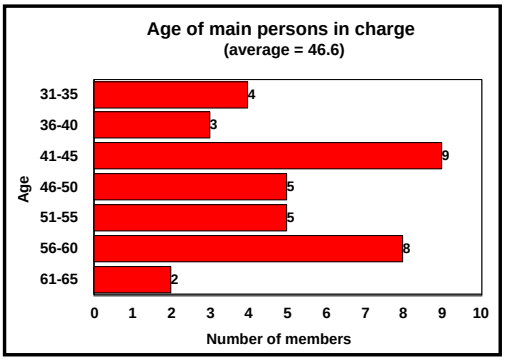
Historical Trends of Key Variables -- Individual harvester vs survey average

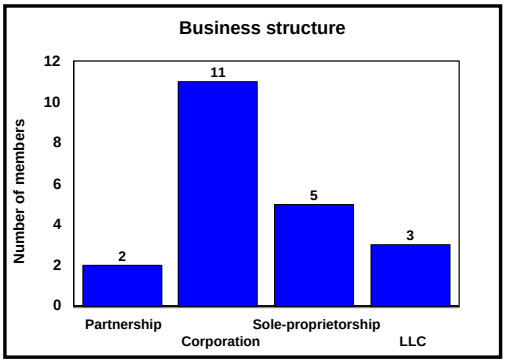


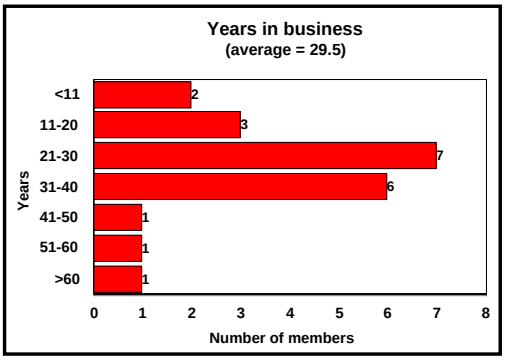
General Information

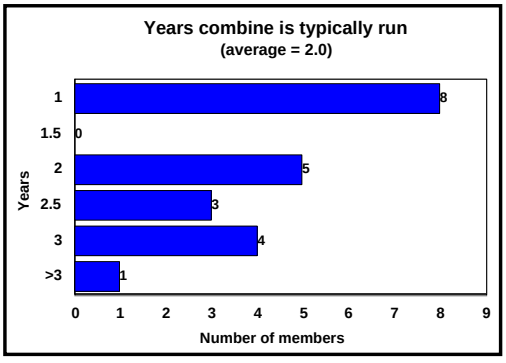
- Location
- Age of manager
- Business structure
- Years in business
- Age and number of combines
- Relative importance of business
- Housing and meals
- People involved in business
- Number of customers







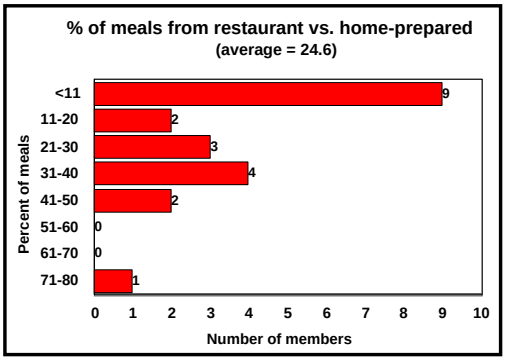


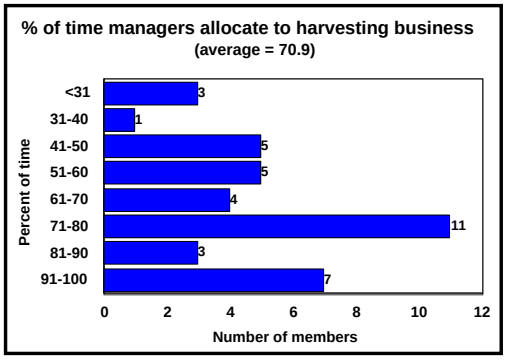


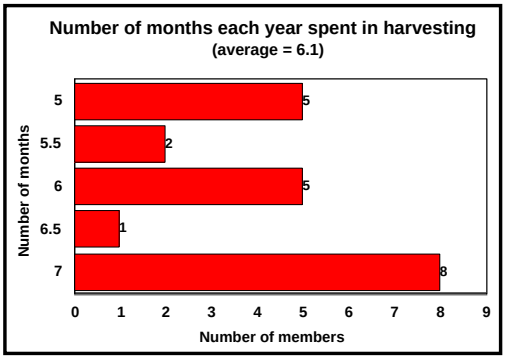
Miscellaneous Information

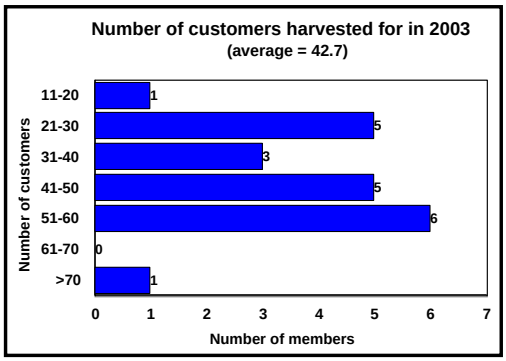
- 12 run new combines
- 8 run used combines
- 1 runs both

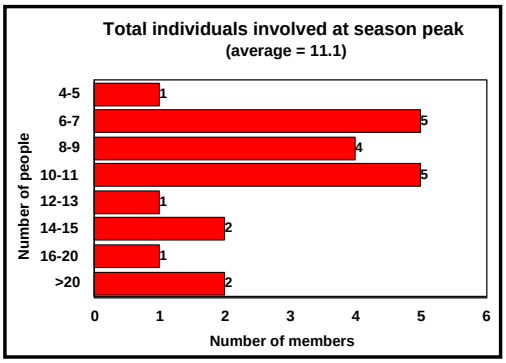
- 14 of 21 (67%) had sideline businesses
  - 10 involved in farming/ranching
  - 9 involved in trucking
  - 3 involved in other businesses

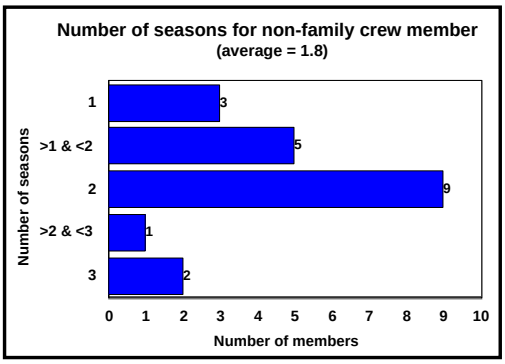










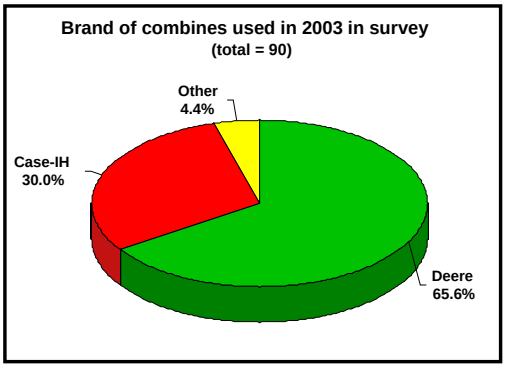


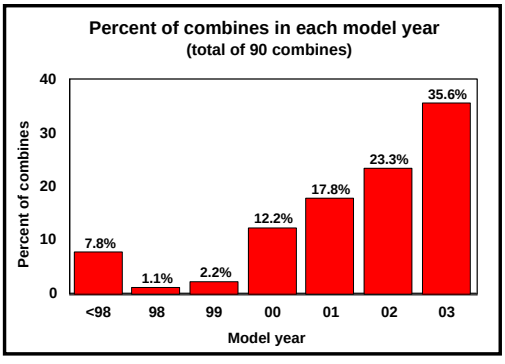
More Miscellaneous Information

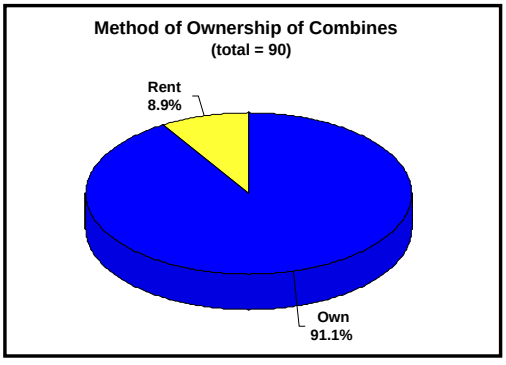
- % splitting machines no longer reported
- 31.6% of season peak employees are family
- 15 of 21 finance their combines through dealers/manufacturers
- 15 of 21 get combine insurance through dealer/manufacturer
- Average interest rate was 6.31%
  - 2002 6.55%; 2001 7.66%; 2000 9.32%
  - Minimum in 2003 = 4.1%
  - Maximum in 2003 = 12.0%

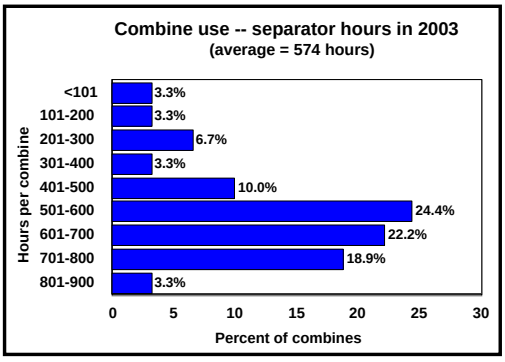
Combine Information

- Brand
- Model year
- Own, lease, or rent
- Headers
- Hours used
- Auxiliary equipment
- Beginning and end of season values



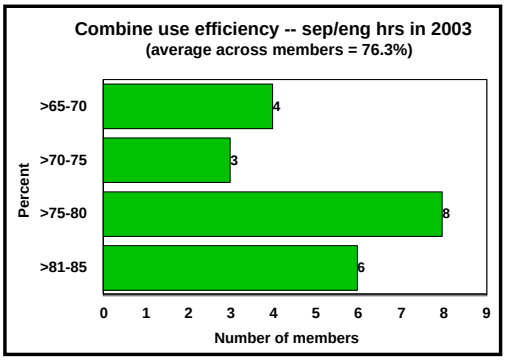






Average engine hours = 761 hours (sep/eng = 75.4%)

25



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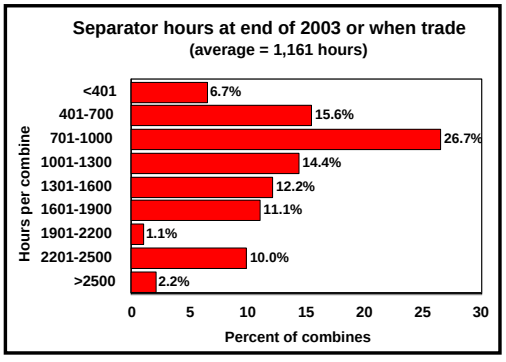

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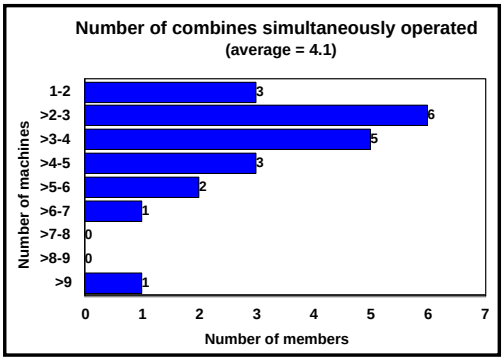

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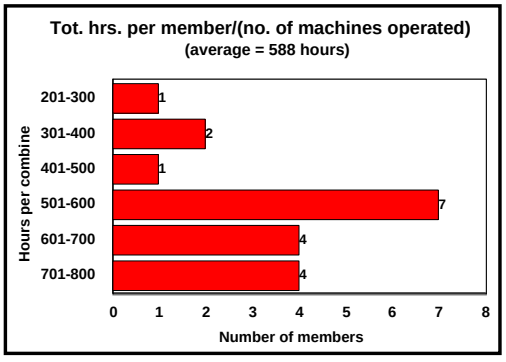

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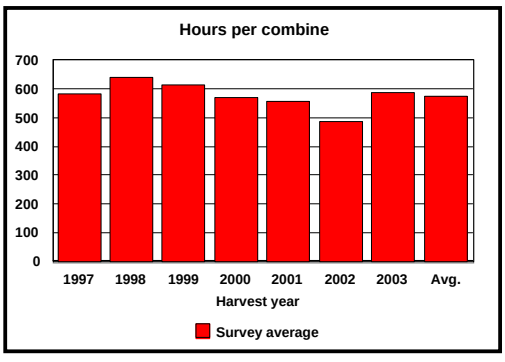

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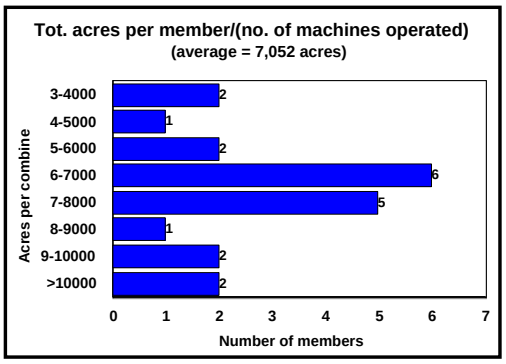

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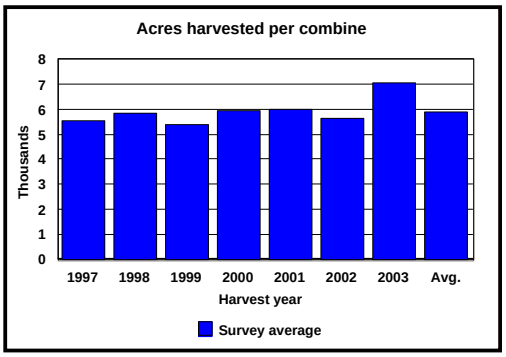

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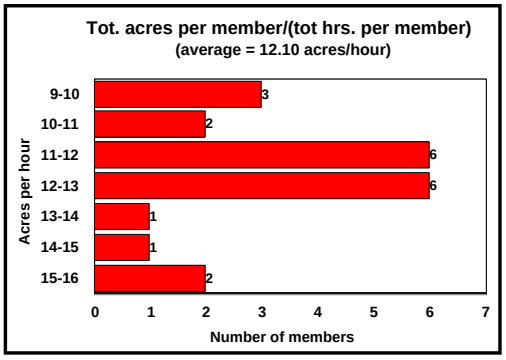

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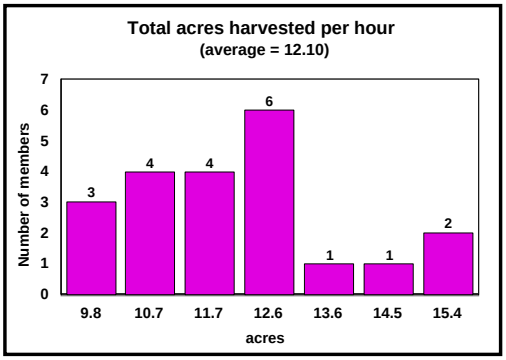

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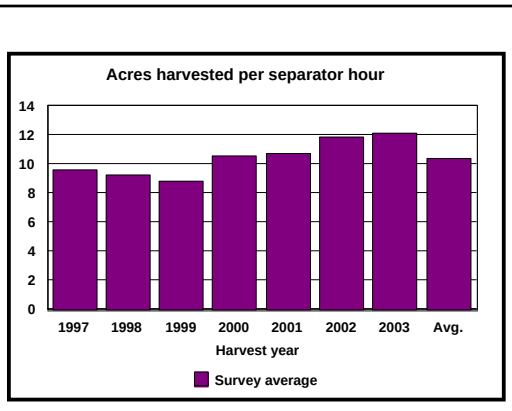

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Combine Headers & Equipment
(90 combines)

• Flex head	57.8%	29.2 ft.
• Corn head	63.3%	9.4 rows
• Row crop head	22.2%	8.1 rows
• Pickup	63.3%	
• Draper/extra pltfrm	5.6%	30.0 ft.

36

Combine Auxiliary Equipment
(90 combines)

- Chaff spreader – quit reporting in 2003
- Yield monitor – 81.1%
  - ('02, 78.8%; '01 60.0%; '00 55.3%)
- GPS equipped – 40.0%
  - ('02 39.8%; '01 37.3%; '00 27.1%)
  - Members providing maps – 28.6%
  - For providers, this % of customers mapped – 8.1%

37

Grain Truck Information (116 total)

- Average year 1991.8
  (2002 1991.2; 2001 1989.2; 2000 1989.7)
- % Tandems 42%
- % Semis 56%
- % owned 94%
- Avg. mi. in 2003 (93 total) 12,982
  (2002 13,549; 2001 12,692; 2000 19,589)
- Avg. miles on truck at end of year
  - (54 total): 454,461
    (2002 552,128; 2001 558,707; 2000 513,162)

38

Equipment depreciation

Market depreciation (% drop in value)

	2003	2002	2001	2000	1999
• Combines	14.4	14.0	14.7	15.1	16.1
• Headers/equip	7.5	7.9	5.1	7.4	9.1
• Trucks	7.2	11.2	11.0	12.1	5.9

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Revenue Information

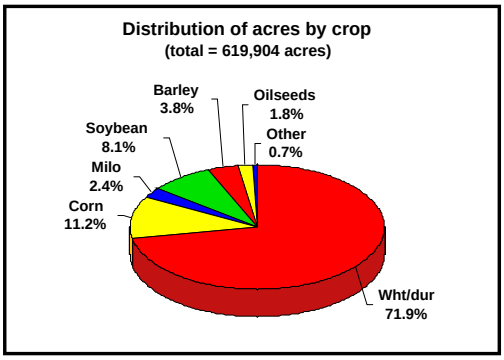
- Acres harvested
- Crops harvested
  - small grains vs. other
- Harvest states
- Number of fields
- Percent hauled to farm
- Combine vs. trucking revenue

40

Acreage Information

- Total-- 619,904 acres
- Small grains-- 470,156 acres (75.8%)
  - Wheat, durum, barley, oats, triticale
- Other-- 149,848 acres (24.2%)
  - Corn, soybeans, milo, sunflowers, canola, safflower, mustard, flax, peas, pinto beans, lentils, alfalfa seed, popcorn

41



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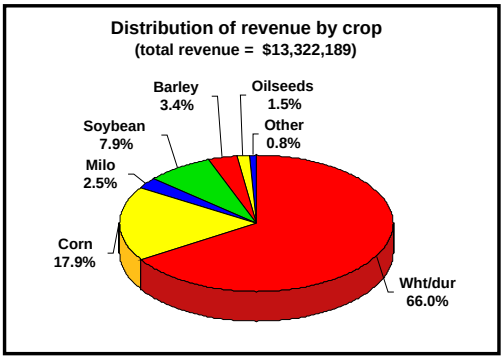

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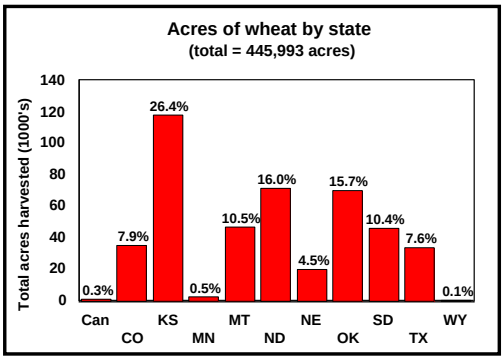

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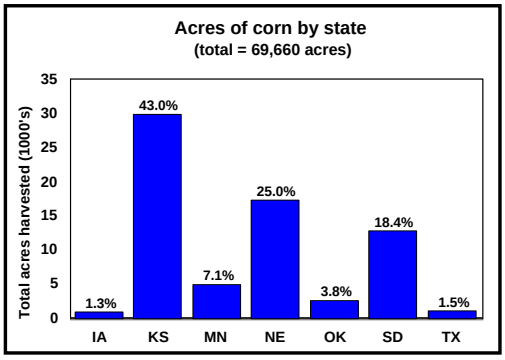

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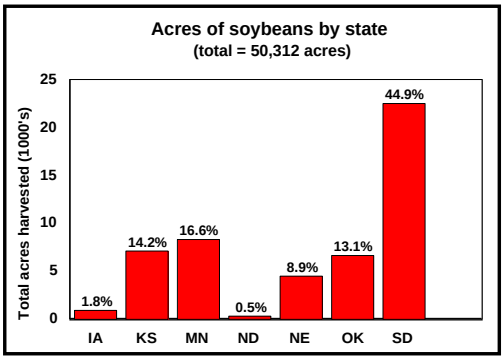

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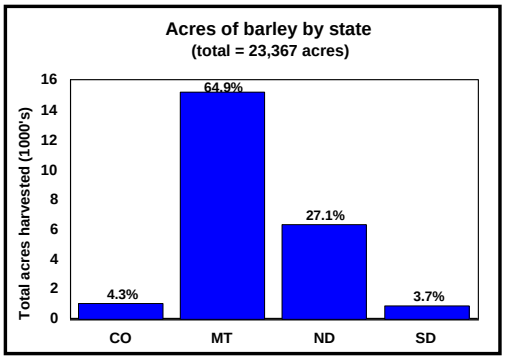

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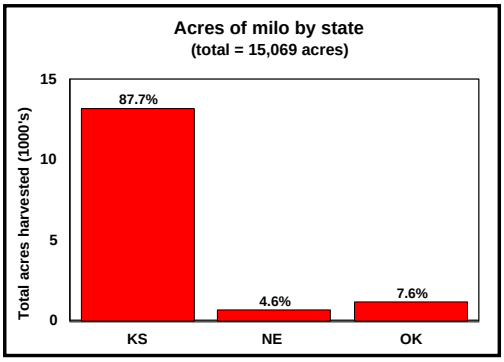

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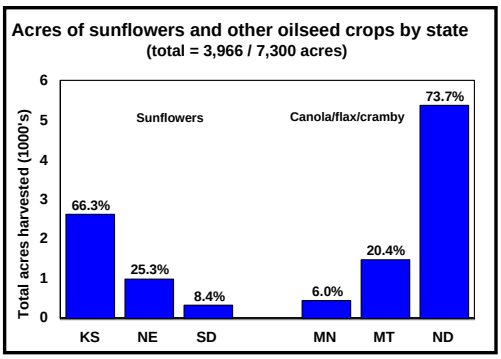
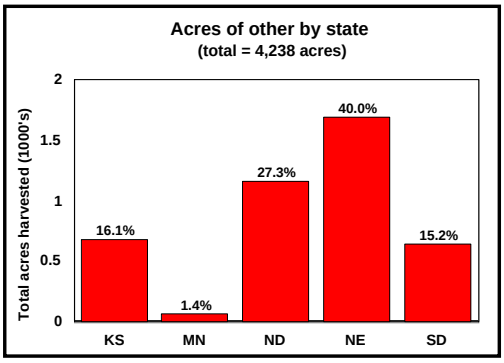
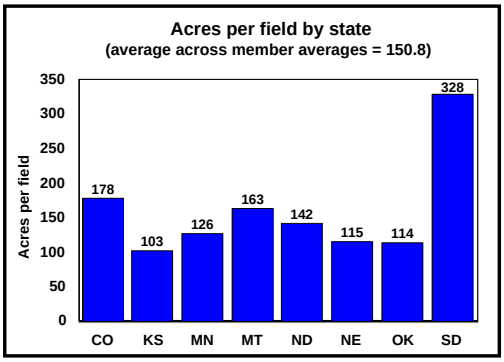


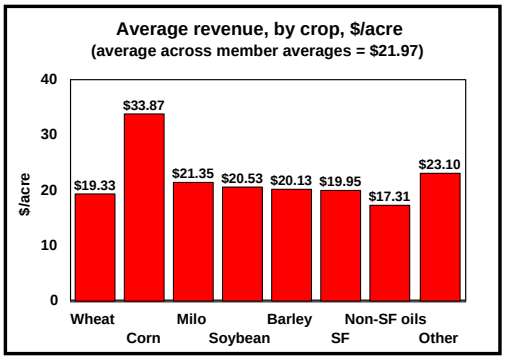


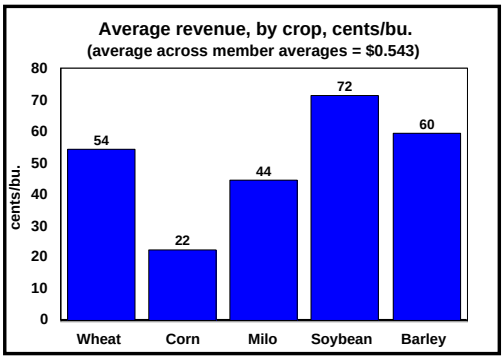
Acres per Field

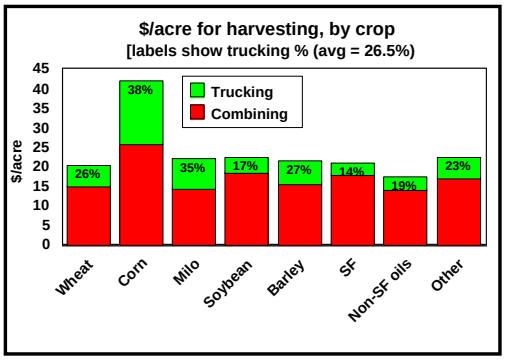
- Wheat 185.2
- Corn 125.8
- Soybeans 130.2
- Barley 127.0
- Milo 82.5
- Sunflowers 97.0
- Non SF oils 157.3
- Other 111.5

- Total acres divided by total fields = 129.9









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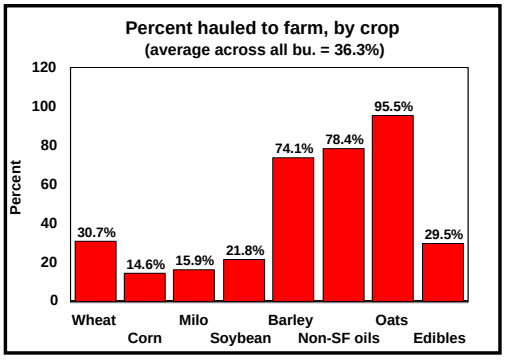
Percent of Grain Hauled by Harvester

- Wheat 92.1%
- Corn 69.1%
- Soybeans 62.5%
- Barley 93.9%
- Milo 92.5%
- Sunflowers 79.0%
- Non-SF oils 100.0%
- Other 85.3%

- Average across all member reports = 87.2%

56



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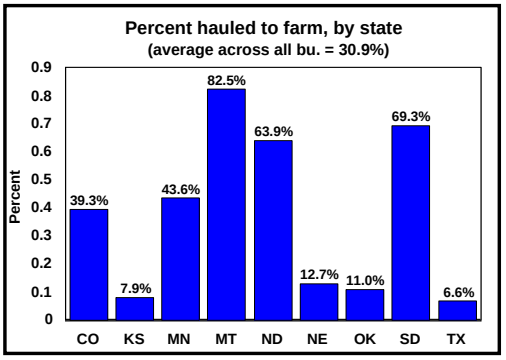

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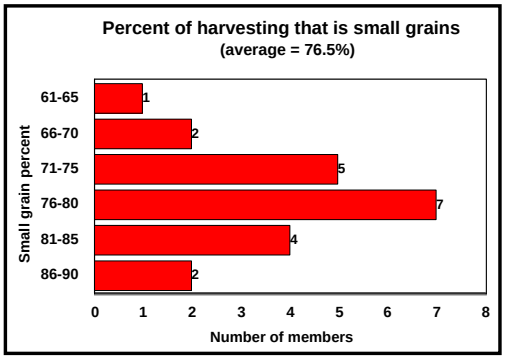

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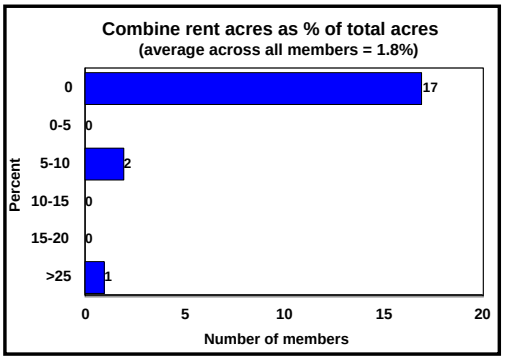

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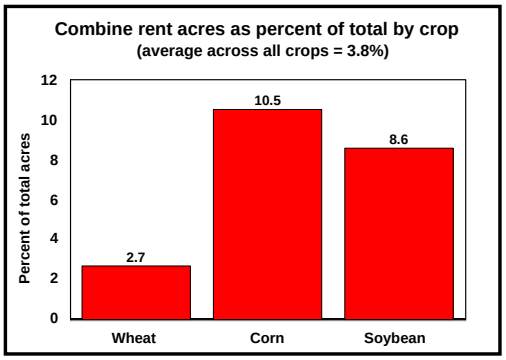

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Operating Expense Information

- Labor (paid and unpaid)
- Travel
- Fuel and Lubrication
- Repair and Maintenance
- Insurance
- Telephone and Utilities
- Other Expenses
- Market Depreciation
- Interest on Assets (assigned)

62

Value of Assets per Combine Operated

• Combine	$116,338
• Platforms	$26,312
• Other equipment (trucks, etc)	$104,006
Sub Total	$246,656
• Other assets (balance sheet)	$29,987
TOTAL	$276,643

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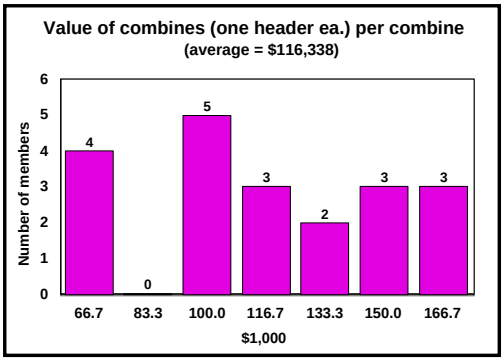

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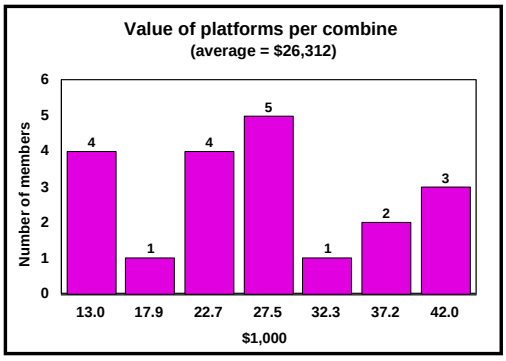

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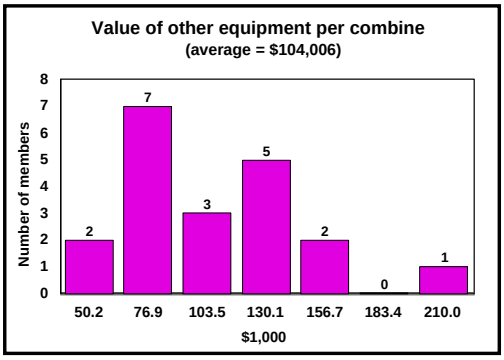

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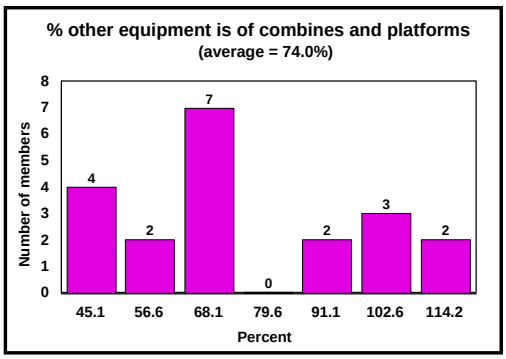

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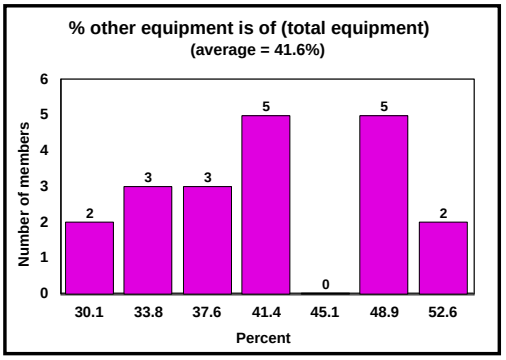

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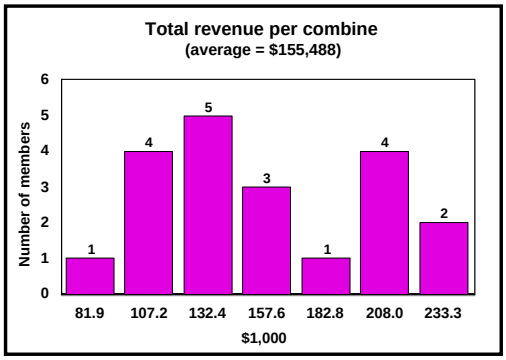

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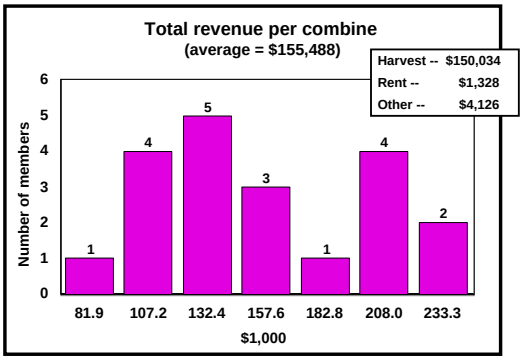

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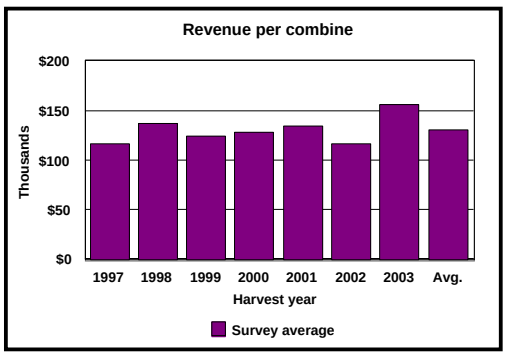

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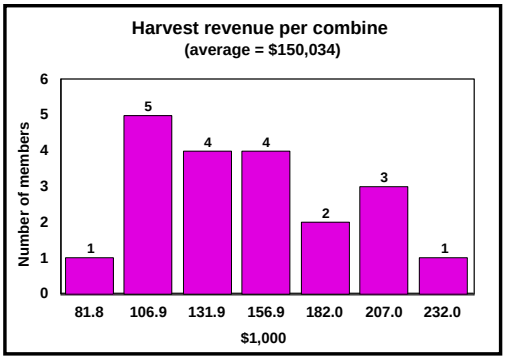

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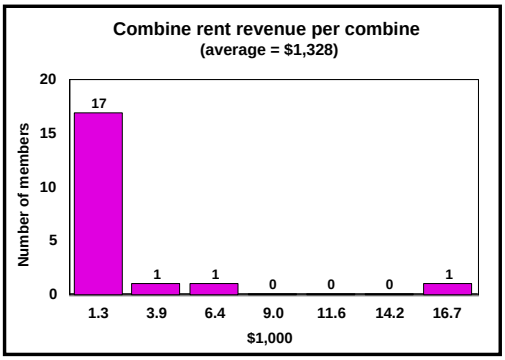

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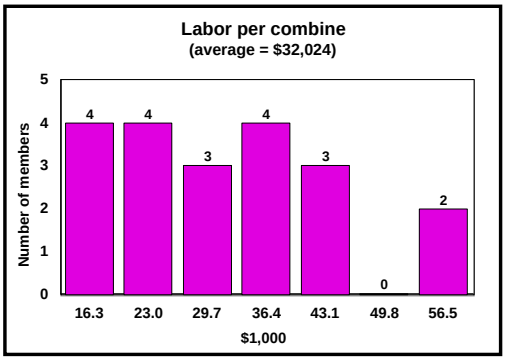

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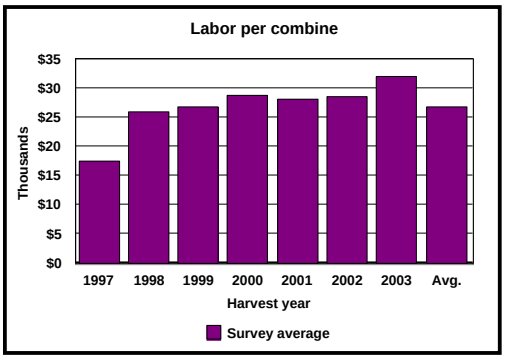

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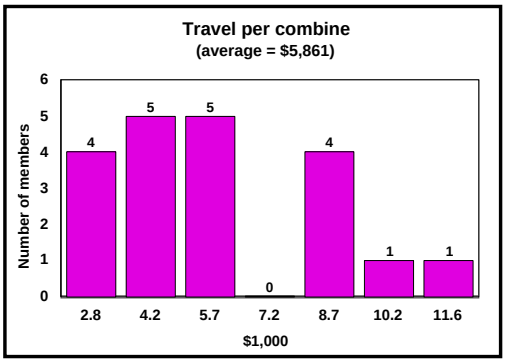

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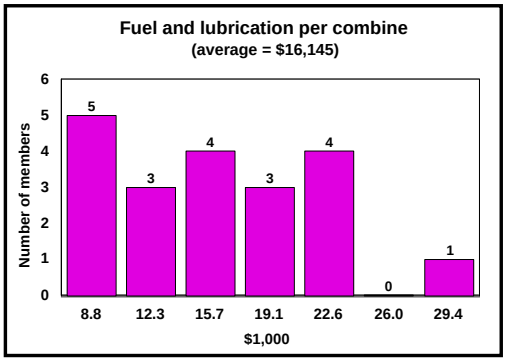

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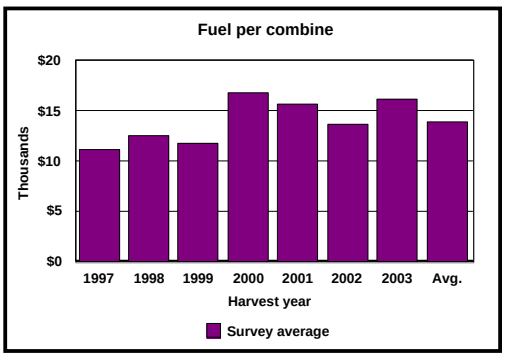

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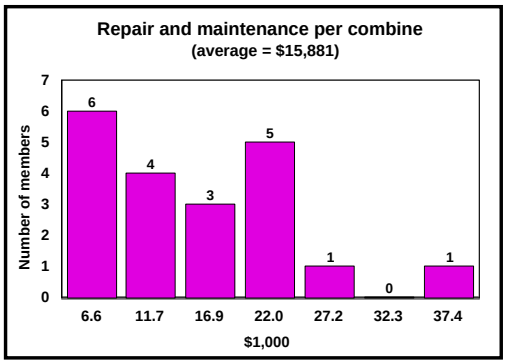

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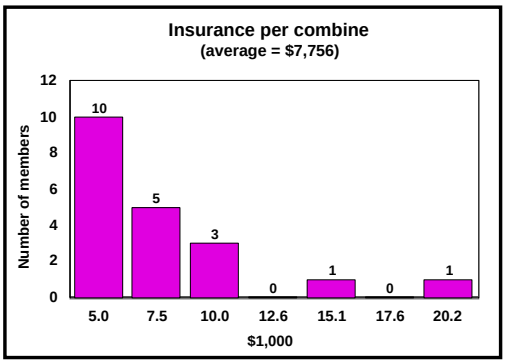

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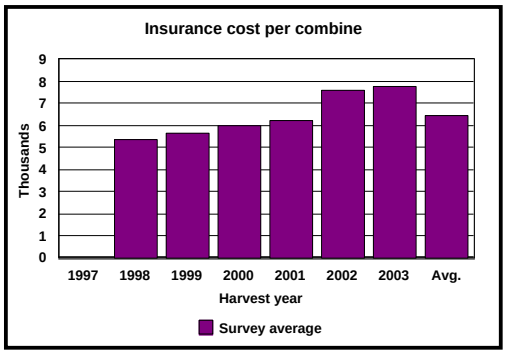

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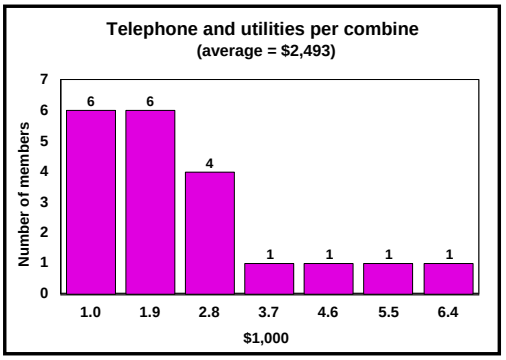

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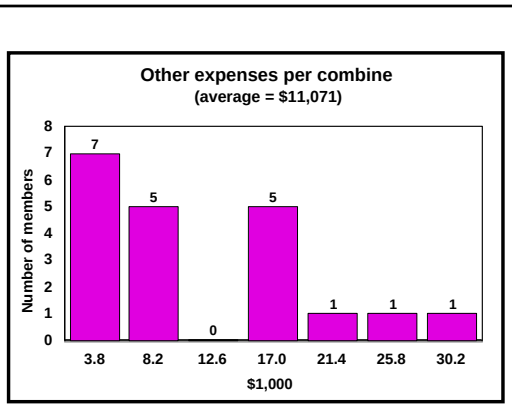

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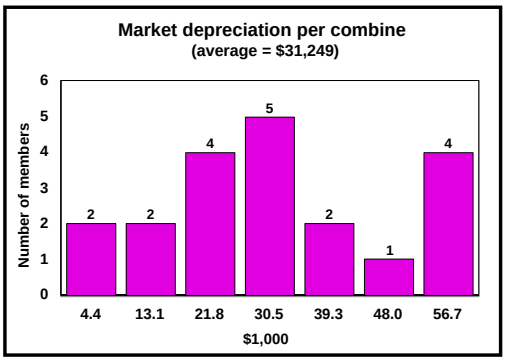

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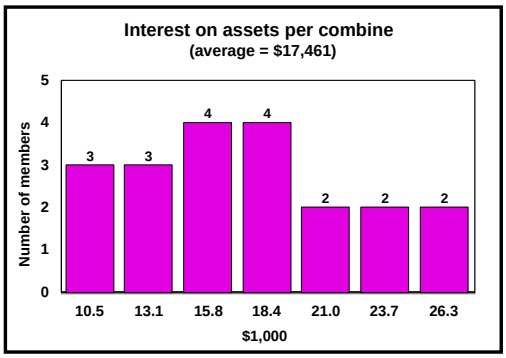

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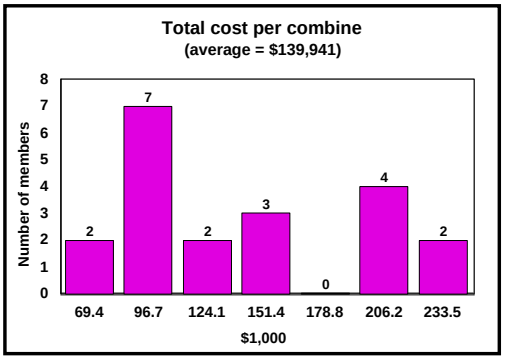

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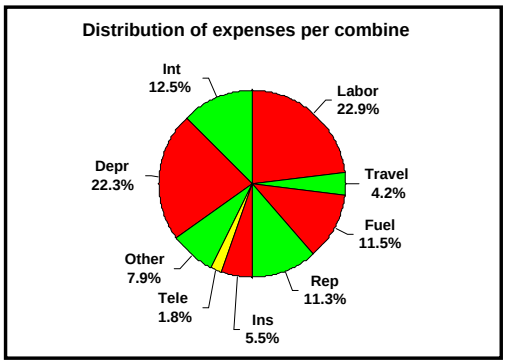

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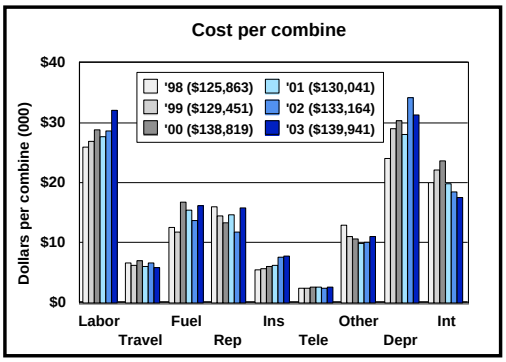

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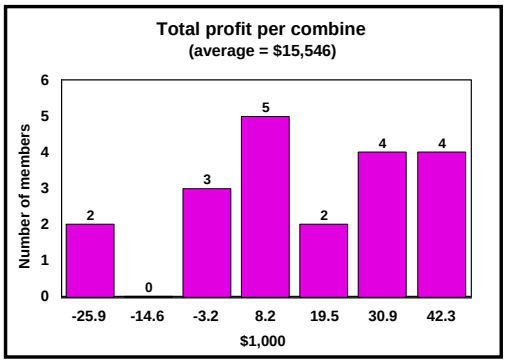

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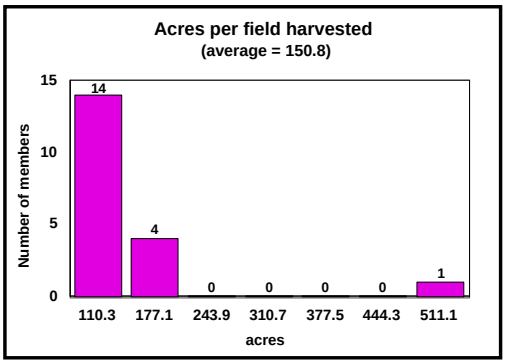

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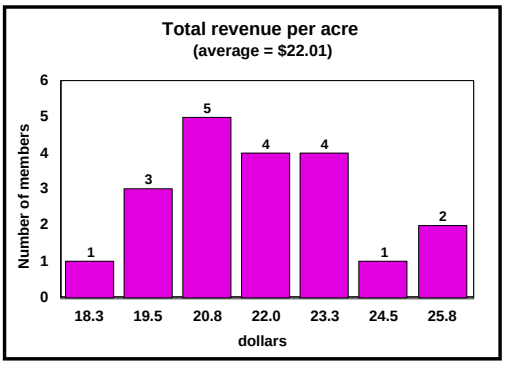

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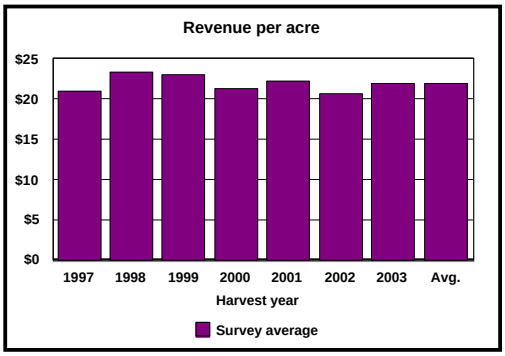

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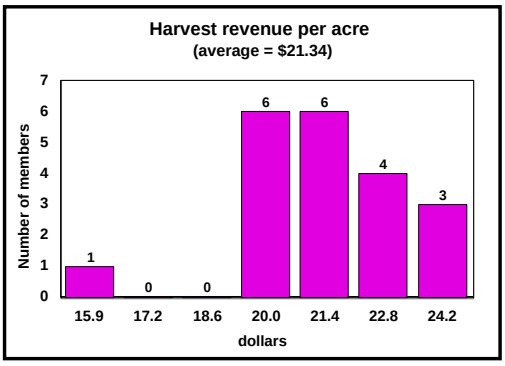

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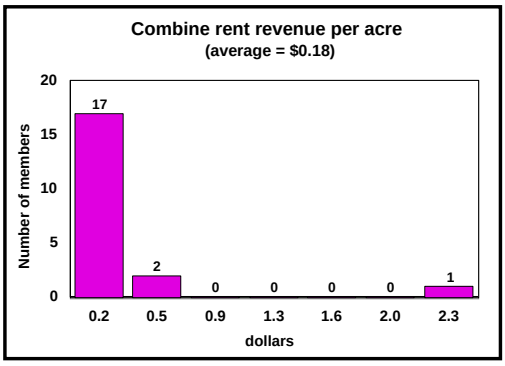

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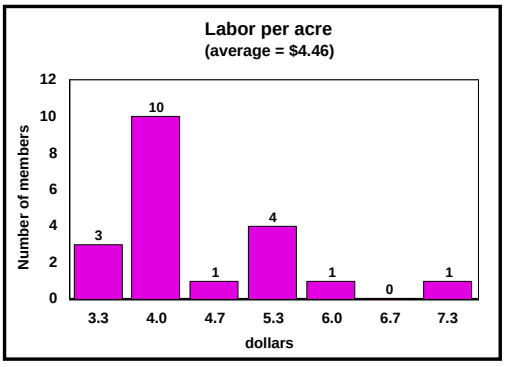

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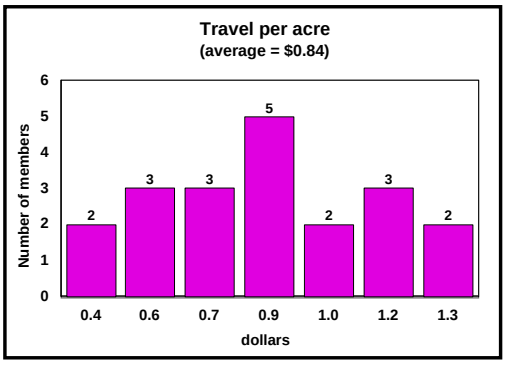

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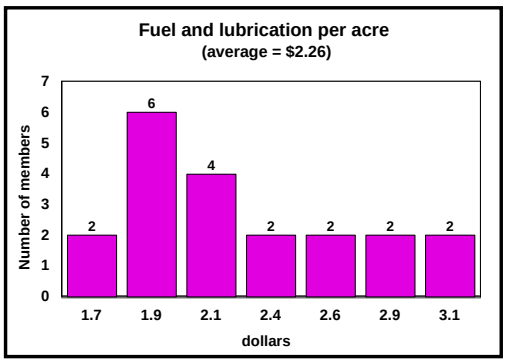

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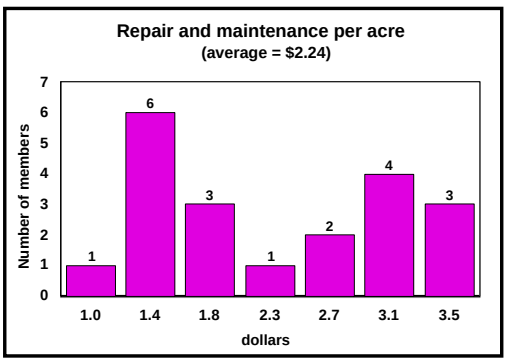

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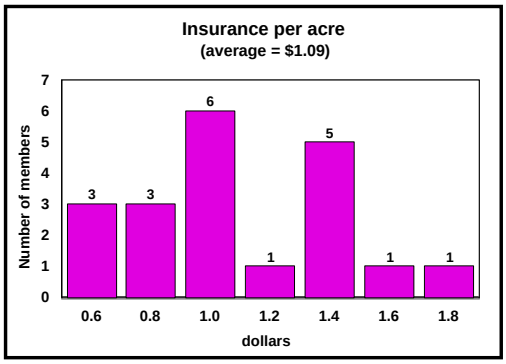

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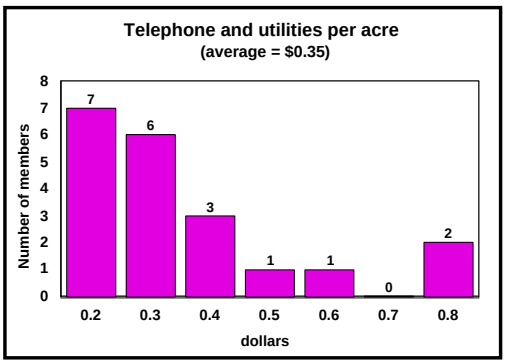

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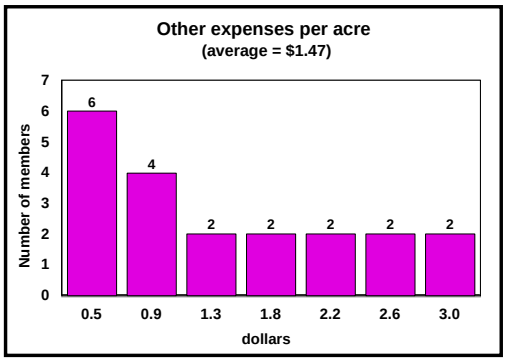

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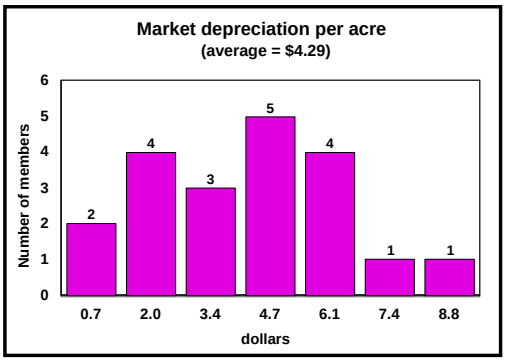

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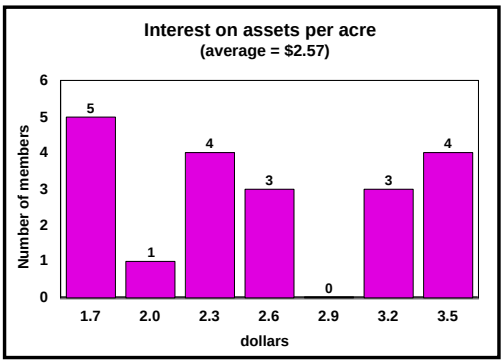

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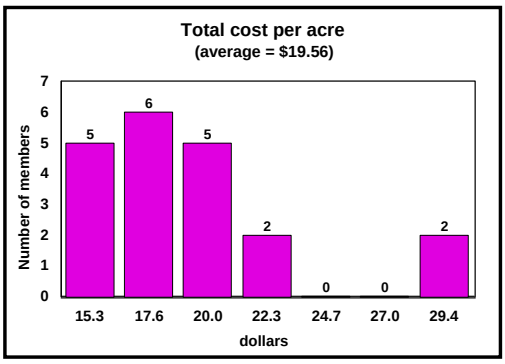

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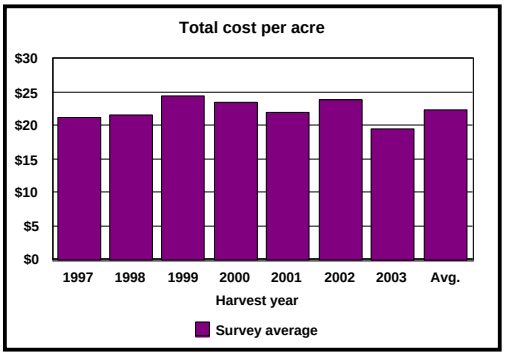

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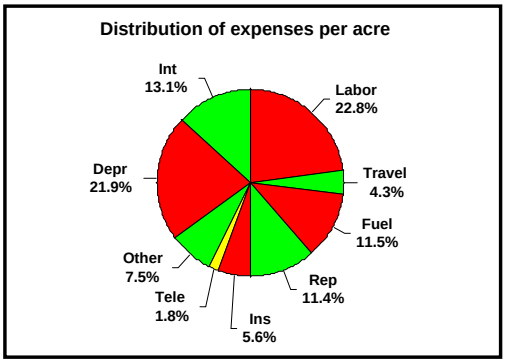

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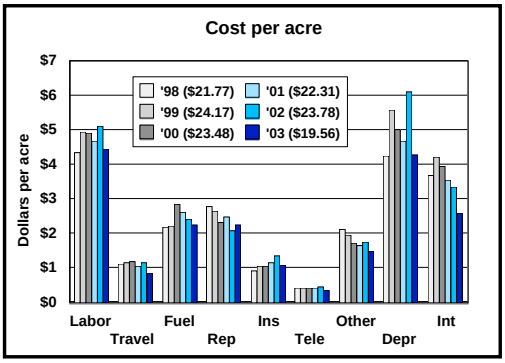

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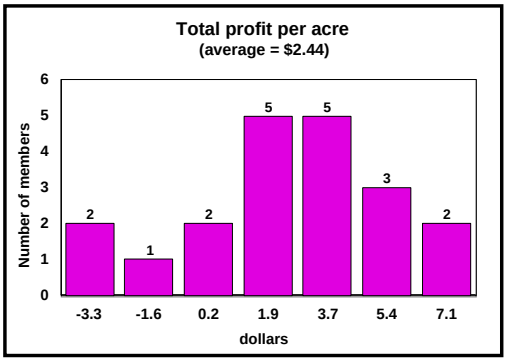

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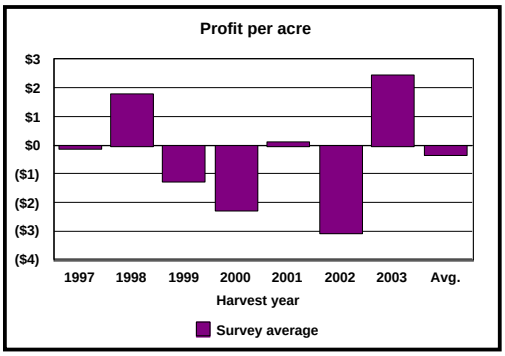

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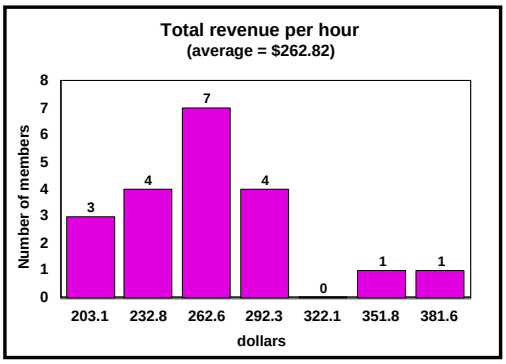

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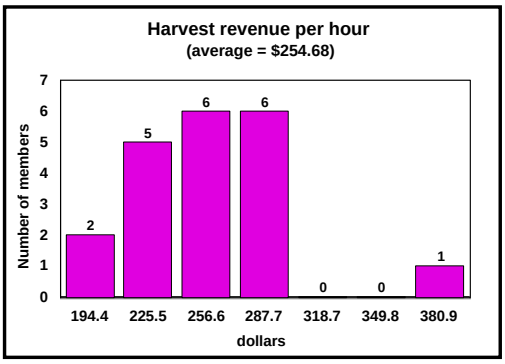

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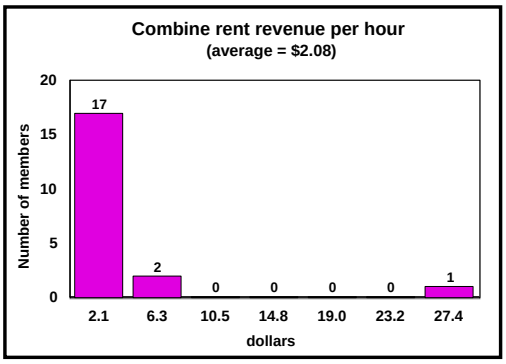

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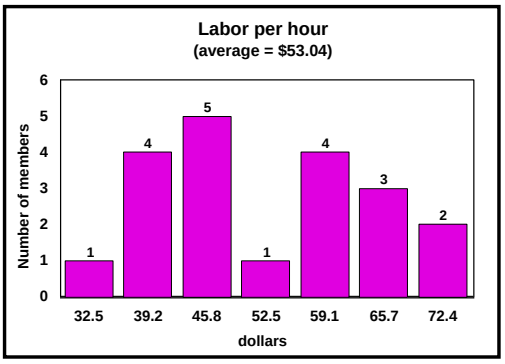

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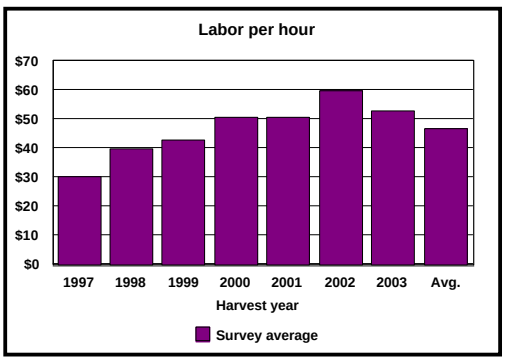

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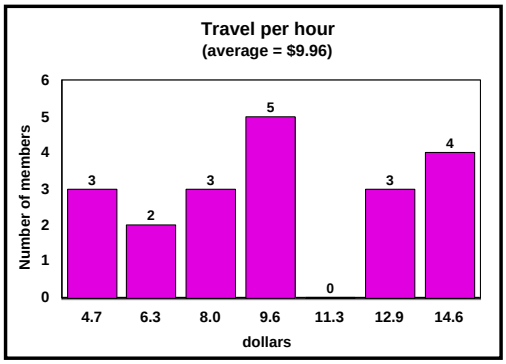

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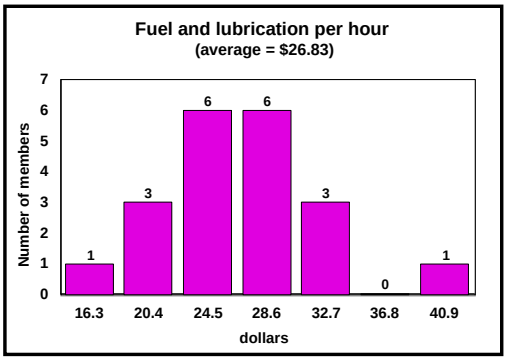

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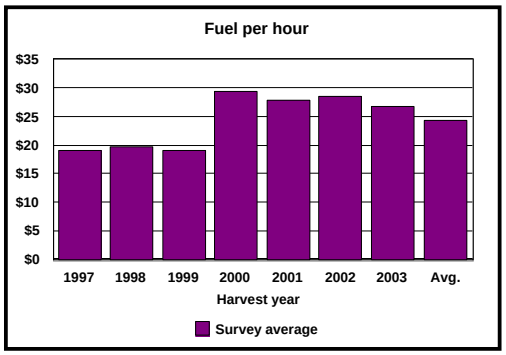

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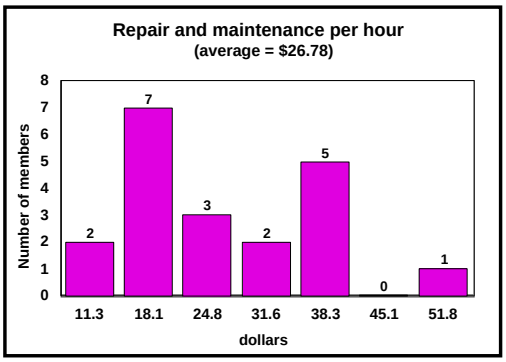

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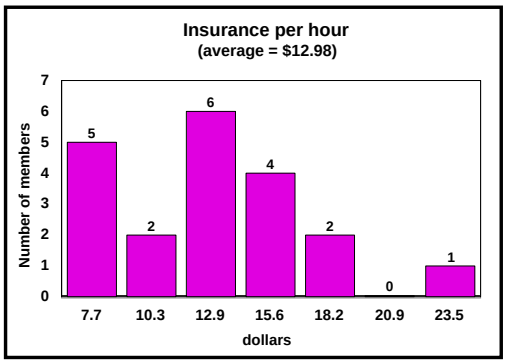

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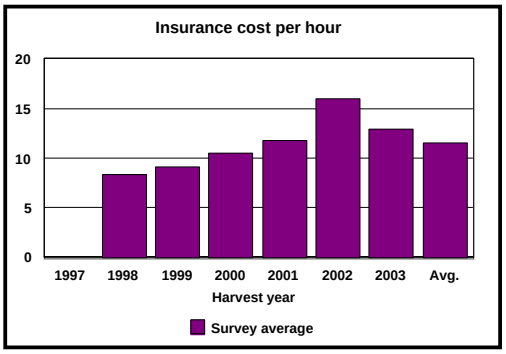

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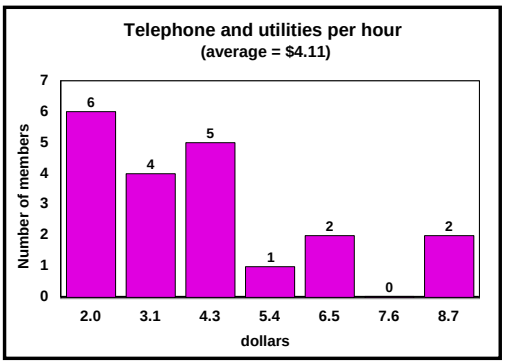

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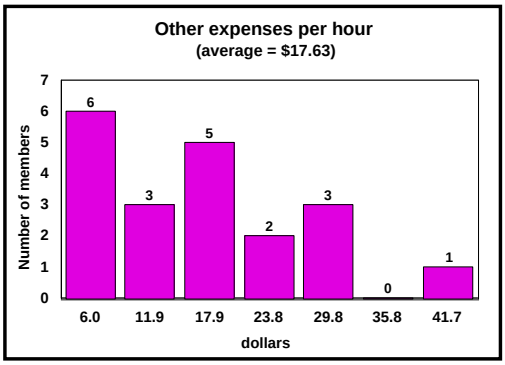

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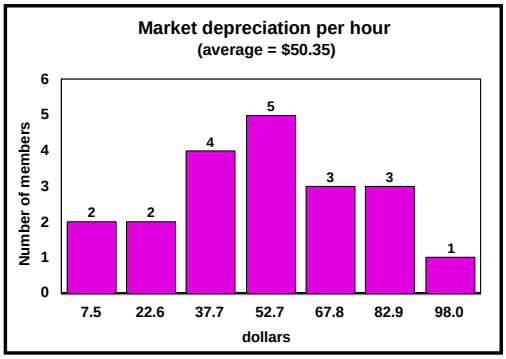

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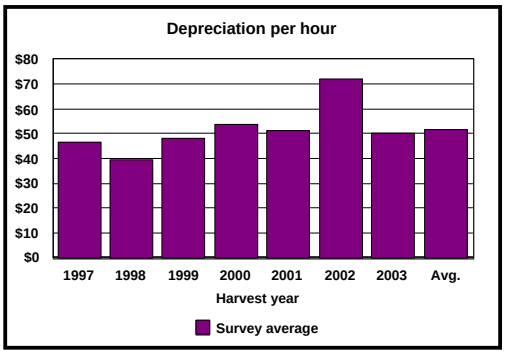

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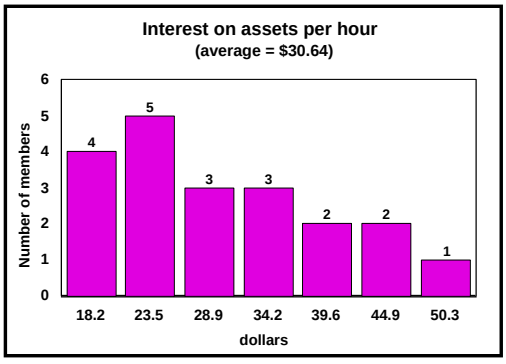

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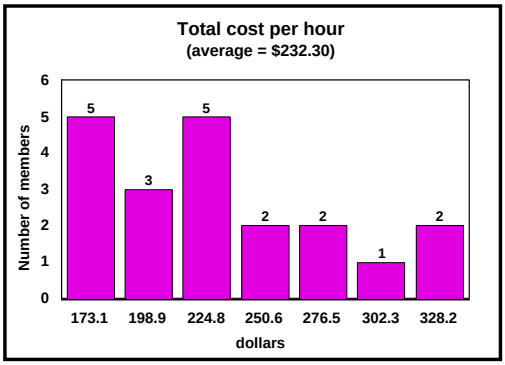

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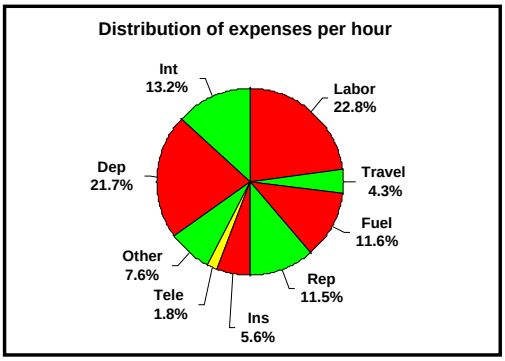

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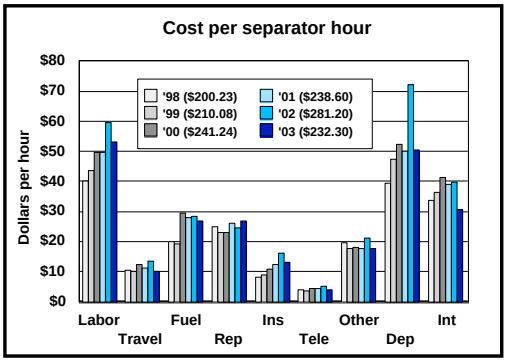

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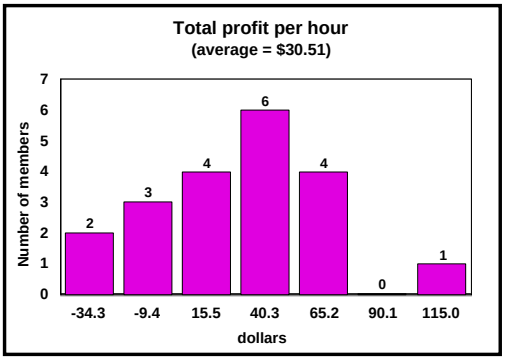

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Survey Average Income and Expense

INCOME AND EXPENSE	$/Combine	$/Acre	$/Hour
Harvest Revenue	$150,034	$21.34	$254.68
Combine Rent Revenue	$1,328	$0.18	$2.08
Other Revenue	$4,126	$0.49	$6.05
Total Revenue	**$155,488**	**$22.01**	**$262.82**
Labor (paid and unpaid)	$32,024	$4.46	$53.04
Travel	$5,861	$0.84	$9.96
Fuel and Lubrication	$16,145	$2.26	$26.83
Repair and Maintenance	$15,881	$2.24	$26.78
Insurance	$7,756	$1.09	$12.98
Telephone and Utilities	$2,493	$0.35	$4.11
Other Expenses	$11,071	$1.47	$17.63
Market Depreciation	$31,249	$4.29	$50.35
Interest on Assets (assigned)	$17,461	$2.57	$30.64
Total Expense	**$139,941**	**$19.56**	**$232.30**
Total Operating Profit	**$15,546**	**$2.44**	**$30.51**

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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) =

$$\frac{\text{profit + interest}}{\text{average assets}}$$

131

Financial Ratios

- Return on Equity from income statement (ROE--- IS) =

$$\frac{\text{profit + interest on equity}}{\text{average equity}}$$

- Return on Equity from balance sheet (ROE--- BS) =

$$\frac{\text{change in equity}}{\text{beginning equity}}$$

132

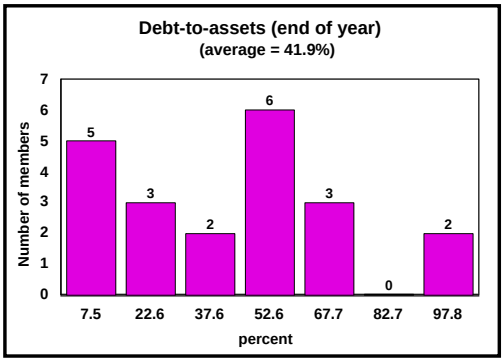
Expense Ratio

a measure of financial efficiency

- **Expense Ratio (ER) =**

$$\frac{\text{total expense}}{\text{total revenue}}$$

133



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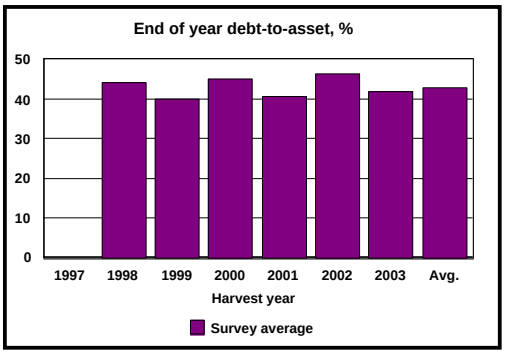

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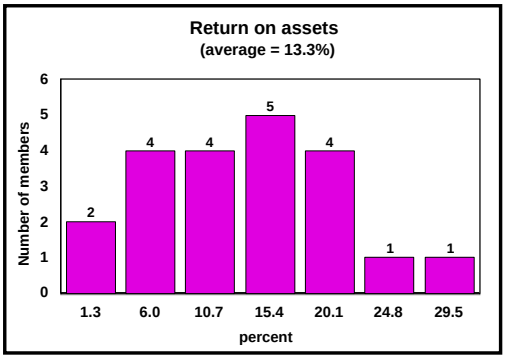

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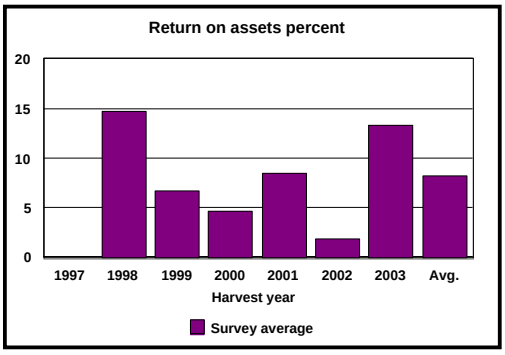

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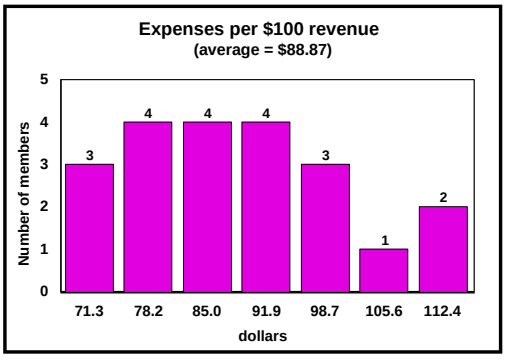

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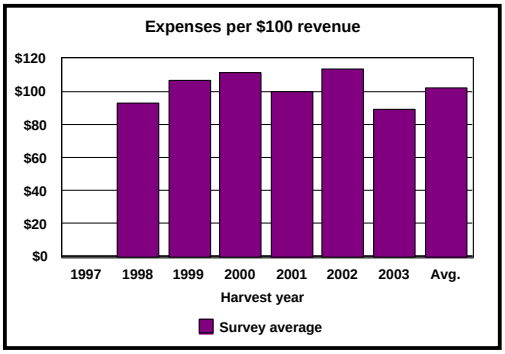

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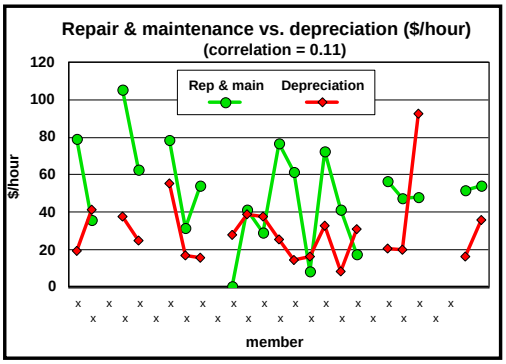

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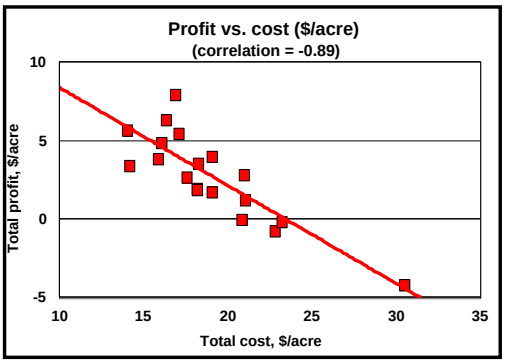

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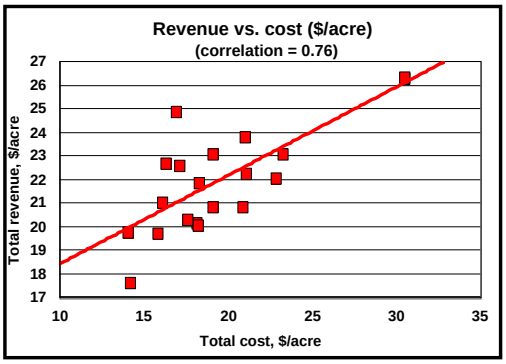

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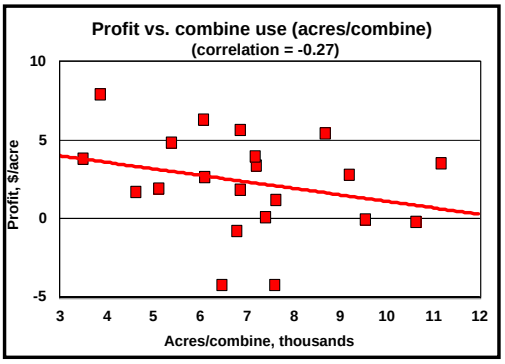

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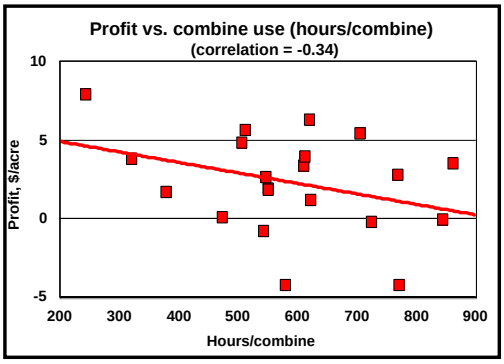

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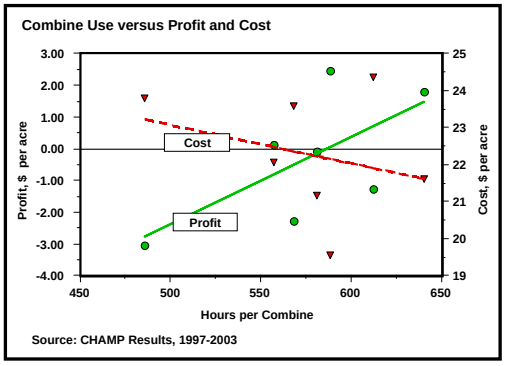

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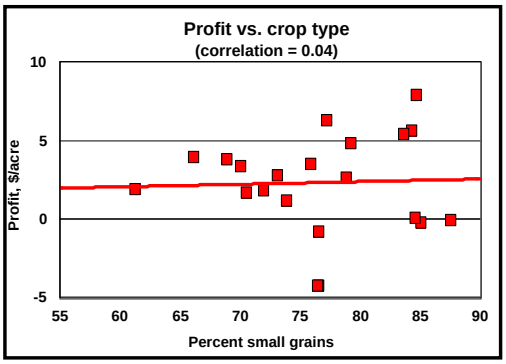

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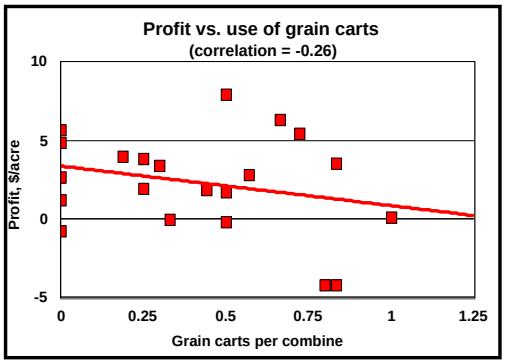

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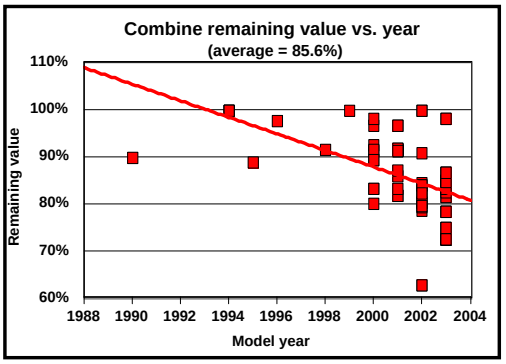

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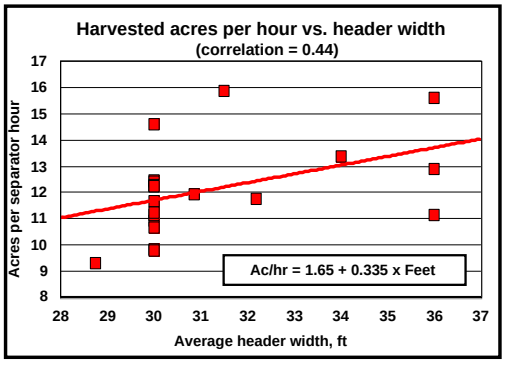

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Summary

- 2003 was a good year!
- Of 7 years analyzed, 2003 best in terms of:
  - Acres harvested per combine and per sep. hour
  - Revenue per combine and hour
  - Cost per acre
  - Profit per combine, acre, and hour
- Considerable variability between firms
  - 17 of 21 firms were profitable in 2003
  - (6/21 in 2002; 11/20 in 2001; 9/22 in 2000)

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