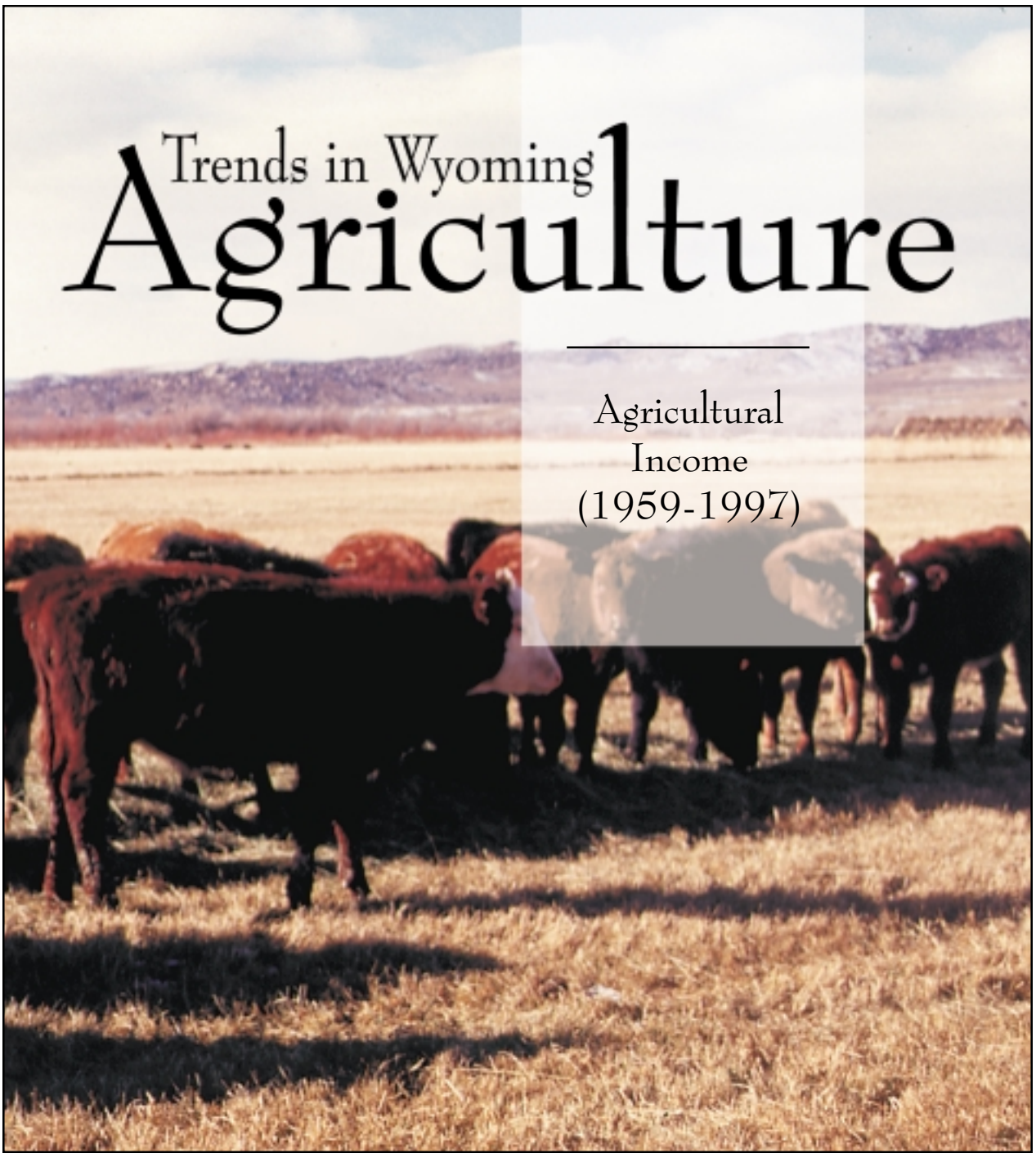

Thomas Foulke, Roger Coupal, David Taylor

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Authors:

Thomas Foulke, Information Specialist, University of Wyoming College of Agriculture Department of Agricultural and Applied Economics, P.O. Box 3354, Laramie, WY 82071

Roger Coupal, Assistant Professor, University of Wyoming College of Agriculture Department of Agricultural and Applied Economics, P.O. Box 3354, Laramie, WY 82071

David Taylor, Professor, University of Wyoming College of Agriculture Department of Agricultural and Applied Economics, P.O. Box 3354, Laramie, WY 82071

Editor: Tonya Talbert, College of Agriculture, Office of Communications and Technology

Graphic Designer: Tana Stith, College of Agriculture, Office of Communications and Technology

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The late twentieth century was a period of rapid social and technological change, affecting nearly every aspect of society, including agriculture. But to what degree has the structure of Wyoming agriculture been influenced, and what developing trends are important to producers and policy makers for the future? More specifically, what is the pattern of income received by producers and how has it been affected by changes in the industry?

It is important to understand that Wyoming agriculture is extremely dependent on livestock, particularly cattle. Eighty-eight percent of Wyoming's agricultural land is devoted to grazing, while half of the remaining cropland is pastured. Hay accounts for the vast majority of crop production acres. Eighty-three percent of all livestock is beef cattle (USDA Census of Agriculture, 1999). Consequently changes in the cattle market have a significant impact on Wyoming's agricultural sector.

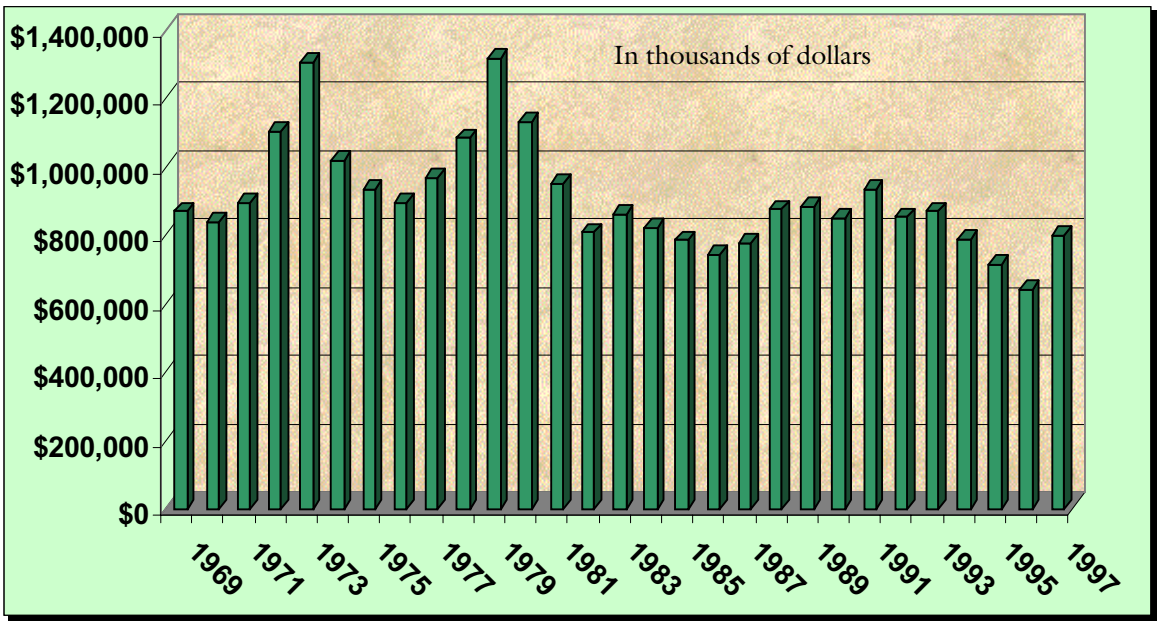
Information for this report was obtained from the Bureau of Economic Analysis' Regional Economic Information System (REIS). The Bureau of Economic Analysis is a branch of the U.S. Department of Commerce. The REIS data covers 29 years of historical economic data for the country and is released on CD-ROM. The most current year available is 1997. It should also be noted that the Bureau of Economic Analysis does not distinguish between farms and ranches, even though in Wyoming, most "farms" are ranches. Therefore, in this report, the words "farm" and "ranch" are used interchangeably to denote agricultural enterprises in Wyoming.

Cash Receipts

Figure 1 shows Wyoming's agricultural producers' total cash receipts for the years 1969-1997. The shape of the graph mirrors the trend in national farm receipts. The significant features are two spikes in receipts in the 1970s. These spikes would not have been nearly as high had it not been for a compounding effect that dramatically increased commodity prices during that same time period. Both spikes are at peaks in the cattle cycle. However, the earlier spike was exacerbated by a combination of events following a period of adverse weather that affected several major world grain production areas.

The United States also adopted a free-floating exchange rate in 1973. The Soviet Union opted to avoid rationing by supplementing grain inventories through imports (USDA, *U.S. Export Performance,* 1997). As the value of the dollar dropped, grain exports escalated, driving up cattle and feed prices in the United States (Knutson, Penn, and Boehm, 1990). Exports continued to grow throughout the 1970s, as did land prices and machinery purchases. The later spike was caused by a combination of cyclically lower beef supplies and high levels of inflation (USDA, Developing Marketing Spreads, 1980), pushing cattle prices up 30 percent from 1978 to 1979 (Wyoming Agricultural Statistics, 1980).

Figure 1. Total cash receipts, Wyoming agriculture, 1969-1997*.



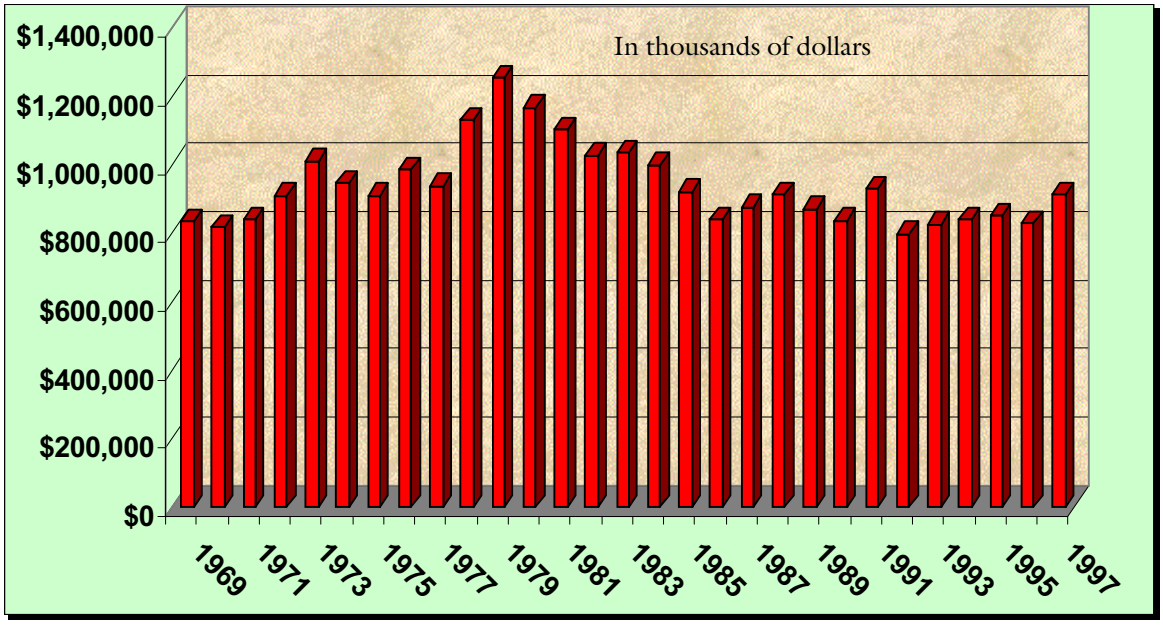
*Dollar amounts represent thousands of dollars. For example, the value $1,400,000 actually represents $1.4 billion. All data has been converted into real dollars, adjusted for inflation to 1992 dollars.

Yet, beyond those two significant events, cash receipts (in real terms) received by Wyoming agricultural producers have remained fairly steady. (Economists use the term "real" to refer to inflation adjusted dollars. That is, dollar values for different years have the effects of inflation removed by "deflating" them to a single year for comparison.) Including the 1970s spikes, total annual cash receipts averaged $906.7 million (1992 dollars). Even so, a downward trend that started in the early 1990s appears to have bottomed in 1996. In 1997 (the last year reported) there was modest improvement. Average receipts for 1997 were $103,531 on a per proprietor basis. (The REIS data counts "proprietors" instead of "farms" as in the census. In 1997, REIS counted 8,758 proprietors, whereas the census counted 9,232 farms in Wyoming. For consistency, the REIS value is used throughout this document.)

Production Expenses

Figure 2 shows total production expenses for Wyoming agriculture. This graph reveals two spikes similar to those in Figure 1, but the early 1970s spike is muted. The fact that production expenses were not as high as receipts during this period was probably due to producers selling into markets for higher than normal prices but not having the high production costs. (Note the differences in the bars for the year 1973 in Figures 1 and 2.) These combined effects led net real income per farm to rise 73 percent nationally for 1970 to 1973 (Knutson, Penn, and Boehm, 1990).

Figure 2. Total production expenses, Wyoming agriculture, 1969-1997.



On the contrary, the late 1970s to mid-1980s was an extended period of high inflation and high interest rates. High interest rates have a particularly detrimental effect on the agricultural sector since it relies heavily on credit. The surge in production expenses that started in 1978 and peaked in 1979 actually lasted until the mid-1980s. The reason for this is that many agricultural operators who depend on financial institutions for operating capital were forced to borrow at higher and higher rates to finance and refinance operations. The cost of credit was a factor in effectively wiping out profits and reducing solvency in this sector during the first half of the 1980s (Figure 3), contributing to the farm crisis. Particularly hard hit during this period were those producers that had borrowed heavily during the 1970s to expand operations during a time of high exports. When monetary policy shifted in the early 1980s to control inflation, farm exports, commodity prices, and farm income dropped off (Knutson, Penn, and Boehm, 1990).

With the exception of the two spikes and their obvious detrimental effects on the sector, production expenses (in real terms) were extremely flat from 1969 to 1997. The average annual rate is $936.5 million (1992 dollars). In real terms, there is little difference between the late 1960s and the early to mid-1990s. Annual production expenses on a per proprietor basis for 1997 were $106,930.

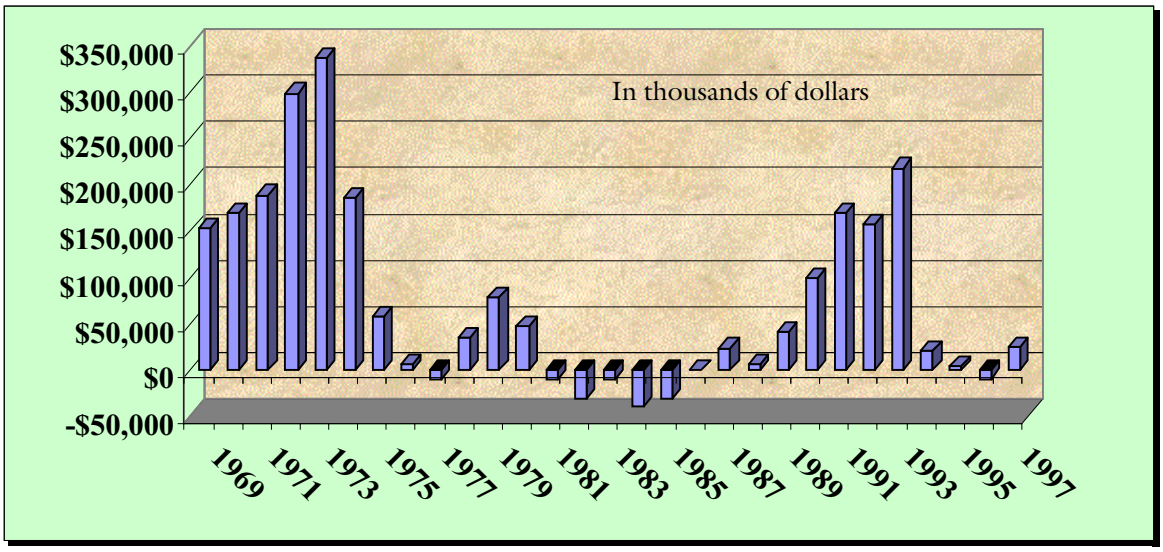
Proprietor's Income

Total net farm proprietor's income is shown in Figure 3. The values in this graph are the result of the total cash receipts minus total production costs. This graph shows how strongly interest rates affect agricultural income. Real interest rates were negative five of seven

years, from 1973 to 1979. Negative interest rates encouraged producers to borrow and expand. When monetary policy shifted in the early 1980s the result was a reduction in agricultural exports, rising interest rates, and decreased farm income and investment in agriculture (Knutson, Penn, and Boehm, 1990). Due to the length of loans, there is a lag between when an interest rate hike is made and when it is felt in the marketplace (or wallet, as the case may be). Proprietor's income plummeted after 1973 as interest rates rose (Figure 3). Profitability returned briefly in the late 1970s (good cattle market), only to be swept away with the higher interest rates, inflation, and fuel prices during the farm crisis. Significant profitability did not return until interest rates started to come down in the late 1980s and early 1990s. Recent marginal profitability is probably due to poor cattle prices. Total net farm proprietor's income for 1997 was $28.1 million (1997 dollars). The net farm proprietor's income for 1997 was $3,210 per proprietor. (This is an average figure without regard to the size of the operation.)

Average proprietor income shows that even though there is wide variation, income over the long term is still positive. Average total net proprietor's income for the 29-year reporting period was $75.3 million or $8,977 per proprietor. This number includes the extraordinarily profitable years prior to 1975. Excluding those years, the 23-year period from 1975-1997 shows an average total net farm proprietor's income of $29.3 million or $3,329 per proprietor (1992 dollars). The shorter period is more indicative of the volatile nature of proprietor's and agricultural income in general. There were 21 positive years and 8 negative years, plus extremely wide variation for the 29-year period. The high was $336.9

Figure 3. Wyoming total net farm proprietor's income, 1969-1997.



million ($42,178 per proprietor) in 1973 and the low was in 1984 at -$39.6 million (-$4,314 per proprietor).

Nationally, average operator household income has kept pace with the average U.S. household income for the past 40 years. However, new statistics show that the share of agricultural operator's household income from farming or ranching has been static since the mid-1980s. This national data estimates that off-farm income accounts for 88 percent of total farm operator household income (USDA Agricultural Income and Finance, 1999), indicating that other family members are working off-farm to keep the operation viable.

The trend in increasing off-farm income is not new. Available data indicates that off-farm income has been important to farm households for decades. Hoppe and Korb (1997) state that operator households relied on off-farm income for at least 50 percent of their income as far back as the early 1960s. And they explain that even in the 1930s, 30 to 41 percent of farm residents' disposable personal income came from off–farm sources.

The number of proprietors has had only a slight effect on total proprietor income. Proprietor employment fluctuated with the economic forces affecting agriculture. The low year was 1975 with only 7,844 proprietors. The high was in 1983 when there were 9,374 proprietors. The number of agricultural proprietors in Wyoming increased 2.17 from 1969 to 1997.

Hired Farm Wages

Figure 4 shows total farm wages. This graph represents the aggregate amount received by hired farm workers in the state, excluding proprietors. The significant feature is the steep decline seen since 1974. The reason for this is not readily apparent unless it is understood that total income value is closely associated with the number of people working. Wyoming hired farm labor, shown in Figure 5, provides useful evidence in this case.

Since 1974, hired agricultural employment in Wyoming has declined by 48 percent (Figure 5). The decline is attributed to technology that changed production practices (mechanization), as well as increased financial pressure on producers in the 1980s. The drop in the number of hired workers explains the drop in total farm wages seen in Figure 4.

Declining numbers do not necessarily mean declining salaries. Figure 6 shows average annual farm wages per hired worker. Note that wages dipped during the 1980s, a period of instability in the sector, but they have rebounded and are currently above historic levels. The average wage per worker in 1997 was $23,031, up from $17,549 the year before. Agriculture lost 534 hired jobs between 1996 and 1997, but most of the decrease was in lower paying jobs. Decreasing the number of lower wage employees allowed higher wage earners to be more heavily weighted in the statistical average, resulting in an increase in average wages.

Figure 4. Wyoming total farm wages, 1969-1997.

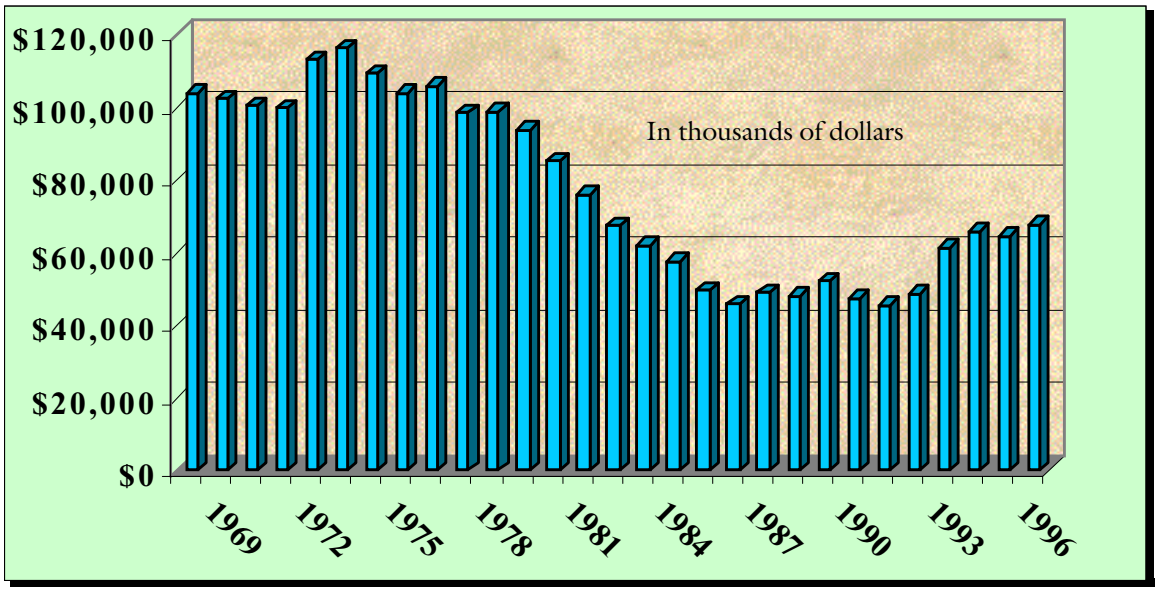


Figure 5. Wyoming hired farm labor 1969-1997.

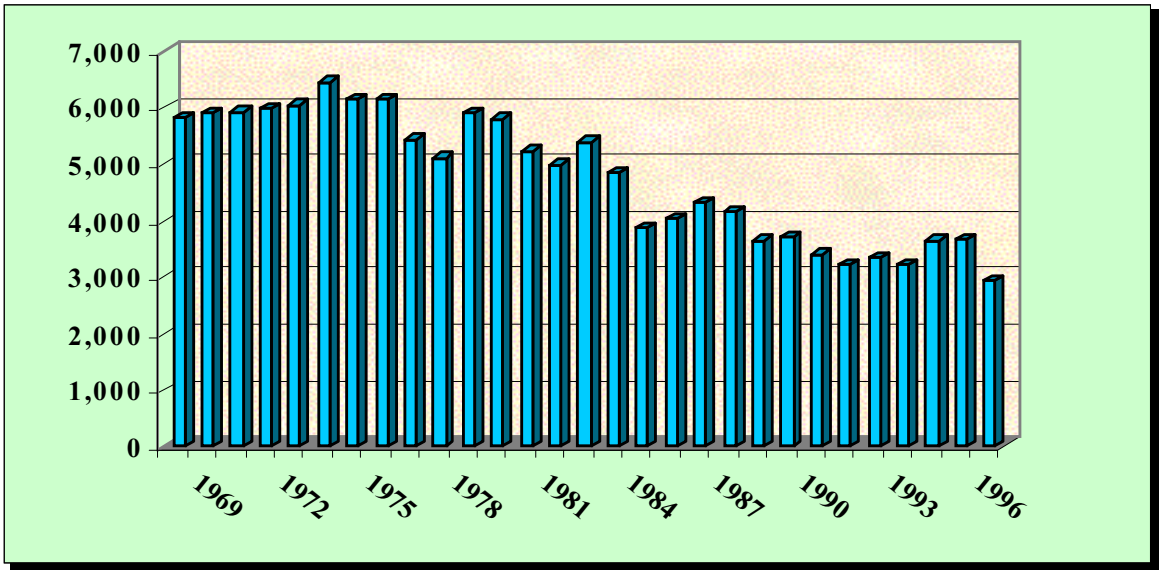
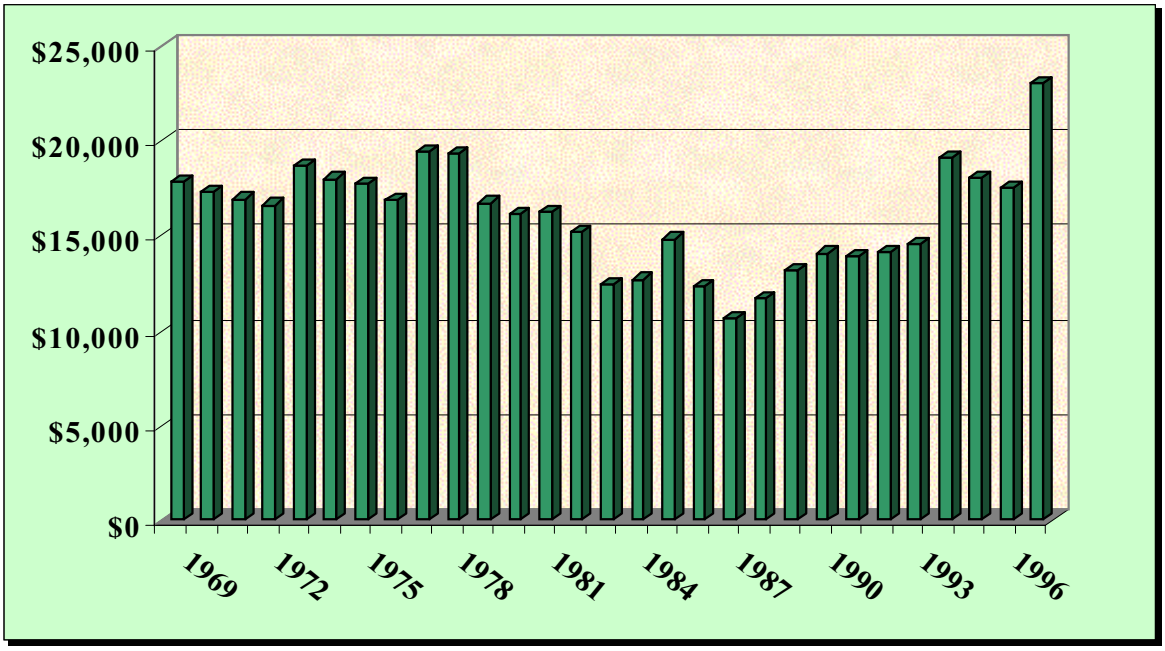


Figure 6. Average farm wages per hired worker, 1969-1997.



Summary

Total cash receipts have been fairly constant, with the exception of the two spikes in the 1970s, showing that the real value of agricultural production has maintained its income-generating capacity over time. Similarly, total production expenses (with the exception of the first half of the 1980s) have been flat, showing that producers face a fairly even set of production constraints from year to year.

Conversely, net proprietor's income has fluctuated dramatically even as the number of proprietors has increased slightly in Wyoming. The cattle cycle and macroeconomic forces (particularly interest rates) of the 1970s and 1980s are chiefly to blame. Stable interest rates in the last 10 years have helped return production costs to longer-term levels, meaning proprietor income is more dependent on the cattle cycle. Recent weakness in the cattle market has not been good for Wyoming producers. Proprietors' average production costs still exceed average cash receipts, pointing to continued reliance on increasing land values and off-farm income to maintain the viability of the enterprise.

While the number of hired workers has decreased substantially since 1974, the average wage per hired worker has increased in recent years. This reflects the continuing trend, started in the 1920s and accelerated in the 1970s, toward mechanization in agriculture. Increased wages per worker may signal a trend toward more salaried management labor in agriculture.

One thing is certain, changes will continue to affect Wyoming's agricultural sector in the years to come.

Structurally, the sector continues to move toward industrialization, concentration, and consolidation as the industry tries to find economies of scale (USDA Concentration and Structural Change, 1999). Producers and policy makers need to be aware of the forces working for and against the producer in order to mitigate adverse socioeconomic consequences before they occur.

For more information on trends in Wyoming agriculture, visit the *Wyoming Economic Atlas* at http://Agecon.uwyo.edu/EconDev.

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