

The Structure, Performance, and Sustainability of Agriculture in the Mountain Region

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Abstract: Farmers in the Mountain Region face growth in population and nonfarm employment that affect land use and how farmers operate their businesses. Growth also increases the demand for nonfarm use of irrigation water and public grazing lands. Sustainable agricultural practices are used by Mountain Region farmers to some extent and may help farming to remain economically viable. Farmers in the Mountain Region have higher education levels and a younger age distribution than farmers elsewhere, which may help them adjust to change. These characteristics may also make the adoption of sustainable agriculture more feasible. Growth in the region does provide some benefits to farmers, however. Growth can help keep the value of farmland up through nonfarm demand for land. In addition, the greater availability of jobs means that off-farm work is available to households operating small farms.

Keywords: Sustainable agriculture, Mountain Region, regional economy, farm structure, financial performance, Gini coefficient.

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The Structure, Performance, and Sustainability of Agriculture in the Mountain Region

The West, including the Mountain Region,¹ is different from the rest of the country (Ward, 1996; Weber, 1998).

Gardner (1996), for example, identified four characteristics of the region that flow directly from its aridity:

- A predominantly urban economy with sparsely settled hinterlands
- Large Federal landholdings
- An agricultural sector with much of the output produced under irrigation
- Relatively heavy non-extractive and recreational demands for natural resource use (particularly on Federal lands).

Some of the major differences between the Mountain Region and the Rest of the Nation are outlined in table 1, which confirms the characteristics listed above. Despite relatively rapid population growth in the Mountain Region, the region remains relatively sparsely populated with a population density about one-fifth as high as in the rest of the country. The Federal government holds about half of the region's land, and half the farms in the Mountain Region have irrigated cropland, about four times the share of farms located elsewhere. In addition, 25 percent of farms have irrigated grazing land, or more than 10 times the 2-percent rate for farms located elsewhere. Nevertheless, the region produces only 8 percent of U.S. agricultural product sales, despite a 25-percent share of the land in farms.

This paper explores some of the differences between the Mountain Region and the rest of the Nation, drawing implications for the future of farming in the region. A variety of data sources are used in this paper to examine the regional economy, population change, land use, farm businesses and households, and the farm sector. (See "Appendix I: Sources of Data.") The paper begins by reviewing recent trends in the growing regional economy, which affect farming. Next, the paper examines farm structure, the financial performance of agriculture in the region, and the use of practices that can be considered sustainable. Finally, the paper draws some implications for the future of farming in the Mountain Region from the information presented.

¹ The region consists of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

Regional Population and Employment Trends

Proximity to growing urban economies and population concentrations can affect how farmers run their operations (Heimlich and Barnard, 1992; Heimlich and Anderson, 2001). Urbanization can have both negative and positive impacts on farming. Negative impacts include vandalism, water- and land-use restrictions, and conflicts with neighbors, as well as increased taxes. Markets for milk and grains may also contract—or even disappear—as milk-collection routes are cut back and grain elevators close down. Positive impacts include a larger pool of seasonal labor, off-farm employment opportunities for operators, and new marketing channels for high-value products (such as sales at farmers’ markets).

This section of the paper focuses on population and employment growth to provide a general picture of recent demographic and economic trends. Trends are discussed for both metro and nonmetro counties, because of important differences between the two areas.

Population Growth

During the past two decades, population growth was fairly rapid in the Mountain Region as a whole, 20 percent between 1980 and 1990 and 33 percent between 1990 and 2000 (table 2). At the National level, growth rates were less than half as high, 10 percent in the 1980’s and 13 percent in the 1990’s.

Population grew slower in the nonmetro than in the metro parts of the region. Nevertheless, the nonmetro population growth rate was much higher in the Mountain Region than in the Nation as a whole. Rapid nonmetro growth was widespread in the West (defined here as the Mountain Region plus California, Oregon, and Washington):

The West led a rebound in nonmetro population growth from the mid-1980’s through the early 1990’s, caused mostly by changing patterns of net migration. . . Scenic settings accessible to metro areas continued to attract a disproportionate share of new residents, but record numbers of recent migrants chose more sparsely settled and isolated areas with fewer natural amenities. The costs as well as the benefits of population related development being felt in a broader cross-section of rural places (Cromartie and Wardwell, 1999, p. 2).

As one would expect, this rapid population growth was accompanied by expansion in the amount of land devoted to urban use (table 3). Urban land increased in the Mountain Region by 42 percent from 1978 to 1987 and by 46 percent between 1987 and 1997, much higher than the corresponding national growth rates. Nevertheless, the impact on overall land use in the region was minor. Despite a doubling of the region's urban land between 1978 and 1997, only one percent of land in the region was in urban uses, and the changes in total cropland and grazing land over the 1978 to 1997 period were minimal. Population growth can also increase the competition for limited water supplies and increase the pressures to transfer water from irrigation to residential, industrial, or commercial uses (Golleson, 1999). Nevertheless, despite rapid population growth, there is no clear trend in total irrigated land in the region in recent years (Vesterby and Krupa, 2001a, p. 47).

Not all areas in the region experience rapid growth, however. For example, population growth from 1990 to 2000 was relatively slow in Montana (13 percent for the State) and Wyoming (9 percent), which had the smallest total population and the highest share of population living in nonmetro areas. Individual counties, such as those in the eastern third of Montana, also experienced stable or declining population. In this respect, eastern Montana was more like western North Dakota than counties nearer the Rocky Mountains.

Because population growth in the Mountain Region is most rapid in metro areas, farm operators feel the most development pressures there. Development in and around metro areas, however, may have somewhat less of an impact on farmers in the Mountain Region than elsewhere, because 64 percent of the region's farms are located in nonmetro areas that are not adjacent to metro areas. (In the rest of the Nation, 69 percent of farms are located in metro areas or in nonmetro areas located adjacent to metro areas.)

Employment Growth

As measured by employment growth, the economy has performed fairly well in the Mountain Region.

During most years of the 1990's, the metro and nonmetro portions of the Mountain Region both experienced annual employment growth rates in excess of their national counterparts (figure 1).

Employment growth during the 1990's was slowest in Montana, New Mexico, and Wyoming, but even in

these States, employment growth was more rapid than at the national level. Amenities in the Mountain Region combined with economic restructuring contributed to the region's employment growth (Vias, 1999, p. 14).

Employment growth (or decline) occurs in different industries at different rates and—over a sufficiently long period of time—changes the composition of the workforce. In the Mountain Region, employment shifted to services, in both metro and nonmetro areas, during the 1980's and 1990's (figure 2). By 1997, services (including finance) accounted for 42 percent of employment in metro areas and 33 percent in nonmetro areas. In both areas, the services share of employment increased by 11 percentage points between 1981 and 1997. Farming and farm-related employment have become small share of total employment, even in nonmetro areas.

Structural Characteristics of Rocky Mountain Farms and Ranches

Farm structure is the way farmers organize their resources to produce farm products (Harl, 2002). The term is generally defined broadly to cover a variety of farm and farm operator characteristics (Boehlje, 1992, p. 219). Examining a few farm and operator characteristics helps show how farm structure differs between the Mountain Region and the rest of the Nation. In particular, this section discusses farm size, products produced, and operator age, education, and occupation. The distribution of Mountain Region farms and ranches by the ERS farm typology—which classifies farms by structural characteristics—is also examined.

Size

Farms in the Mountain Region are large in area, operating an average of nearly 2,000 acres, compared with only 360 acres in the rest of the Nation, according to the 2000 Agricultural Resource Management Survey (ARMS). Acres operated understates the amount of land used in the Mountain Region, however, because it excludes land that farms access through grazing fees paid on a per-head or animal unit month (AUM) basis. According to ARMS, approximately 19 percent of the farms and ranches in the Mountain Region paid grazing fees in 1997, compared with 4-percent nationally. Two Federal Agencies—the Bureau of Land Management and the Forest

Service—were both heavily involved in supplying grazing land, although farmers in the region also used other sources, including private landowners, grazing associations, and reservations.

Environmental concerns regarding the administration of grazing fees, however, could eventually reduce the amount of grazing on public land. Critics argue that the current system—with its low fees and preference for livestock producers with operations adjacent to BLM land—results in environmental degradation. In response, a variety of organizations have suggested a more market-oriented allocation of permits that would allow competing bids by ranchers, environmental groups, and other organizations to set the value and use of grazing allotments (Wiebe, et al., pp. 1999, p. 55).

The level of sales of farm products is a better indicator of farm size than acreage, since it unambiguously measures economic activity in dollars. (In contrast, farm acreage just measures land use, with no indication of the value of what is actually produced.) Compared with farms elsewhere, farms and ranches in the Mountain Region are less likely to have sales less than \$10,000 and slightly more likely to have sales greater than \$250,000 (figure 3). At least half of the farms in both areas, however, have sales less than \$10,000 and about three-fourths have sales less than \$50,000.

Products Produced

Like the U.S. in general, the Mountain Region produces a variety of products (figure 4). However, cattle and other livestock² make up a larger share of production in the Mountain Region than elsewhere. In addition hay, which is fed to cattle and other livestock, accounts for about 7 percent of the value of production in the Mountain Region, compared with only 2 percent elsewhere. The rest of the Nation is more specialized than the Mountain Region in grains, hogs, and poultry. These differences in production reflect long-standing regional production specializations largely established by the early 1900's (Cochrane, 1993, p. 91).

² “Other livestock” includes sheep, goats, horses, mules, ponies, fur-bearing animals, bees, fish, and any other livestock species not shown separately in figure 4.

The region's specialization in cattle and other livestock helps explain the relatively low sales per acre throughout the region shown in table 1. Cattle ranches and other grazing-based operations may have a low volume of sales, but encompass many acres of pasture or range. Such operations also help explain why so many of the region's operations are classified in the lower sales classes (figure 3), despite a large average acreage.

High-value crops³ make up about 16 percent of the value of production in the region, which may seem high. However, the Mountain Region includes Arizona, which ranks ninth in acres of vegetables harvested and tenth in acres of orchards, according to the 1997 Census of Agriculture.

Operator Characteristics

Farm operators in the Mountain Region are different than their counterparts elsewhere. For example, 66 percent of operators in the region have at least some college education, compared with only 43 percent of operators in the rest of the Nation (figure 5). Educational attainment is negatively correlated with age, in both the farm and nonfarm populations, and at least some of the regional difference in educational attainment can be explained by a somewhat younger age distribution of operators in the region. About 43 percent of operators in the Mountain Region are above 55 years old, compared with 50 percent in the rest of the nation. Age differences also help explain a regional difference in occupation. Only 12 percent of operators report they are retired in the Mountain Region, compared with 18 percent elsewhere.

The Farm Typology

Farms vary widely in their characteristics, ranging from very small retirement and residential farms to establishments with sales in the millions. A farm typology developed by ERS categorizes farms into more homogeneous groups (See the box, "Defining the Farm Typology.") The typology is largely based on the occupation of operators and the sales class of farms. Compared with classification by sales alone, the ERS typology is much more reflective of operators' expectations from farming, stage in the life cycle, and dependence on agriculture.

³ High-value crops include vegetables, fruits and tree nuts, and nursery and greenhouse products.

Defining the Farm Typology

Small Family Farms (sales less than \$250,000)	Other Family Farms
<ul style="list-style-type: none"> • Limited-resource farms. Small farms with sales less than \$100,000, farm assets less than \$150,000, and total operator household income less than \$20,000. Operators may report any major occupation, except hired manager. • Retirement farms. Small farms whose operators report they are retired.* • Residential/lifestyle farms. Small farms whose operators report a major occupation other than farming.* • Farming-occupation farms. Small farms whose operators report farming as their major occupation.* • Low-sales. Sales less than \$100,000. • High-sales. Sales between \$100,00 and \$249,999. 	<ul style="list-style-type: none"> • Large family farms. Sales between \$250,000 and \$499,999. • Very large family farms. Sales of \$500,000 or more.
	<p style="text-align: center;">Nonfamily Farms</p> <ul style="list-style-type: none"> • Nonfamily farms. Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers. <p style="text-align: center;">*Excludes limited-resource farms whose operators report this occupation.</p> <p>For more information, see Hoppe (2001a) or Hoppe and MacDonald (2001).</p>

Most farms in the region (87 percent) are small, but production is concentrated among very large family farms, which account for about 52 percent of the value of production (figure 6). The distribution of farms by the typology was similar in the Mountain Region and the rest of the Nation. The only statistically significant differences were a slightly higher percentage of very large and nonfamily farms in the Mountain Region. The value of production, however, was more concentrated in very large farms in the Mountain Region than elsewhere. Very large farms accounted for only 35 percent of the value of production outside the region, about 17 percent less than in the region.

Small-farm households in the Mountain Region do not rely heavily on farm income (figure 7). Only households operating large and very large family farms received a substantial share of their income from farming. The same variation by typology group also prevailed in the rest of the United States. In the region (and elsewhere), only

three groups received household income substantially above the average for all U.S. households.

Residential/lifestyle farms had a high average income due to off-farm income, while the high average income of large and very large farms was largely a result of farm earnings.

Concentration of Farm Income

In farm structure discussions, the concentration of production on fewer farms is a bigger issue than the declining number of farms (Stanton, 1996). Concentration at the regional level appears in the large share of production accounted for by very large farms in figure 6 and in the absence of positive income from farming in households operating small farms in figure 7. The concentration issue in the Mountain Region is examined further by calculating Gini coefficients for the net farm income generated by the farm business. Gini coefficients are a zero-to-one measure for which zero indicates perfect equality and one indicates all wealth or income is owned by one person. A farm average net-income statement of the major categories of income and expenses forms the basis of the analysis.

Annual Gini coefficients from 1991-2000 are presented in table 4 for the components of a farm operator income statement. Observations exclude those with zero values for each variable. Only farms that actually reported an expense or income were included in the estimates. Farms are not homogeneous and it would be inappropriate to include inputs or income from businesses not using the input or not gaining income from a source. Gini coefficients were adjusted for negative values, however. (Including negative values can raise the Gini above 1.) Although not shown in the printed table, standard errors and hypothesis tests were calculated to measure the significance of the changes (Dubman, 2001).

Both net cash farm income and net farm income had Ginis above 0.95, indicating extremely skewed distributions. By either measure, most net income goes to the largest farms, while small farms tend to receive small negative net income. The Ginis from 1991 to 2000 suggest that farm income and expenses have become somewhat more

concentrated over the 10-year period. Ginis for net cash income and net farm income were at approximately the same level at both the national and regional levels.⁴

The Ginis for gross cash income and cash expenses are substantially lower than those for net farm income and net cash farm income. All farms have receipts and expenses, but not all farms turn the receipts and expenses into net income. Livestock purchases, feed, and other livestock related expenses show the highest Ginis of all expenses. This indicates a concentration of livestock among all farms in the Mountain Region. Most small livestock farms are likely to be grazing operations while large operations may concentrate on finishing purchased livestock. Fixed expenses—real estate and property taxes, interest expenses, and insurance premiums—have more moderate Ginis indicating few large outliers.

Financial Performance of the Mountain Region Farm Economy

So far, the discussion of farming in the Mountain Region has focused on structural characteristics as of 2000 and the distribution of net farm income in the 1990's. This section examines the financial performance of the Mountain Region farm sector over a longer period of time, from 1960 to 2000. The main performance measures used here are changes in farm equity (farm assets minus farm debt) and changes in the rate of return on farm business assets.

Farm Equity

Agriculture is subject to “boom-bust” cycles (Schmitz, 1995) that can lead to swings in farm equity levels. Although the overall trend in U.S. farm business equity was upward between 1960 and 2000, agriculture realized a significant loss in equity in the mid-1980's after a rapid increase during the 1970's (figure 8). Specifically, U.S. farm business wealth fell from \$813.7 billion in 1981 to \$565.0 billion in 1986, a drop of \$248.7 billion or 31 percent. The decline in equity was greatest in the Lake States (45 percent), the Corn Belt (47 percent), and the Northern Plains (42 percent). Farm wealth in the Mountain Region fell by about \$18.5 billion, or 24 percent,

⁴ Net farm income and net cash income (table 4) are different concepts than farm earnings received by the operator household (figure 7). For more information, see Hoppe (2001a, p.63).

during this period. This is primarily because farmland values fell by less in the Mountain Region (4 percent) than in the Lake States (8 percent), Corn Belt (9 percent), Northern Plains (7 percent) and the U.S. overall (6 percent). More stable farmland values in the Mountain Region also kept the ratio of debt to assets from raising as high as in other regions during the 1981-86 farm financial crisis (not shown).

One reason why the value of farmland fell less in the Mountain Region may be due to the nature of demand and supply in the region's land markets. The demand for farmland is not restricted to farmers seeking land to farm. In a rapidly growing area like the Mountain Region, there also is a strong demand for farmland by those seeking land for nonfarm purposes. In addition, the supply of land is restricted in the region, because only one-third is privately owned and can enter the land market (table 1). In some cases, this limited private land derives additional value by providing access to public land for grazing and recreational/amenity uses.

Generally speaking, direct government payments affect farmland values less in the Mountain Region than they do in the Midwest and Northern Plains (Barnard et al., 2001). These regions produce a large share of the major program crops, while the Mountain Region specializes more in cattle and other livestock (figure 4).

Rate of Return on Farm Business Assets

The rate of return on farm assets is another measure of farm sector performance. The total return on farm assets from current income and from capital gains varies considerably from year to year, reflecting variations in weather, markets, etc. The boom-bust cycle is also reflected in the 1960 to 2000 data series on the rate of return (figure 9). During the farm financial crisis years (1981 to 1986) farms in the Mountain Region (like U.S. farms overall) experienced negative returns to farm assets. Farmland values fell, resulting in large capital losses and a negative total rate of return.

Use of Sustainable Practices in the Mountain Region

Although the financial performance of the Mountain Region's farm sector compares favorably with that of the Nation and other regions, the long-term sustainability of farms in the region depends on more than financial

performance. Various definitions of sustainable agriculture (Nabhan, 1989; Hurt 1997; Chichilnisky, 1997; Pannell and Schilizzi, 1999) exist, but most observers argue that sustainable agriculture integrates three main goals:

- Environmental health
- Economic profitability
- Quality of life for farm families and rural communities.

Sustainability rests on the objective that the needs of the present must be met without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship of human resources includes consideration of social responsibilities such as working and living conditions of laborers, the needs of rural communities, and consumer health and safety. Stewardship of land and natural resources involves maintaining or enhancing this vital resource base for the long term (University of California, Sustainable Agriculture Research and Education Program, 2002; USDA, CSREES, 2002). This section examines the use of practices that also contribute to environmental health and the quality of life. Measures that meet the economic profitability goal alone are not addressed here.

Over the years, ARMS and the Farm Costs and Returns Survey (FCRS—the predecessor to ARMS) have asked questions about specific practices, some of which can be considered sustainable. Selected sustainable practices, the goals they address, and the survey that provided data on the practices are identified in table 5. Variation in the use of these sustainable practices is discussed below. The decision on what to include as a sustainable practice is somewhat arbitrary, but all the practices listed in table 5 could contribute to the continuation of agriculture in the long run.

ARMS does not collect information about a given sustainable practice each year, so some of the data presented in this section are dated. In addition, the sample is small in the Mountain region. Sample size prevented examining variation across the ERS typology within the region. However, the sample size was sufficient to provide information for a collapsed form of the typology with three categories—rural residential farms, intermediate farms, and commercial farms. Typology groups included in the collapsed categories are:

- **Rural residential farms:** Limited-resource, retirement, and residential/lifestyle small farms.
- **Intermediate farms:** Low- and high-sales small farms.
- **Commercial farms:** Large and very large family farms, plus nonfamily farms.

Conservation Programs and Practices

The Conservation Reserve and Wetlands Reserve Programs (CRP and WRP) take environmentally sensitive land out of production. The Environmental Quality Incentives Program (EQIP) provides technical, financial, and educational aid to farms facing serious soil and water problems. In addition to these programs, farmers may also improve the quality of their soil through the use of cover crops and other means (see Feather, et al., 1999; Caswell et al. 2001; Claassen et al., 2001; Hrubovcak et al., 1999). These items obviously contribute to environmental health, but they may also contribute to productivity and profitability over the long run. CRP provides annual payments and WRP pays for easements.

Farmers used these three practices in the Mountain Region at about the same rate as in the rest of the Nation (table 6). One-tenth of all farms in both areas enrolled land in the CRP or WRP, with some variation by farm size. A smaller percentage of farms participated in EQIP, roughly between 1 and 2 percent of all the farms in both the region and the rest of the Nation. Finally, about 4 or 5 percent of all farms used cropland for soil improvement, with little variation by farm type or region.

Alternative Marketing and Sources of Income

Direct sales to customers and receipt of recreation income from farming can help farm profitability. They may also contribute a higher quality of life, particularly for farmers' customers. Neither of these practices was common in the region, or elsewhere.

Only 3 percent of all farms in the Mountain Region had direct sales, compared with 5 percent in the rest of the Nation. There was little statistically significant variation within each area among the different types of farms. The relatively low level of direct sales in the Mountain Region is consistent with an analysis of 1992 Census of Agriculture data by Gale (1997). He found direct sales were lowest in the Great Plains, most of the Mountain

Region and the western portion of the Corn Belt and much of the South. Sales were highest in areas where farmers commonly produce fruits and vegetables and where farms are near large population centers.

In contrast to direct sales, receipt of recreational income is more common in the Mountain Region. About 6 percent of all farms receive recreational income, about three times the rate in the rest of the Nation. Within the region, recreational income was more common among intermediate and commercial farms than residential farms, although the difference was significant only at the 90-percent level. The amenities that make the Mountain Region attractive to migrants may also make the region attractive to people seeking recreation on farms.

Production Practices

A variety of production practices can contribute to environmental health while contributing to economic viability (table 7). The contribution to economic viability may be through a reduction in costs rather than an increase in output. For example, organic farming may reduce the costs of fertilizer and pesticides enough to compensate for any decline in production resulting from lower yields and higher insect losses.

Relatively large shares of farms in the Mountain Region practiced controlled or rotational grazing (49 percent of all farms) and conservation tillage (26 percent of all farms). There were some significant differences between the region and the rest of the Nation among larger farms in the use of these practices. Controlled or rotational grazing was more common among intermediate and commercial farms in the Mountain Region than in the rest of the country. Conservation tillage, however, was less common among commercial farms in the Mountain Region than elsewhere. These differences may simply reflect differences in regional specialization. Because the Mountain Region specialized more in beef and other livestock (figure 4), controlled or rotational grazing may be more applicable to larger farms there. In contrast, the Mountain Region specialized less in crops—particularly grain—which may make conservation tillage less useful to its commercial-sized farms.

The 49-percent estimate of operators in the region who reported using rotational or controlled grazing may seem high. However, the question in the ARMS questionnaire was phrased to include “controlled grazing,” not just

the management-intensive grazing systems generally associated with the term “rotational grazing.” Operators may have responded positively to the question if they used summer and winter pastures, or if they grazed their cattle part of the year on public land. Of course, some respondents—particularly those with irrigated pasture—actually did practice management-intensive rotational grazing.

Other practices were fairly common in the region, but not as common as controlled or rotational grazing or conservation tillage. Between 10 and 20 percent of all farms in the region reported diversifying their enterprises, used integrated pest or crop management, (IPM or ICM), or used solar power. IPM was more common in the Mountain Region than elsewhere, as was the use of solar power (probably related to the amount of sunshine). Diversification, however, was more common outside the region. Regional differences in these items disappeared for commercial farms.

Finally, some practices were not used widely, inside or outside the region. Less than 5 percent of farms in the region or elsewhere used drip irrigation, practiced precision farming, or farmed organically, although the data for some of these items are dated.

Unanswered Questions

The ARMS data indicate the extent of farmers’ adoption of particular sustainable practices in the Mountain Region. However, the data do not provide all the information about sustainable practices that one might desire. For example, they do not indicate the extent of specific environmental problems that a given practice might address, or estimate what the extent of the problem might be, if farmers did not use the practice. Nor does the survey indicate why farmers actually adopted a practice. A farmer could adopt a sustainable practice for purely economic reasons, when the practice satisfies both the environmental and profitability goals in table 5. For example, some older farmers scaling back their operations may own land that they may no longer want to farm, but do not want to sell. For these farmers, the assured and steady stream of rental payments coming from the CRP may be attractive. There is a need for more information on the motivation for adopting of sustainable practices and how adoption alleviates environmental problems.

Summary and Implications

Some of the characteristics of the Mountain Region affect the future of agriculture there. They are:

- The rapidly growing population and economy.
- Farm structure in the area
- Farmers' use of sustainable practices.
- Financial viability of the farm business and household sectors

Although these points are related, they will be discussed separately below.

Rapid Growth

Population growth in the Mountain Region is most rapid in metro areas, which means that farm operators will feel the most development pressures there. Nevertheless, farmers in nonadjacent counties that attracted migrants because of environmental or scenic amenities may also face development (or at least more people). They may also have to deal with a local nonfarm population that is more concerned about the environmental impact of local farming practices than in the past.

Regional employment growth in both metro and nonmetro areas should help farm household members who want (or need) off-farm work. The job growth in both metro and nonmetro areas, however, has resulted in an economy more dependent on services, which often pay lower wages than other industries. Vias (1999, pp. 22-23) suggests that policy makers in the region who stress service growth and attracting migrants to amenity areas could:

- Consider the effects of these policies on wages.
- Maintain income from traditional resource oriented industries without harming the environmental amenities that attract migrants.

The second point applies more to the mining and timber industries than to agriculture, since those industries pay relatively high wages. Most farm households, in contrast, realize little income from farming. Earnings from farming are substantial, however, for households operating large and very large farms.

Farm Structure

Farm structure is different in the Mountain Region than elsewhere. Farms are much larger, in terms of acres, and are somewhat more likely to have more than \$250,000 in sales. Production is more concentrated among very

large family farms (sales greater than \$500,000). Issues related to grazing (particularly on federal land) are important to the region, because cattle and other livestock make up a larger share of agricultural output. The relatively high education levels of operators (and their younger age distribution) may help farming adapt to change. It could also make the adoption of sustainable agriculture more feasible in the region.

Despite these differences, however, the distribution of farms by typology group is similar in both the region and the rest of the Nation. In addition, farm and ranch households rely heavily on off-farm income in both the region and elsewhere, and off-farm income makes the distribution of operator household income more equitable. Many of today's farm households are dual career (Hoppe, 2001b). On smaller farms, both the operator and spouse may work off-farm, in addition to running the farm. On larger farms, the spouse may work off-farm while the operator concentrates on farming, generally without working off-farm.

For many farm households, particularly small farm households, the health of the local nonfarm economy is critical. Population growth and urbanization have positive and negative effects for farmers, and one of the positive effects is more nonfarm jobs for farm operators and their families. For farmers in some parts of the Mountain Region, too little growth in the local economy may be viewed as a problem, rather than too much growth.

Sustainable Practices and the Future of Agriculture

Generally speaking, the use of sustainable practices in the Mountain Region is similar to that in the rest of the Nation. However, there are some differences in the use of sustainable practices between the region and elsewhere, which reflect the special characteristics of the Mountain Region. Farmers in the Mountain Region do use two basic practices extensively: controlled or rotational grazing and conservation tillage. Nevertheless, there are issues related to conservation, the environment, and resource use that can affect the future of the region's agriculture.

As explained earlier, concern that the current system of grazing permits contributes to environmental degradation has led to proposals for a more market-oriented allocation of grazing permits to allow competitive bids by

ranchers and others. Even without a market-oriented system, shifts to nontraditional uses of public land for recreation and environmental amenities could reduce public land available for grazing (Mathews, et al., 2002). Reduction in the amount of public grazing land could lead ranchers to compensate by using more management-intensive grazing systems on the land they still control.

The chief constraint on the future of agriculture in the Mountain Region, however, is probably the growing competition for limited water supplies, which increases the pressure to transfer water from irrigation to other uses. In the case of the Mountain Region, water may be more of a constraint on the future of farming than land as the region develops. Urban land makes up only 1 percent of all land in the Mountain Region, after decades of rapid growth. On the other hand, irrigation is critical to the region, given the large percentage of farms that have irrigated cropland or grazing land.

So far, total irrigated land in the region has not declined appreciably, and only 4 percent of farmers in the region reported using drip irrigation, which is expensive, but uses water more effectively. At some point, however, competing demands for water as the region grows may require adjustments by farmers. These adjustments may include a shift to more water-conserving practices, such as drip irrigation.

It is well to remember S.V. Ciriacy-Wantrup's (1952) notion of safe minimum standards for renewable resources. Since the early 1970's, economists have written extensively about the value of maintaining flexibility in decision-making and of avoiding irreversible decisions. Castle et al. (1999) suggest:

- Examining the external forces (market and nonmarket) that influence the performance of farms and other extractive industries with regard to the environment.
- Comparing how particular sustainable practices differ in their ability to protect resources for future generations.
- Determining the current opportunity costs associated with particular sustainable practices.
- Promoting institutional structures—including a legal system—that promote flexibility and the ability to adapt.

Farm Financial Performance

Farms in the Mountain Region are subject to the same boom-bust cycles as farms elsewhere. Farmers faced falling equity and declines in their returns on assets during the farm financial crisis of the 1980's. However, farmland values did not fall as rapidly at that time in the Mountain Region, possibly due to nonfarm demand for land.

Because land comprises a large share of farm assets (about 70 percent), farmland values affect the financial health of farms. For example, Moss, Schmitz, and Erickson (1997) found that changes in real estate values account for about 58 percent of the systematic variation in solvency of the farm sector. The fact that farmland values were less likely to fall in the Mountain Region undoubtedly helped existing farmers continue in business. On the other hand, higher land prices and nonfarm demand for farmland may make it more difficult for beginning farmers to enter farming.

Nevertheless, farming remains risky in the Mountain Region, partly because of the region's specialization in beef cattle. When grain prices fall, Corn Belt grain producers receive government payments. But when cattle prices fall, ranchers in the Mountain Region may have to reduce production or diversify to other enterprises during a downturn in the cattle cycle (Blank, 2002).

A Final Note . . .

To sum up, farmers in the Mountain Region—in both metro and nonmetro areas—face growth in population and nonfarm employment that affect land use and how farmers operate their businesses. Growth also increases the demand for nonfarm use of irrigation water and public grazing lands. Sustainable agricultural practices are used by Mountain Region farmers to some extent and may help farming to remain economically viable. Farmers in the Mountain Region have higher education levels and a younger age distribution than farmers elsewhere, which may help operators adjust to change. These characteristics may also make the adoption of sustainable agriculture more feasible. Growth in the region does provide some benefits to farmers, however. Growth can help keep the value

of farmland up through nonfarm demand for land. In addition, the greater availability of jobs means that off-farm work is available to households operating small farms.

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Appendix: Sources of Data

Data used in this report are from a variety of sources. Most of the data on farm structure, production practices, and income distribution are from the Agricultural Resource Management Survey (ARMS). ARMS is a sample survey, designed and conducted each year by the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS), both agencies of the U.S. Department of Agriculture (USDA, NASS, 2001). ARMS provides detailed information about the individual farm business and farm operator household.

ARMS replaced the former Cropping Practices Survey (CPS) and the Farm Costs and Returns Survey (FCRS). The CPS provided enterprise-level chemical use, production practices, and integrated pest management data on selected field crops. The FCRS provided two types of data, whole farm economic data and enterprise-level cost of production data for particular crop and livestock commodities. Combining the surveys avoids the same type of information on chemical use and production practices being collected by both the CPS and the cost of production component of the FCRS. ARMS is conducted in three phases, and the data used in this paper is whole farm data from Phase III. For more information about the survey, see the ARMS Briefing Room on the ERS website (at <http://www.ers.usda.gov/briefing/ARMS/>)

In addition to ARMS-based estimates for farm businesses and operator households, ERS prepares balance sheets and income statements for the farm sector as a whole, at both the U.S. and State level. The sector balance sheets and income statements are used in this paper to gauge farm financial performance over time. In addition, ERS publishes estimates of farm financial ratios—such as the debt-to-asset ratio and the rate of return on farm assets—based on the balance sheets and income statements. These ratios are also useful in understanding the economic health of the Nation's farm sector. For more information, see "Farm Income and Costs on the ERS website (at <http://www.ers.usda.gov/Briefing/FarmIncome/>). Data from the 1997 Census of Agriculture was used for a few comparisons between the Mountain Region and other areas.

Population data are from the three most recent Census of Population (1980, 1990, and 2000). The information on trends in unemployment and employment came from Local Area Unemployment

Statistics, estimated by the Bureau of Labor Statistics. See “State Fact Sheets” on the ERS website (at <http://www.ers.usda.gov/StateFacts/>) for estimates of population and employment by State.

Metro/nonmetro definitions are based on the 1993 official designations of metropolitan counties released by the Office of Management and Budget (OMB).

Finally, changes in employment by industry came from the ERS series “farm and farm-related employment.” This series combines farm employment data from the Bureau of Economic Analysis with nonfarm employment data from the Census Bureau's County Business Patterns. For more information, see “Farm and Farm-Related Employment” on the ERS website (at <http://www.ers.usda.gov/Data/FarmandRelatedEmployment/>).

Table 1. Selected characteristics, Mountain Region and the rest of the Nation

Selected characteristic	Mountain Region	Rest of the Nation
		<i>Percent</i>
Population growth between 1990 and 2000		
Metropolitan	37.2	13.9
Nonmetropolitan 1/	23.2	10.3
		<i>Persons per square mile</i>
Population density 1/	21	98
		<i>Percent</i>
Distribution of population by residence		
Metropolitan	72.5	80.0
Nonmetropolitan 1/	27.5	20.0
Land ownership in region:		
Federal	48.7	22.2
State	6.6	8.0
Local	0.3	1.2
Indian	7.5	0.8
Private	36.9	67.8
All 2/	100.0	100.0
Farms with:		
Irrigated cropland	48.1	11.7
Irrigated grazing land 3/	24.6	1.6
Share of farm product sales 3/	7.8	92.2
		<i>Dollars per acre</i>
Sales per acre 3/	67	258

Note: Population estimates are for 2000. Information on irrigation, land ownership, agricultural sales are 1997

1/Census of Population.

2/Vesterby and Krupa, 2001a.

3/1997 Census of Agriculture.

Table 2. Metro and nonmetro population in the Mountain Region and the United States, 1980, 1990, 2000

Geographic area and residence	1980		1990			2000		
	Population	Distribution	Population	Distribution	Change from 1980	Population	Distribution	Change from 1990
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>
Mountain Region:								
Total population	11,371,502	100.0	13,658,794	100.0	20.1	18,172,295	100.0	33.0
Metro	7,645,176	67.2	9,604,834	70.3	25.6	13,177,516	72.5	37.2
Nonmetro	3,726,326	32.8	4,053,960	29.7	8.8	4,994,779	27.5	23.2
United States:								
Total population	226,542,204	100.0	248,718,291	100.0	9.8	281,421,906	100.0	13.1
Metro	176,964,857	78.1	197,815,745	79.5	11.8	225,262,580	80.0	13.9
Nonmetro	49,577,347	21.9	50,902,546	20.5	2.7	56,159,326	20.0	10.3

Source: 1980, 1990, and 2000 Census of Population

Table 3. Land use in the Mountain Region and the United States, 1978, 1987, and 1997

Geographic area and land use	1978		1987			1997		
	Land	Distribution	Land	Distribution	Change from 1978	Land	Distribution	Change from 1987
	<i>1,000 acres</i>	<i>Percent</i>	<i>1,000 acres</i>	<i>Percent</i>	<i>Percent</i>	<i>1,000 acres</i>	<i>Percent</i>	<i>Percent</i>
Mountain Region:								
Total land 1/	547,868	100.0	547,324	100.0	-0.1	547,917	100.0	0.1
Cropland 2/	43,589	8.0	47,029	8.6	7.9	45,426	8.3	-3.4
Grassland pasture and range 3/	306,508	55.9	302,263	55.2	-1.4	302,658	55.2	0.1
Forest-use land 4/	119,027	21.7	117,425	21.5	-1.3	112,575	20.5	-4.1
Special uses 5/	48,385	8.8	52,698	9.6	8.9	56,381	10.3	7.0
Urban 6/	2,620	0.5	3,723	0.7	42.1	5,435	1.0	46.0
Other land 7/	30,359	5.5	27,909	5.1	-8.1	30,877	5.6	10.6
United States:								
Total land 1/	2,263,587	100.0	2,265,147	100.0	0.1	2,263,254	100.0	-0.1
Cropland 2/	470,842	20.8	464,001	20.5	-1.5	455,052	20.1	-1.9
Grassland pasture and range 3/	586,721	25.9	591,083	26.1	0.7	580,165	25.6	-1.8
Forest-use land 4/	702,627	31.0	648,164	28.6	-7.8	641,536	28.3	-1.0
Special uses 5/	202,545	8.9	335,241	14.8	65.5	351,081	15.5	4.7
Urban 6/	44,646	2.0	56,642	2.5	26.9	65,537	2.9	15.7
Other land 7/	300,852	13.3	226,658	10.0	-24.7	235,420	10.4	3.9

1/Total acreage differs over time due to remeasurement of the land area

2/Includes cropland harvested, crop failure, cultivated summer fallow, idle cropland, and pastured crop land.

3/Grassland and other nonforested pasture and range in farms (excluding cropland used only for pasture) plus open or nonforested grazing land not in farms. Does not include grazed forest land.

4/Includes both grazed and ungrazed forest lands.

5/Includes urban areas, land used for rural transportation, rural parks and wildlife areas, land in defense and industrial uses, plus land in miscellaneous farm uses (farmsteads, farm roads, and lanes)

6/Land in incorporated and unincorporated places with a population of 2,500 or more.

7/All other land uses. Includes unclassified uses such as marshes, swamps, bare rock, and tundra, plus other uses not estimated, classified, or inventoried.

Source: Vesterby and Krupa, 2001b.

Table 4.—Farm operation income statement Gini coefficients, Mountain Region, by year, 1991–2000

Item	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of farms	118,400	117,500	116,600	114,900	114,500	103,213	116,500	135,977	132,400	131,481
	<i>Gini coefficient</i>									
Gross cash income	0.7564	0.7833	0.7896	0.7995	0.8344	0.7877	0.8136	0.8689	0.8434	0.8583
Livestock income	0.8530	0.8736	0.8983	0.9059	0.9117	0.8764	0.9013	0.9214	0.9179	0.9256
Crop sales (incl. net CCC loans)	0.8865	0.8936	0.8951	0.8858	0.9084	0.8894	0.9120	0.9470	0.9298	0.9361
Government payments	0.8911	0.8808	0.8761	0.8438	0.8798	0.8525	0.8659	0.8917	0.8826	0.8976
Other farm-related income ¹	0.9175	0.9206	0.8925	0.9357	0.9308	0.8782	0.9021	0.9446	0.9366	0.9147
<i>Less:</i> Cash expenses	0.7199	0.7483	0.7754	0.7771	0.7974	0.7644	0.7871	0.8133	0.8042	0.8220
Variable	0.7534	0.7869	0.8142	0.8078	0.8270	0.7913	0.8218	0.8329	0.8355	0.8524
Livestock purchases	0.9739	0.9848	0.9851	0.9794	0.9847	0.9756	0.9894	0.9719	0.9895	0.9932
Feed	0.9040	0.9153	0.9367	0.9477	0.9576	0.9421	0.9436	0.9276	0.9397	0.9352
Other livestock-related ²	0.9055	0.8911	0.9089	0.8993	0.8974	0.8769	0.8650	0.9203	0.9069	0.9216
Seed and plants	0.8982	0.8795	0.8957	0.8877	0.8873	0.8806	0.9454	0.9415	0.9334	0.9442
Fertilizer and chemicals	0.8601	0.8776	0.8868	0.8798	0.8846	0.8770	0.8831	0.9274	0.9111	0.9188
Labor	0.8918	0.9202	0.9251	0.9202	0.9292	0.9006	0.9344	0.9346	0.9442	0.9407
Fuels and oils	0.6974	0.6915	0.7050	0.7185	0.6738	0.6905	0.7185	0.7884	0.7585	0.7677
Repairs and maintenance	0.7033	0.7435	0.7352	0.7407	0.7239	0.7347	0.7560	0.7870	0.7687	0.7845
Machine-hire and custom work	0.8949	0.8887	0.9033	0.8472	0.8831	0.8481	0.9189	0.9262	0.9232	0.9432
Utilities	0.7622	0.7854	0.7608	0.8101	0.8269	0.7840	0.8296	0.8481	0.8182	0.8114
Other variable expenses ³	0.7556	0.7552	0.7824	0.8360	0.8056	0.7541	0.7995	0.8584	0.8319	0.8353
Fixed	0.6812	0.6884	0.6933	0.7089	0.7312	0.7141	0.7075	0.7971	0.7467	0.7515
Real estate and property taxes	0.6203	0.6824	0.6290	0.6794	0.6726	0.6650	0.6442	0.6769	0.6699	0.6466
Interest	0.7801	0.7844	0.7745	0.7815	0.8152	0.7775	0.8003	0.8754	0.8351	0.8404
Insurance premiums	0.7191	0.6991	0.7029	0.7068	0.7163	0.6994	0.6982	0.7453	0.7521	0.7264
Rent and lease payments	0.8782	0.8892	0.9021	0.8998	0.8890	0.9122	0.8736	0.9231	0.9061	0.9134
<i>Equals: Net cash farm income</i>	0.9693	0.9849	0.9808	0.9817	0.9907	0.9957	0.9953	1.0011	0.9871	0.9967
<i>Less:</i>										
Depreciation	0.7578	0.7637	0.7706	0.7605	0.7433	0.7733	0.8111	0.8387	0.8222	0.8385
Labor, non-cash benefits	0.9457	0.9590	0.9658	0.9551	0.9428	0.9522	0.9617	0.9636	0.9721	0.9692
<i>Plus:</i>										
Value of inventory change	0.9893	0.9791	1.0038	1.0004	1.0112	1.0016	0.9973	1.0003	0.9999	1.0456
Nonmoney income ⁴	0.4565	0.4876	0.5221	0.4906	0.4529	0.4558	0.4297	0.5090	0.5301	0.4421
<i>Equals: Net farm income</i>	0.9590	0.9679	0.9851	0.9891	0.9967	0.9789	0.9956	1.0019	0.9944	1.0054

¹Income from machine-hire, custom work, livestock grazing, land rental, contract production fees, outdoor recreation, and other farm-related sources.

²Includes livestock leasing, custom feed processing, bedding, and grazing.

³Supply, transportation, storage, and general business expenses, and registration fees.

⁴The value of home consumption plus an imputed rental value of farm dwellings.

Source: USDA, ERS; 1991-95 Farm Costs and Returns Survey; 1996-2000 Agricultural Resource Management Survey.

Table 5. List of sustainable practices, by goal and survey year.

Practice	Goal			Survey
	Environmental health	Economic profitability	Quality of life	
Conservation programs and practices				
Farm has land enrolled in CRP or WRP	x	x		2000 ARMS
Farm receives EQUIP payment	x	x		2000 ARMS
Farm has cropland used for soil improvement 1/	x	x		1997 ARMS
Alternative marketing and sources of income				
Farm has direct sales to consumers		x	x	1997 ARMS
Farm receives recreation income from hunting, fishing, petting zoos, riding horses, on-farm rodeos, etc		x	x	2000 ARMS
Production practices				
Farm practices controlled or rotational grazing	x	x		2000 ARMS
Farm uses conservation tillage 2/	x	x		1994 FCRS
Farm diversifies number or type of enterprises	x	x		1998 ARMS
Farm uses integrated pest management (IPM) or integrated crop management (ICM)	x	x		1994 FCRS
Farm uses solar power 3/	x	x		1994 FCRS
Farm uses drip irrigation	x	x		1994 FCRS
Farm uses precision farming techniques 4/	x	x		1998 ARMS
Farm produces certified, organic crops	x	x		1998 ARMS

1/Cropland used for cover crops, legumes, and soil improvements, but not harvested and not pastured.

2/Low till, ridge tile, reduced till.

3/For electric fencing, automatic gates, etc.

4/Includes: applying fertilizer, lime, seed, or pesticides with variable rate technology; using a yield monitor, developing yield maps; using remote sensing; and having soil samples taken to create a grid map for use with a GPS system.

Table 6. Conservation and alternative marketing, by region and collapsed farm typology 1/

Practice	Mountain Region	Rest of Nation	Significance level of difference
	<i>Percent of farms in group</i>		<i>Percent</i>
Conservation Programs and Practices			
Farm has land enrolled in CRP or WRP	8.7	11.1	--
Rural residential farms	*5.0	11.2	95
Intermediate farms	14.0	9.6	--
Commercial farms	13.0	16.1	--
Farm receives EQUIP payment	*1.6	0.9	--
Rural residential farms	d	d	--
Intermediate farms	d	d	--
Commercial farms	**2.5	2.9	--
Farm has cropland used for soil improvement 2/	4.7	4.2	--
Rural residential farms	*4.5	*4.2	--
Intermediate farms	4.7	3.9	--
Commercial farms	*5.3	5.6	--
Alternative marketing and sources of income			
Farm has direct sales to consumers	2.9	5.2	95
Rural residential farms	*2.2	5.3	95
Intermediate farms	*3.9	5.0	--
Commercial farms	**2.4	4.7	--
Farm receives recreation income from hunting, fishing, petting zoos, riding horses, on-farm rodeos, etc	*6.4	2.1	95
Rural residential farms	**2.9	1.4	--
Intermediate farms	*12.1	3.5	90
Commercial farms	*9.4	2.2	95

d = Data suppressed due to insufficient observations.

* = Standard error is between 25 and 50 percent of the estimate.

** = Standard error is between 51 and 75 percent of the estimate.

The standard errors of unmarked estimates are no more than 25 percent of the estimate.

1/See text for the definition of the collapsed typology.

2/Cropland used for cover crops, legumes, and soil improvements, but not harvested and not pastured.

Source: USDA, ERS; 1997 and 2000 Agricultural Resource Management Survey.

Table 7. Production practices, by region and collapsed farm typology

Practice	Mountain Region	Rest of Nation	Significance level of difference
	<i>Percent of farms in group</i>		<i>Percent</i>
Farm practices controlled or rotational grazing	49.0	40.9	--
Rural residential farms	45.9	42.7	--
Intermediate farms	55.8	41.5	95
Commercial farms	47.7	23.8	99
Farm uses conservation tillage 2/	26.0	27.2	--
Rural residential farms	*15.6	17.4	--
Intermediate farms	39.0	40.0	--
Commercial farms	35.6	57.3	99
Farm diversifies number or type of enterprises	15.1	22.2	99
Rural residential farms	*5.5	13.5	99
Intermediate farms	26.3	34.0	90
Commercial farms	43.0	43.0	--
Farm uses integrated pest management (IPM) or integrated crop management (ICM)	14.6	10.1	90
Rural residential farms	*11.7	4.3	90
Intermediate farms	14.4	16.3	--
Commercial farms	37.3	35.4	--
Farm uses solar power 3/	12.7	6.1	99
Rural residential farms	*11.0	3.8	95
Intermediate farms	*15.0	8.8	--
Commercial farms	*14.0	14.8	--
Farm uses drip irrigation	*4.1	2.6	--
Rural residential farms	d	*1.9	--
Intermediate farms	d	3.0	--
Commercial farms	*11.1	6.6	--
Farm produces certified, organic crops	**0.3	*0.4	--
Rural residential farms	0.0	**0.2	90
Intermediate farms	d	d	--
Commercial farms	d	d	--
Farm uses precision farming techniques 4/	2.0	4.5	99
Rural residential farms	d	d	--
Intermediate farms	d	d	--
Commercial farms	*5.3	17.3	99

d = Data suppressed due to insufficient observations.

* = Standard error is between 25 and 50 percent of the estimate.

** = Standard error is between 51 and 75 percent of the estimate.

The standard errors of unmarked estimates are no more than 25 percent of the estimate.

1/See text for the definition of the collapsed typology.

2/Low till, ridge tile, reduced till.

3/For electric fencing, automatic gates, etc.

4/Includes: applying fertilizer, lime, seed, or pesticides with variable rate technology; using a yield monitor, developing yield maps; using remote sensing; and having soil samples taken to create a grid map for use with a GPS system.

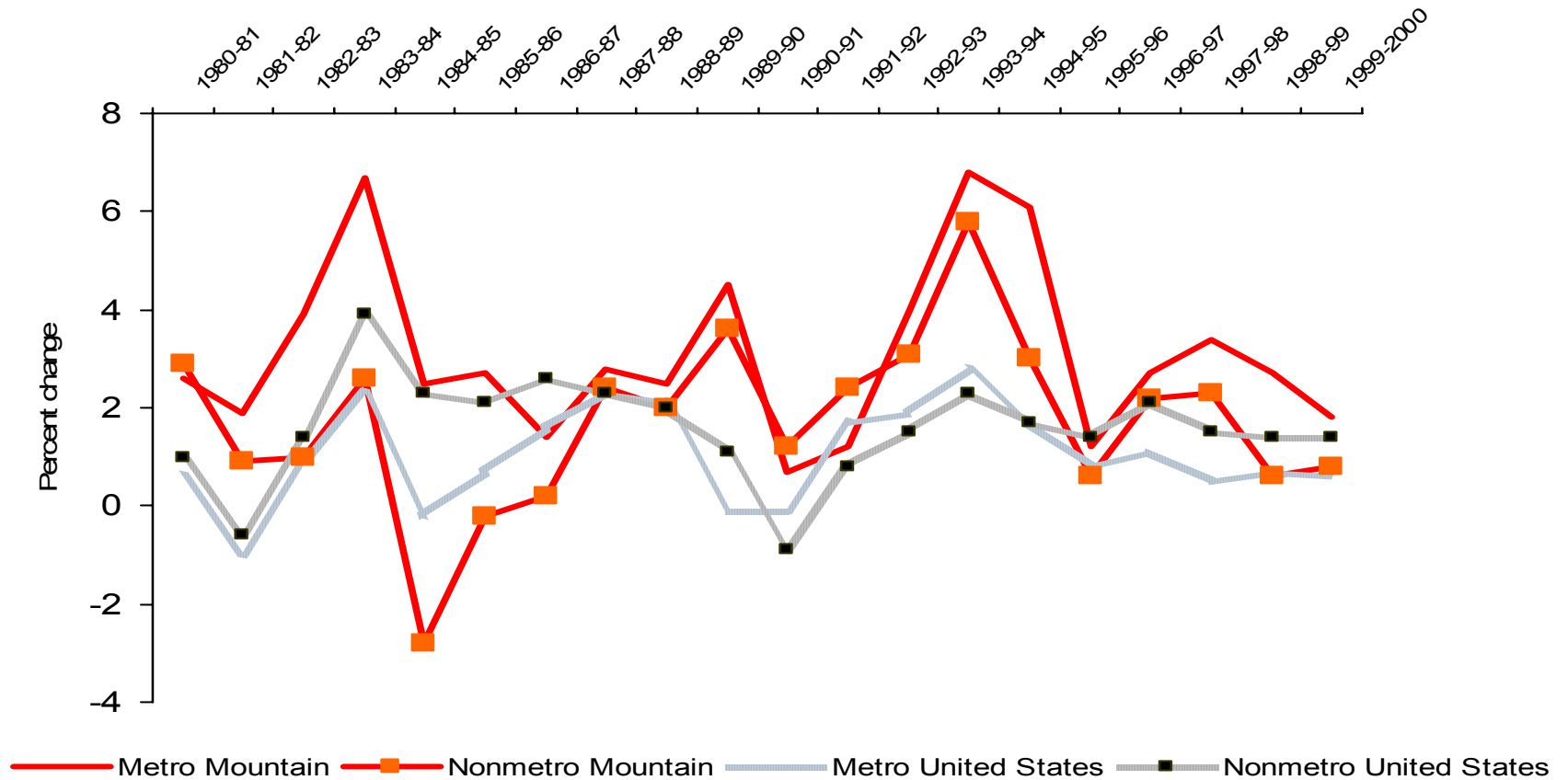
Source: USDA, ERS; 1994 Farm Costs and Returns Survey; 1997, 1998, and 2000

2000 Agricultural Resource Management Survey

Figure 1

Employment growth in the Mountain Region and the United States by residence, 1980-2000

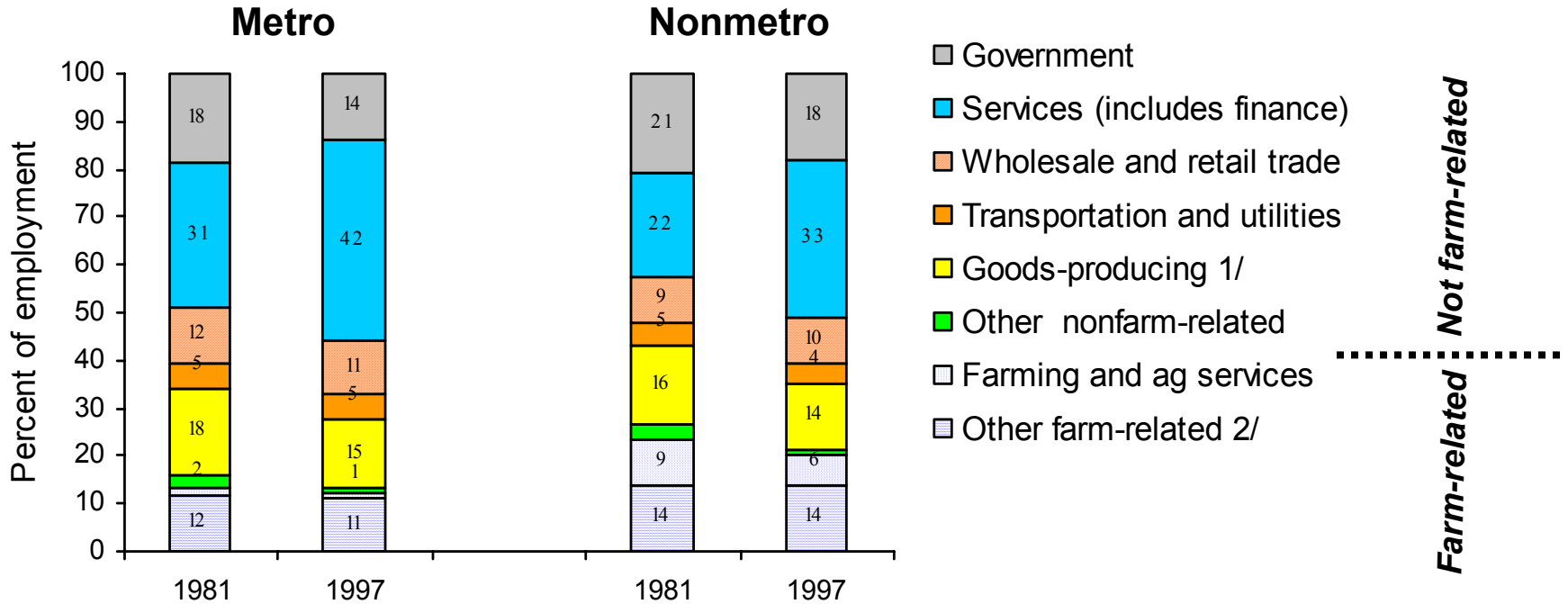
The metro Mountain Region typically has the highest growth rates



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

Figure 2

Distribution of jobs by industry in the Mountain Region by residence, 1981 and 1997
Services are a large industry in both metro and nonmetro areas



1/Includes mining, construction, and manufacturing.

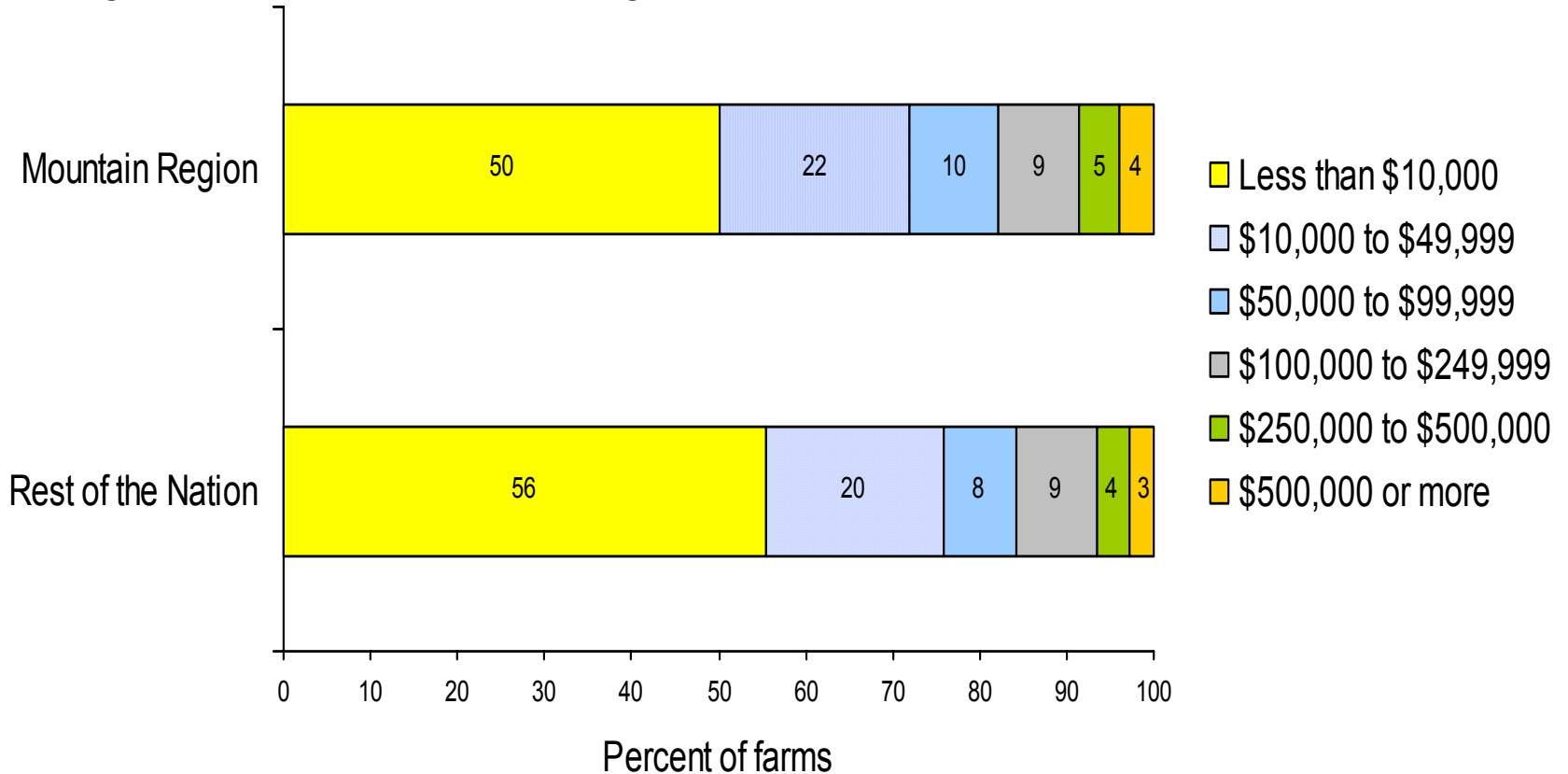
2/Includes agricultural input industries, agricultural processing and marketing, and farm-related wholesale and retail trade. Farm-related wholesale and retail trade includes establishments selling processed agricultural goods to consumers, plus the wholesalers who supply them.

Source: USDA, ERS, Farm and Farm-Related Employment.

Figure 3

Distribution of farms by sales class in the Mountain Region and the rest of the Nation, 2000

The Mountain Region has a smaller share of farms with sales less than \$10,000 and a larger share of farms with sales greater than \$250,000

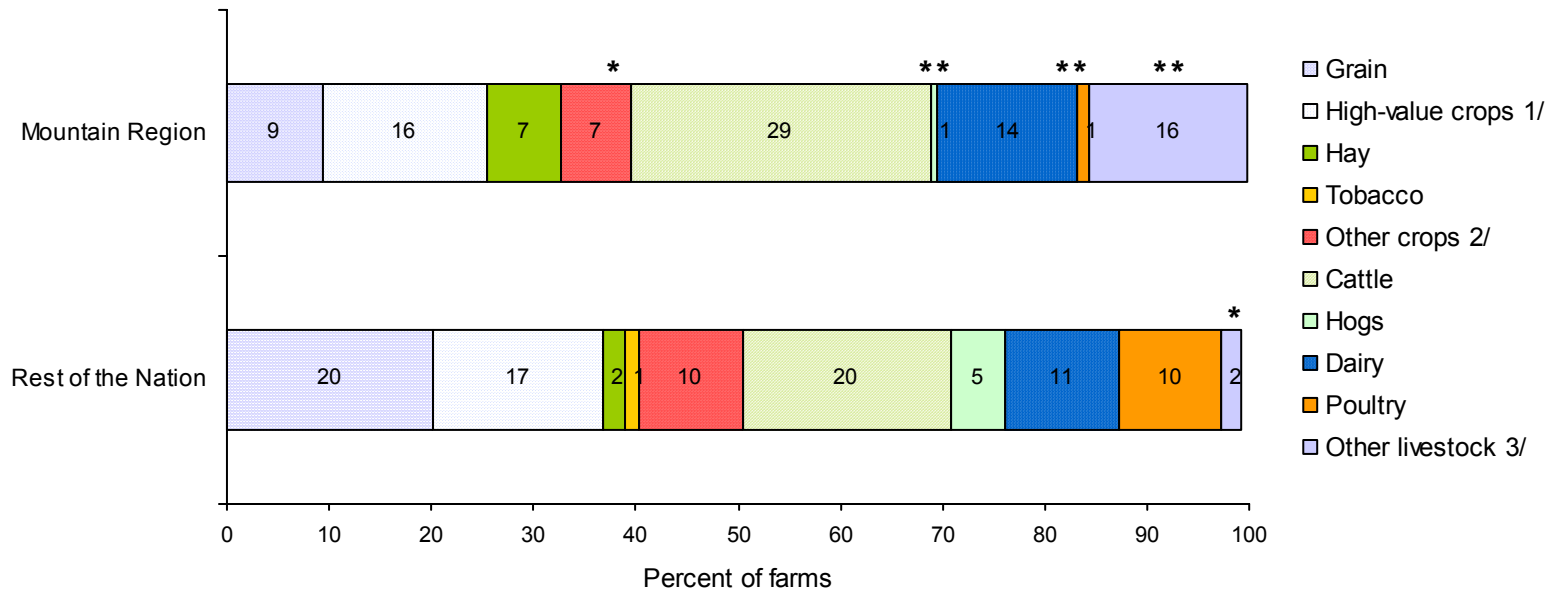


Source: USDA, ERS, 2000 Agricultural Resource Management Survey (ARMS).

Figure 4

Distribution of the value of production by commodity in the Mountain Region and the rest of the Nation, 2000

The Mountain Region specializes in beef and “other livestock”



*The standard error exceeds 25 percent of the estimate, but is no more than 50 percent of the estimate.

**The standard error exceeds 50 percent of the estimate, but is no more than 75 percent of the estimate.

1/ Vegetables, fruits & tree nuts, and nursery & greenhouse.

2/ Cotton, peanuts, sugar beets, sugar cane, silage, canola, seed crops, mint, hops, and any other crops. Also includes farms with all cropland in the Conservation Reserve Program.

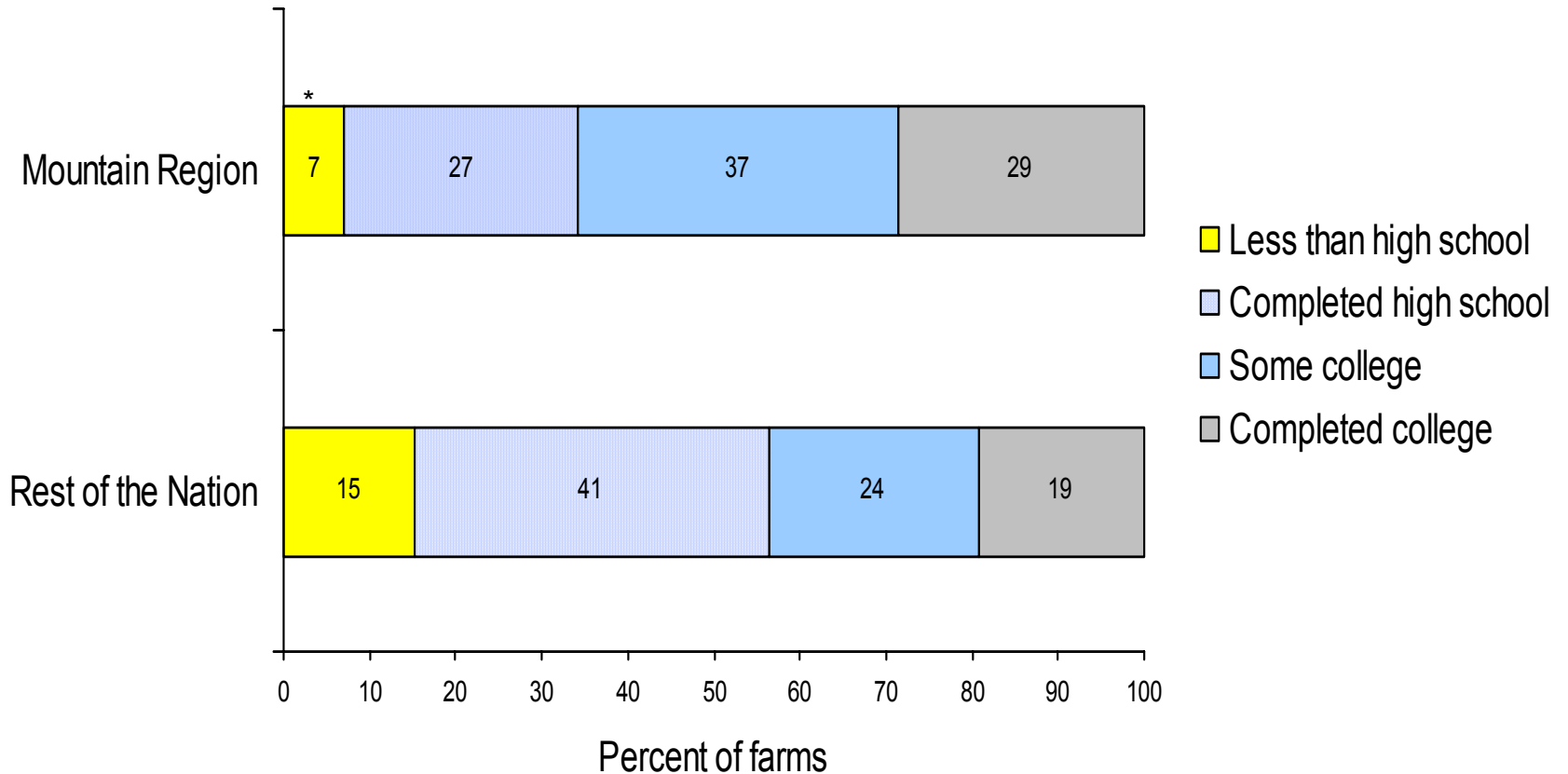
3/ Sheep, goats, horses, mules, ponies, fur-bearing animals, bees, fish, and any other livestock.

Source: USDA, ERS, 2000 Agricultural Resource Management Survey (ARMS).

Figure 5

Distribution of farm operators by education in the Mountain Region and the rest of the Nation, 2000

Farmers in the Mountain Region tend to be better educated



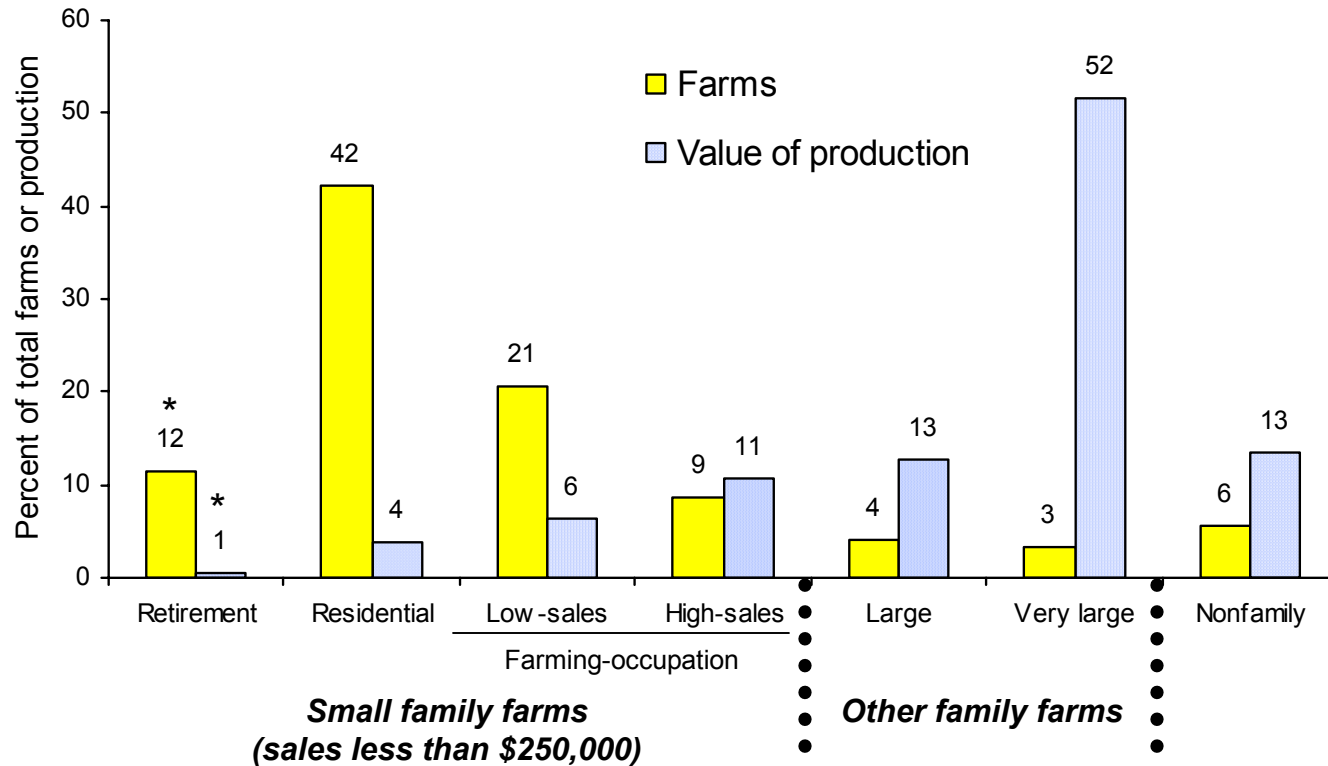
*The standard error exceeds 25 percent of the estimate, but is no more than 50 percent of the estimate.

Source: USDA, ERS, 2000 Agricultural Resource Management Survey (ARMS).

Figure 6

Distribution of farms and production in the Mountain Region by typology group, 2000

Very large farms account for half of production in the region



Note: Estimates are suppressed for limited-resource farmers due to insufficient observations.

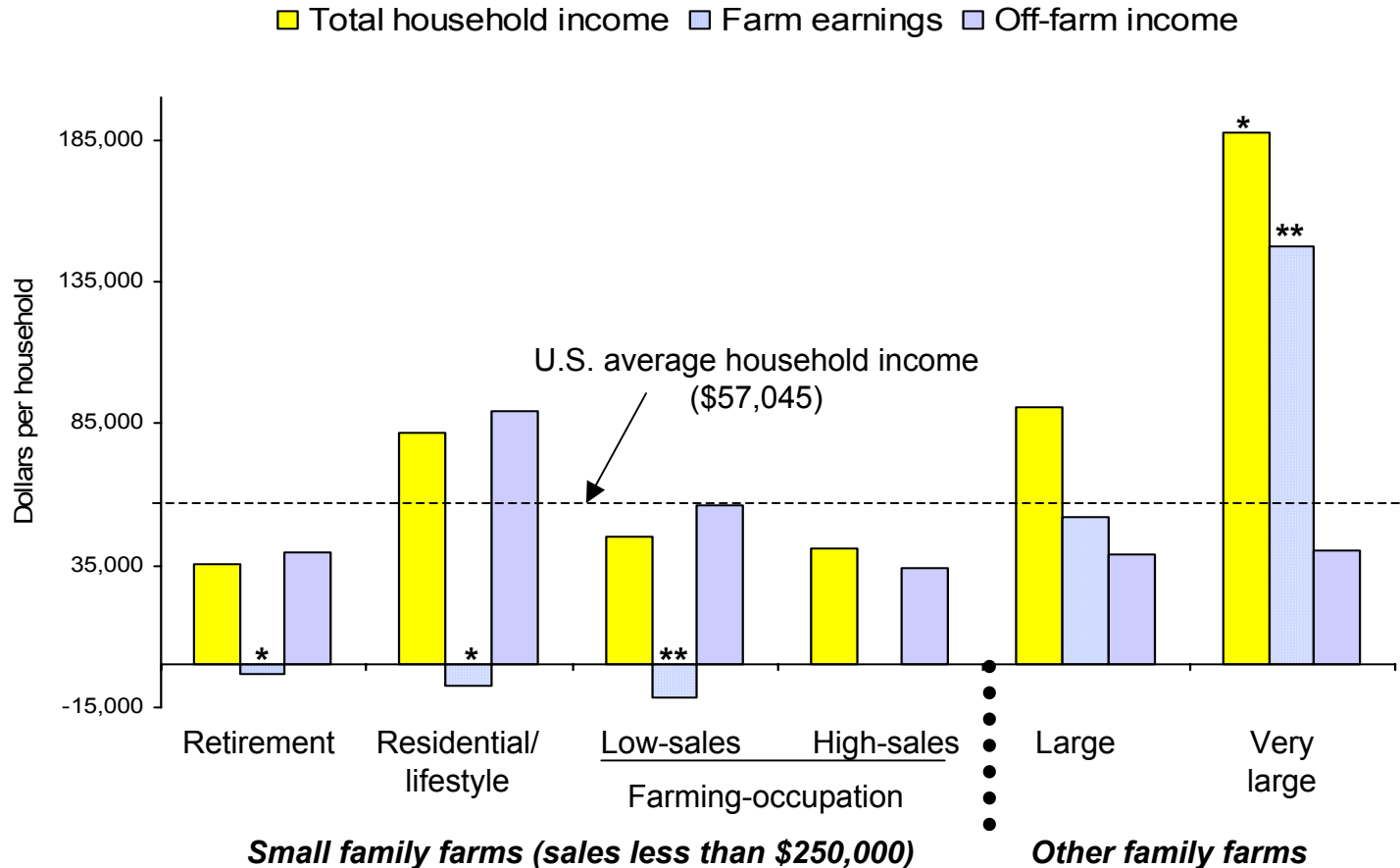
*The standard error exceeds 25 percent of the estimate, but is no more than 50 percent of the estimate.

Source: USDA, ERS, 2000 Agricultural Resource Management Survey (ARMS).

Figure 7

Sources and levels of operator household income by farm typology group in the Mountain Region, 2000

Most small farm households rely heavily on off-farm income



Note: Estimates are suppressed for limited-resource and high-sales households due to insufficient observations.

*The standard error exceeds 25 percent of the estimate, but is no more than 50 percent of the estimate.

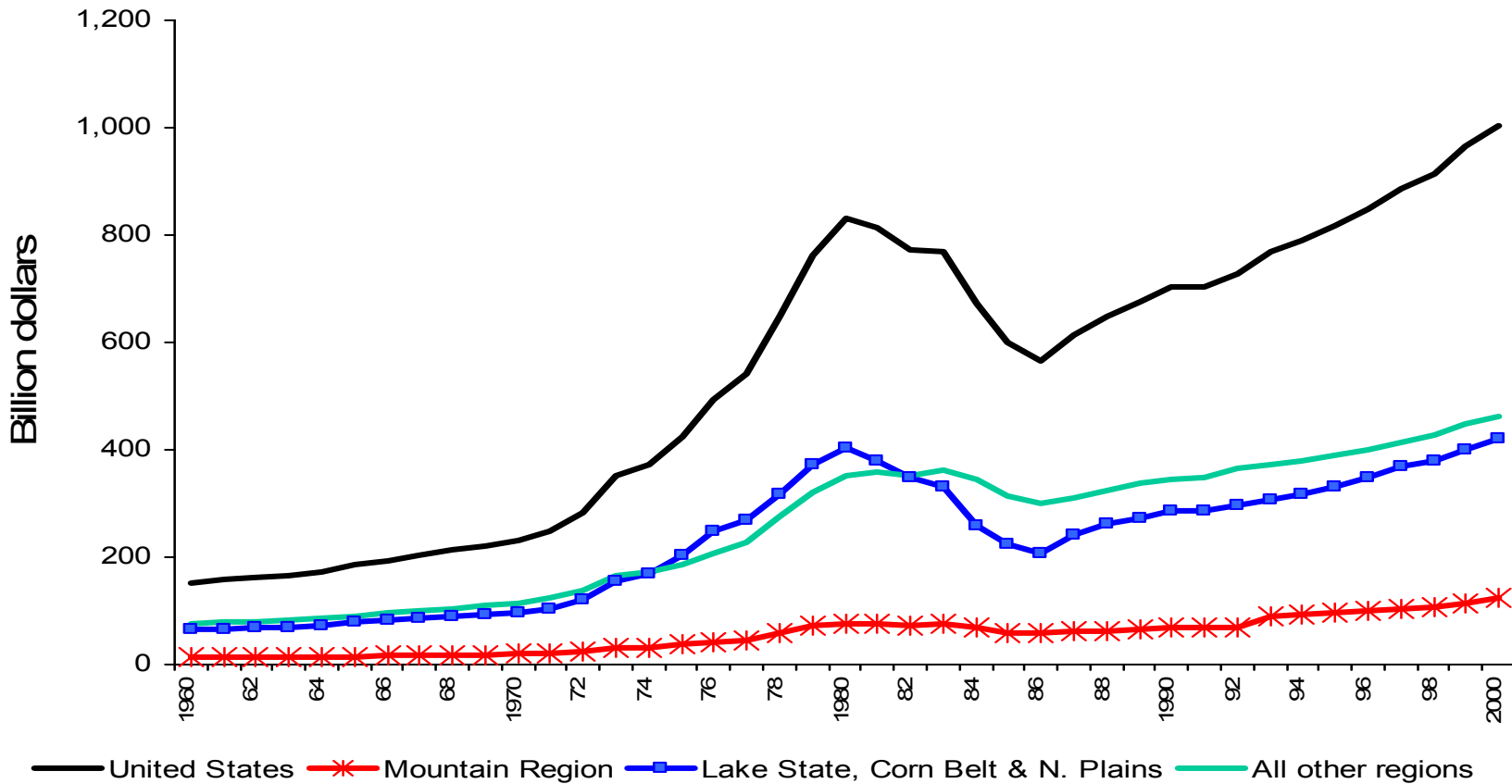
**The standard error exceeds 50 percent of the estimate, but is no more than 75 percent of the estimate.

Source: USDA, ERS, 2000 Agricultural Resource Management Survey (ARMS). Data for all U.S. households is from the Census Bureau's Current Population Survey.

Figure 8

Farm business equity for the United States and selected regions, 1960-2000

Farm wealth fell by about \$18.5 billion between 1981 and 1986

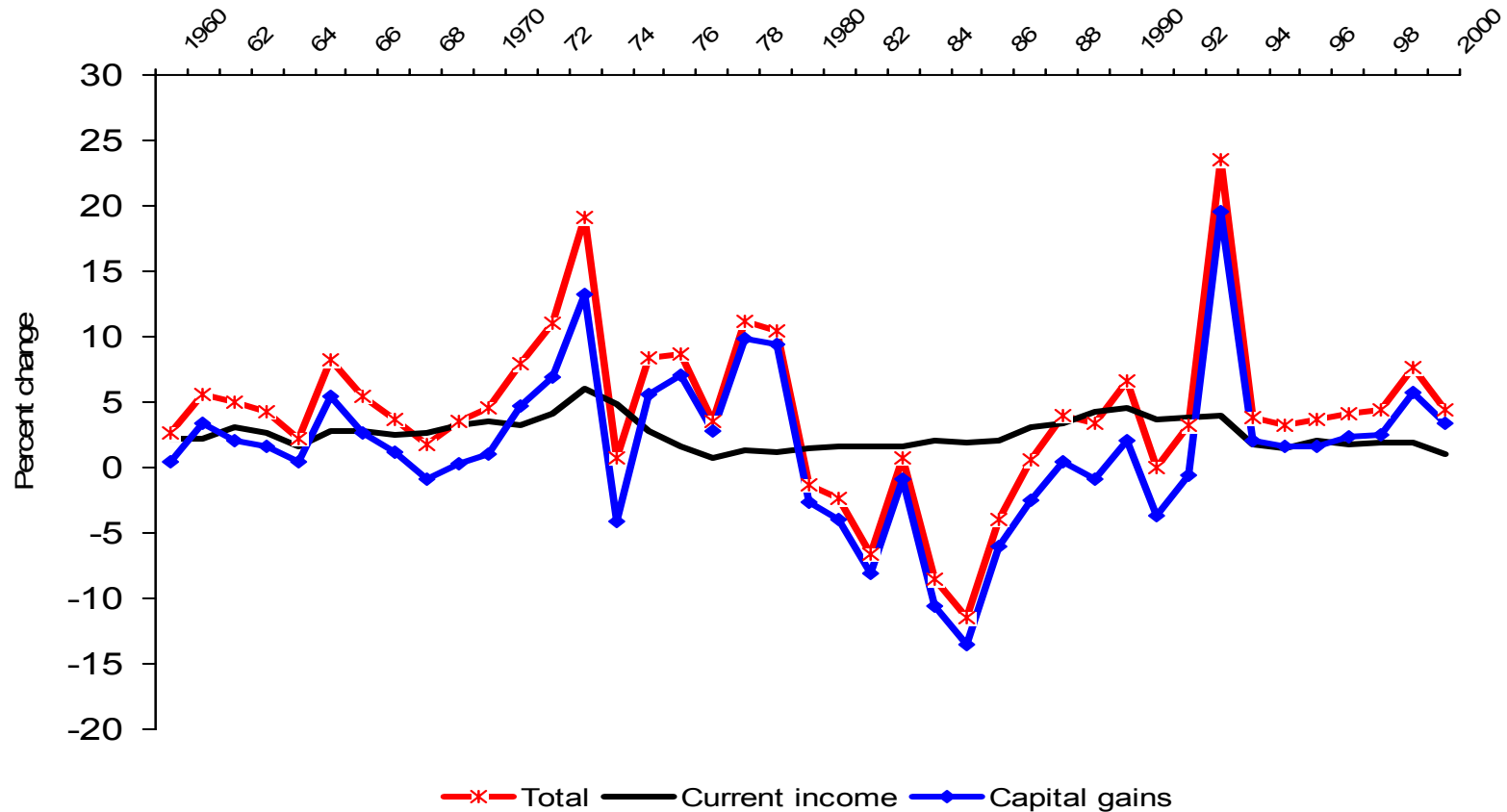


Source: USDA, ERS, Farm Sector Accounts.

Figure 9

Rates of return on farm business assets in the Mountain Region, 1960-2000

Farms in the Mountain Region experienced a negative total rate of return in the 1980's



Source: USDA, ERS, Farm Sector Accounts.