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# Production Expenses of Specialized Vegetable and Melon Farms

Mir Ali and Gary Lucier

## Abstract

Vegetable and melon production requires a substantial investment in production inputs. Using data from USDA's Agricultural Resource Management Survey (ARMS), this article presents and explores the major expense components of specialized U.S. and regional vegetable and melon farms during 1998-2006. Total cash expenses per acre for specialized U.S. vegetable and melon farms increased 32 percent between 1998-2000 and 2004-06 and were highest in the West and lowest in the Midwest. Labor accounted for 30 percent of U.S. cash expenses, followed by fertilizer and agricultural chemicals at 18 percent.

**Keywords:** Vegetables, costs, production expense, labor, fertilizer, fuel, interest, seed, sales class, regions.

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## Vegetables: Small Footprint, Big Impact

Producing food and fiber in the United States requires a substantial investment in inputs by farms and ranches. During 2004-06, the production expenses (excluding operator dwelling expenses) of all U.S. farms and ranches averaged \$213 billion annually (USDA, ERS, Farm Income Data Files). The portion consisting of fixed and variable cash expenses during this period averaged \$195 billion, up 12 percent from the average of the previous 3 years.<sup>1</sup>

U.S. production of vegetables (including potatoes and pulse crops) and melons occurs on less than 7 million acres, about 2 percent of all harvested cropland. However, from this small footprint comes a diverse set of high-value products, which generated 16 percent of all farm cash receipts and 8 percent of U.S. farm export value during 2004-06 (USDA, ERS, Vegetables and Melons Briefing Room). Reflecting the intensive, high-cost nature of U.S. vegetable and melon agriculture, total farm cash expenses of such farms averaged \$288,036 per farm in 2004-06 and accounted for roughly one-seventh of total U.S. farm cash expenses. The largest vegetable and melon farms (those with more than \$1 million in sales) averaged \$2.9 million in total cash expenses. Cash expenses for all farms and ranches with more than \$1 million in sales averaged about 40 percent less, at nearly \$1.7 million.

National or regional information on production expense components that are specifically for the vegetable and melon sector has not been widely available until now. Most farm finance research has grouped vegetables and melons with fruit and tree nuts and treated the combination as one sector (Lucier et al.). No previous studies have focused solely on the expenses of vegetable and melon farms (Jenkins and Lucier). Using data from USDA's Agricultural Resource Management Survey (ARMS), this report explores the major expense components of specialized U.S. vegetable and melon farms from 1998-2006. Basic questions include: What proportion of the total cash expenses of U.S. vegetable and melon farms consist of labor, fertilizer, or fuel? How do vegetable and melon farm expenses vary by size of farm and geographic location? How have expenses changed on specialized vegetable and melon farms over the past decade? By answering these questions and providing key data, this report aims to contribute to the knowledge of this agricultural sector's financial picture.

The report briefly touches on each of the major expense components for vegetable and melon farms, along with changes in these expenses over three 3-year periods (1998-2000, 2001-03, and 2004-06). In addition to data for all specialized vegetable and melon farms, the discussion includes expenses for four major farm sizes and four census regions, along with comparisons with expenses on all U.S. farms.

### What Are Specialized Vegetable and Melon Farms?

For this report, farms are defined as *specialized vegetable farms* if vegetables and melons account for at least half the total value of farm production. According to data derived from ARMS, these specialized farms represent the bulk of U.S. vegetable and melon output, relying heavily on vegetable

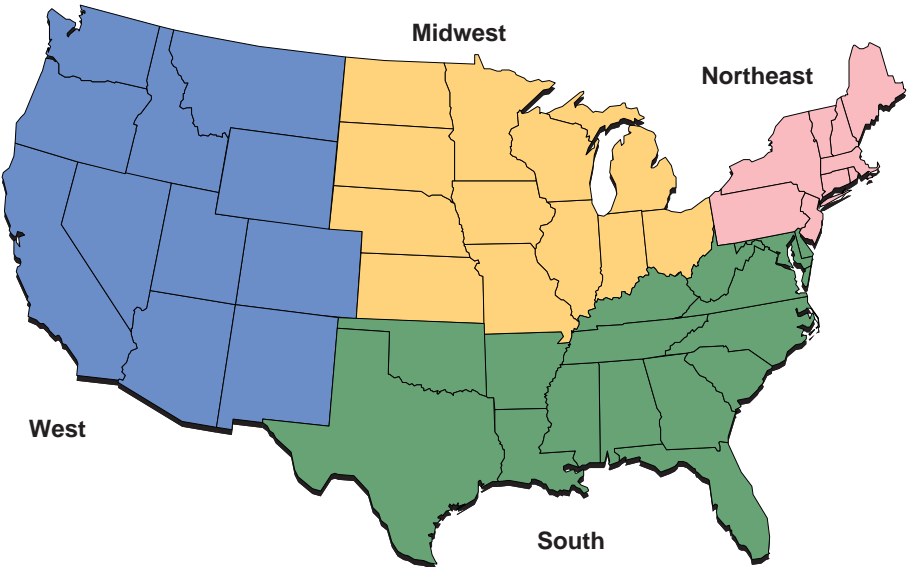
<sup>1</sup>Variable expenses are those operating expenses that change as area or production varies over a set production period. Fertilizer expenditures, for example, are variable costs because they generally increase as the number of planted acres increases. Fixed expenses such as property taxes and depreciation remain the same during a production cycle even if no crops are grown.

sales for a substantial proportion of their farm income. On average, specialized vegetable farms accounted for more than half of all the farms producing vegetables in the United States and contributed nearly 90 percent of the total value of U.S. vegetable production during 2004-2006. In addition to a national overview, specialized vegetable farms are examined in this report according to four census regions: Northeast, Midwest, South, and West (fig. 1). Regionally, these farms tend to be most heavily concentrated in the South, with substantial numbers also found in the Midwest and West (fig. 2). However, the West dominates in terms of crop value, with about two-thirds of the national total for vegetable and melon farms. Although a significant volume of vegetables is also grown in the Midwest and Northeast, operations in these areas tend to rely more on other crops for their farm revenue.

Specialized vegetable farms were classified into four groups based on total farm value of production: *small* (value of production less than \$40,000), *medium* (\$40,000 to \$249,999), *large* (\$250,000 to \$999,999), and *very large* (more than \$1,000,000). About 8 percent of specialized vegetable farms are classified as very large, each producing \$1 million or more of agricultural commodities in 2004-06 (fig. 3). The very large farms accounted for 88 percent of the total value of vegetables produced by all specialized vegetable farms and tend to be concentrated in the West. Vegetable and melon farms that produced less than \$40,000 worth of commodities (small farms) made up 70 percent of these farms, yet accounted for just 1 percent of the total value of production. Small farms are largely concentrated in the South.

The specialized vegetable and melon farm group consists of hundreds of individual commodity markets, each with unique supply and demand characteristics. Thus, the aggregate data for specialized vegetable and melon farms may not be representative of any single commodity within the industry. This is also true for farms raising individual vegetables that may serve both fresh and

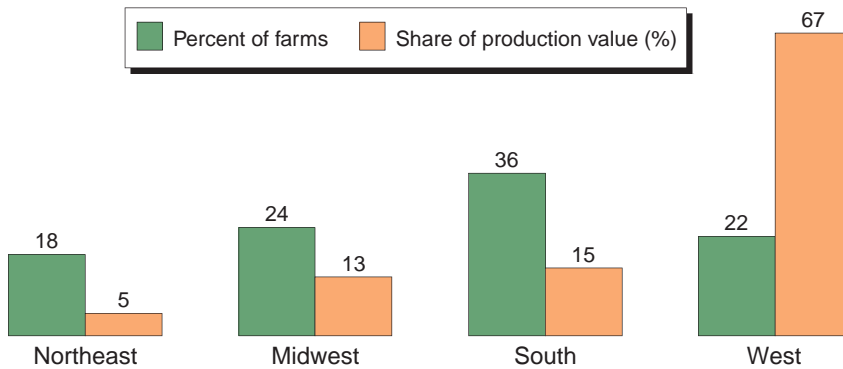
Figure 1  
**States included in each census region**



Source: Prepared by ERS using data from U.S. Dept. of Commerce, U.S. Census Bureau.

Figure 2

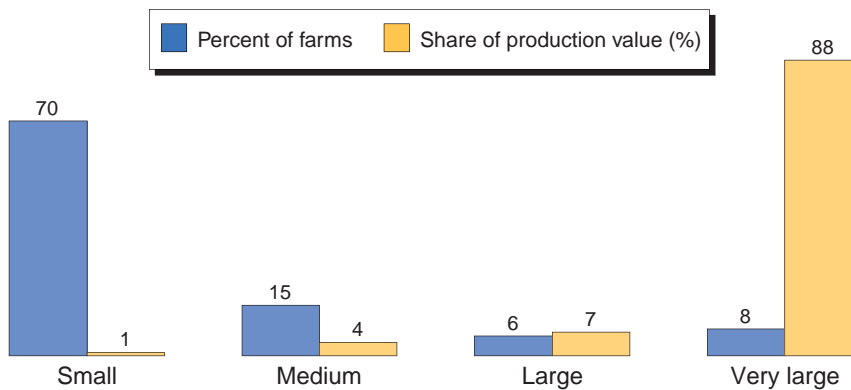
**Specialized vegetable and melon farms: Regional distribution, 2004-06**



Source: Prepared by ERS using data from USDA's 2004-06 Agriculture Resource Management Survey (ARMS).

Figure 3

**Specialized vegetable and melon farms: Distribution by farm size, 2004-06**



Source: Prepared by ERS using data from USDA's 2004-06 Agriculture Resource Management Survey (ARMS).

processed markets, such as sweet corn or tomatoes. In the case of tomatoes, the production expenses for fresh market tomatoes differ radically from those of tomatoes grown for processing, especially the labor expense. Each acre of fresh tomatoes is heavily dependent on hand labor for harvest, while an acre of processing tomatoes is machine-harvested in a fraction of the time (usually by a processor-owned machine).

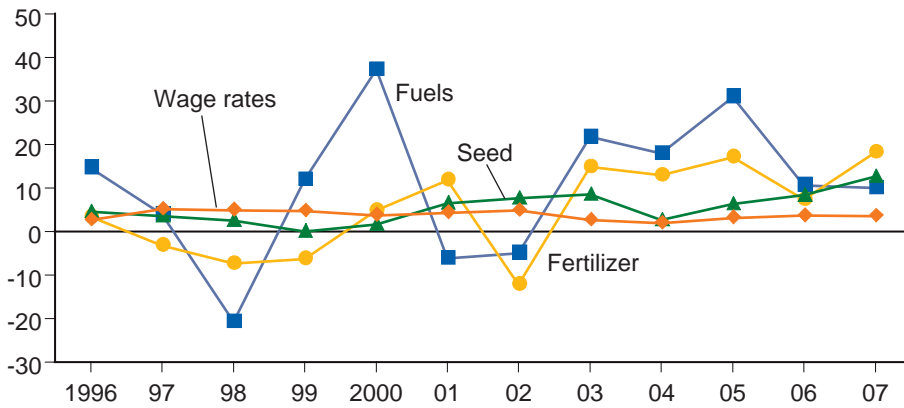
**Prices Paid by Vegetable and Melon Growers Trending Higher**

Input price changes play a major role in farm production expenses and farm profitability (fig. 4). Over the past decade, prices paid (unadjusted for inflation) by vegetable and melon growers for production inputs have moved steadily higher (USDA, NASS). An index calculated by ERS using items pertinent to vegetable production (leaving out farm-origin inputs like

Figure 4

**Annual change in prices paid by farmers for selected inputs**

Percent change<sup>1</sup>



<sup>1</sup>Percent change from a year earlier.

Source: Derived by ERS from USDA, National Agricultural Statistics Service, *Agricultural Prices*.

feed and livestock) indicates that average input prices increased 25 percent between 1998-2000 and 2004-06. This easily exceeded price changes in the general economy over the period (15 percent, as measured by the GDP implicit price deflator). Some growers may have experienced a “cost-price squeeze,” with average prices received by commercial vegetable growers increasing about 11 percent during this period. However, changes in input or product prices are not the only factors determining net revenue. Many growers may have been able to offset any negative income effect from price changes through gains in productivity (i.e., becoming more efficient). Record yields for several crops, including sweet potatoes and onions, were posted (and largely maintained) during this period.

The top five inputs in terms of nominal price gains between 1998-2000 and 2004-06 were fuels (up 99 percent), fertilizer (up 47 percent), seeds and transplants (up 38 percent), farm machinery (up 27 percent), and wage rates (up 23 percent). Farm chemicals (up 3 percent) and custom services (up 3 percent) had the slowest gain in prices over the period. In 2007, strong demand from field crop farmers helped push fertilizer and seed prices higher, while rising interest rates boosted the cost of credit. Concurrently, strong world demand for petroleum and limited U.S. refinery capacity pushed diesel fuel prices higher. These increases resulted in a 7-percent increase from a year earlier in the prices paid for production inputs by vegetable and melon growers. In 2006, vegetable and melon growers had also experienced a 7-percent surge in input prices. Further substantial increases are expected in 2008, led by escalating prices for fuel and fertilizers.

**Cash Expenses Highest in the West**

Reflecting larger farm sizes and a greater share of farm acres in vegetables, total cash expenses on specialized vegetable and melon farms during 2004-06 were highest in the West. In the West, specialized vegetable and melon farms averaged 548 acres per farm, compared with 199 acres in the Midwest and

the low of 133 acres in the Northeast. About 52 percent of the total acreage of specialized vegetable farms in the West was devoted to vegetables and melons (with the remainder usually planted to rotational crops or kept fallow). On a per-farm basis, cash expenses averaged \$884,554 in the West during 2004-06—up 41 percent from 1998-2000 and easily the highest among the four regions (app. table 3). Per-acre expenses were lowest in the Midwest for all three periods, reflecting the heavy concentration of low-cost machine-harvested vegetables for processing, such as sweet corn, green beans, and green peas.

On a per-acre basis, total cash expenses of specialized vegetable and melon farms in the West averaged \$1,605 per acre, 30 percent higher than during 1998-2000. During 2004-06, the per-acre total cash expense in the West was 84 percent greater than the next-highest region, the South, reflecting the greater share of farm area devoted to vegetables and melons. Because so many different crops are represented within these data, the average expense per farm or per acre would seem too low to those producing such high-value crops as fresh-market tomatoes, bell peppers, or broccoli. However, in addition to these high-cost commodities, the data are also capturing such low-cost crops as pumpkins, sweet corn, wheat, and dry beans, which moderate the aggregate per-farm and per-acre averages depicted here.

## Variable Expenses Rising

Variable expenses are production-related cash expenses that fluctuate with acreage or output. They include such items as seed, fertilizer, chemicals, fuel, custom work, and hired labor. During 2004-06, annual variable expenses across all specialized vegetable and melon farms averaged \$240,510 per farm—79 percent of total cash and noncash expenses. Noncash expenses consist largely of depreciation and do not include charges for management and operator and unpaid labor. Variable expenses in 2004-06 were up 27 percent from 1998-2000, led by increased outlays for fuel and oil, seeds and plants, and fertilizer and chemicals.

Hired labor (excluding custom work) was the single largest expense item on specialized vegetable and melon farms. The production of many fresh-market vegetable and melon crops tends to be labor intensive. This is because field operations such as thinning, cultivating, irrigating, and harvesting must frequently be accomplished by skilled hand labor to avoid damage to tender plants and to assure the product meets the stringent quality and appearance criteria expected by consumers. For this reason, labor expenses tend to be much greater for fresh-market crops, compared with those of the highly mechanized processing side of the industry.

Agricultural chemicals (including fertilizers) were the second-largest variable cash expense for specialized nonorganic vegetable and melon farms—accounting for about 21 percent of total variable expenses. Seed and transplants are also an important annual expense, with many vegetable commodities (such as tomatoes, broccoli, and watermelon) produced from transplants or costly hybrid seed.

In addition to variable cash expenses, vegetable and melon farms have fixed (overhead) cash outlays such as insurance premiums, real estate and property

taxes, interest, rent, and lease payments. When these fixed cash expenses are added to variable cash expenses, specialized vegetable and melon farms averaged \$288,590 in total cash expenses during 2004-06. In comparison, nonspecialized vegetable and melon farms averaged \$209,583, due primarily to their greater share of livestock and other crops, which generally incur lower cash expenses.

## Labor Is Vital and Costly

Farm labor is an important input for most agricultural operations, but it is essential for many specialized vegetable and melon farms. Maintaining access to an affordable labor pool is critical to the industry. With some exceptions, most fresh-market growers depend on hand labor for harvest and other field and packing activities. The timing of labor availability is also critical to vegetable and melon growers, who must harvest crops within a specific window during the growing cycle to ensure optimal quality. According to the U.S. Department of Labor's National Agricultural Workers Survey, fruit and vegetable farms accounted for two-thirds of all hired crop workers in the United States.<sup>2</sup> For vegetables and melons alone, 78 percent of workers were hired directly by growers, with the other 22 percent sourced through labor contractors.

Payments to stakeholders (lenders, hired labor, and nonoperator landlords) averaged \$123,781 per vegetable and melon farm during 2004-06, 16 percent more than during 1998-2000, with the increase reflecting the impact of lower interest rates on debt-servicing costs and increased labor productivity. Labor remains easily the largest stakeholder on U.S. farms. The total labor expense on U.S. farms and ranches (cash wages and contract labor) averaged nearly \$24 billion annually in 2004-06. Commercial farms account for more than three-fourths of all hired labor expenses in agriculture.<sup>3</sup>

Although the importance of labor varies by crop, vegetable and melon farming (especially for fresh-market crops) generally depends much more on hand labor than most other U.S. farm enterprises (although fruit and other horticultural products are also labor dependent). For example, fresh-market vegetables are often produced from transplants grown in a greenhouse and set in the ground by hand. Vegetables are also often thinned and cultivated by hand. Most fresh-market vegetables are grown under irrigation, which can also be labor-intensive, depending on the method employed (e.g., drip vs. flood or furrow). One of the most critical times for labor in the production cycle for fresh-market crops is during harvest, when the tender fresh vegetables are picked, sorted, and packed mostly by hand. Although some mechanization is beginning to appear in fresh-market crops (virtually all processing vegetables are machine harvested), such as green beans, sweet corn, and some leafy crops, hand labor remains a critical harvest-time input.

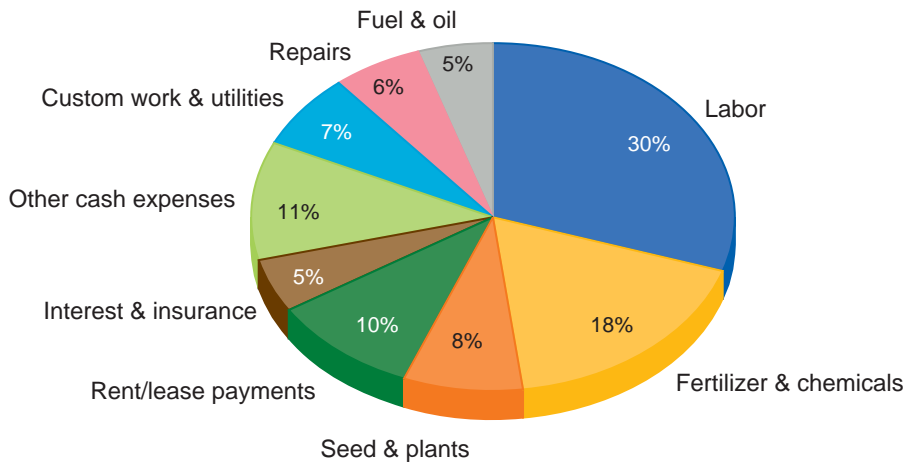
For all specialized vegetable and melon farms, labor expenditures averaged 30 percent of total cash expenses—tops among all expense categories (fig. 5). Labor's share of total cash expenses generally rises with farm size, ranging from 9 percent on small farms to 31 percent on large and very large farms. On small farms, the operator and family generally provide a greater share of the labor. On all U.S. farms and ranches, labor accounted for 14 percent of cash costs. Among the four census regions, the share of cash expenses represented

<sup>2</sup>The 2001/2002 labor survey was the latest available at this writing, with the 2006 survey results not yet summarized (U.S. Department of Labor).

<sup>3</sup>A commercial farm is generally defined by ERS as a farming operation with annual sales of \$250,000 or more (Covey et al.).

Figure 5

**Cash expense shares: Specialized vegetable and melon farms, 2004-06**



Source: Prepared by ERS using data from USDA's Agriculture Resource Management Survey (ARMS).

by labor varied from a high of 36 percent in the South to a low of 28 percent in the Midwest. This difference can be partly explained by the prevalence of vegetable farms geared toward the production of processing vegetables such as sweet corn, snap beans, and green peas in the upper Midwest. Thanks largely to mechanization, fewer labor hours are required to produce vegetables used in canned, frozen, and dehydrated products, resulting in lower total and unit costs. In the South, vegetable farms largely supply the fresh market; only a small fraction (5 percent or less) of the Nation's processed vegetables is produced in this region.

### Manufactured-Input Costs Rising

Rising prices for oil and natural gas have resulted in increased costs throughout the farm economy, with direct impacts felt in manufactured, or energy-based, inputs such as fuel, fertilizer, and pesticides. Vegetable and melon growers must combat a wide range of weeds, insects, and plant diseases to harvest the blemish-free produce most of today's consumers have come to expect. U.S. farms and ranches spent \$12.5 billion on fertilizer (including soil conditioners such as lime) and another \$8.8 billion on various pesticides (such as insecticides and fungicides) during 2004-06.

Higher prices for natural gas (a feedstock for nitrogen fertilizers) and strong world demand for potash and phosphate helped drive fertilizer prices and expenses up over the past few years. Natural gas prices have eased since peaking in 2005, but since then, high crop prices have led to rising acreage and strong world demand and high prices for all fertilizers. This has increased expenses for vegetable and melon growers since 2005 even though the average farm's fertilizer and chemical expense had already risen 25 percent from 1998-2000 (table 1). Expenditures for fertilizers and chemicals, 18 percent of cash costs, were the second-largest cash expense for all specialized vegetable and melon farms. This national expense share was unchanged over each of the 3-year periods studied.



Table 1

**Manufactured inputs on specialized vegetable and melon farms<sup>1</sup>**

Period and farm size	Fuels & oils	Fertilizer and chemicals	Utilities <sup>2</sup>	Total
<i>Dollars per farm</i>				
<b>1998-2000</b>				
Small	707	2,126	556	3,389
Medium	5,318	16,303	3,311	24,932
Large	18,043	76,022	16,732	110,797
Very large	66,922	501,588	124,152	692,662
All	7,051	40,844	9,800	57,695
<b>2004-06</b>				
Small	1,099	1,118	590	2,807
Medium	9,128	17,335	3,745	30,208
Large	24,453	79,499	14,724	118,676
Very large	136,071	529,260	118,965	784,296
All	14,691	51,158	11,515	77,364
<i>Percent change</i>				
<b>Change</b>				
Small	55	-47	6	-17
Medium	72	6	13	21
Large	36	5	-12	7
Very large	103	6	-4	13
All	108	25	18	34

<sup>1</sup>See the text for farm size definitions.

<sup>2</sup>Due to data handling limitations, includes other utilities in addition to electricity.

Source: Prepared by ERS using USDA's Agricultural Resource Management Survey (ARMS).

Fertilizer and agrichemical expenses as a share of cash expenses on vegetable and melon farms ranged from 9 percent on small farms to 18 percent on larger farms. During 2004-06, with the exception of the Northeast (where the expense was 15 percent), the fertilizer/chemical expense share was 18 percent for each region. The smaller share in the Northeast reflected the prevalence of smaller vegetable farms in the region. These smaller farms likely raise a different mix of crops and practice a different intensity of production than larger operations. Although the prevalence of certified organic vegetable acreage is not much different in the Northeast region (2 percent) than nationally (nearly 3 percent), practices such as use of manure in place of chemical fertilizers may be more common on smaller farms. In comparison, fertilizer and chemical use tends to be less intensive on total U.S. farms and ranches—where it represents about 13 percent of cash expenses—than on specialized vegetable farms,

U.S. farms and ranches spent \$13.4 billion for fuel, oil, and electricity during 2004-06. The unit cost of petroleum-based fuels such as diesel and gasoline rose sharply, as reflected by a 156-percent jump in the index of prices paid by farmers for fuels between 1999 and 2006. As a result, fuel and oil expenses for farms in 2006 were much higher than in 1999.<sup>4</sup> Fuel and oil accounted for 5 percent of the cash expenses of all specialized vegetable and melon farms in 2004-06—up from 3 percent during both the 1998-2000 and 2001-03 periods. Much of the rise in manufactured-input costs occurred after 2005. As a result, other than the higher cost for fuels, these price increases are not well represented in the 2004-06 expense averages. During 2004-06, the fuel share

<sup>4</sup>In addition to boosting grower costs, higher costs for petroleum-based fuels also affect costs for firms such as vegetable processors (increased costs for running boilers and for packaging materials) and vegetable shippers (increased cost for packaging materials and for transporting products to market).

of total cash costs declined as farm size increased, ranging from 9 percent for small farms to less than 5 percent for very large farms. Regionally, there were only minor differences in the fuel share of cash costs.

## **Interest Expenses Up, but Well Below Historic Peak**

In addition to variable cash expenses, vegetable and melon farms have fixed cash expenses, such as insurance premiums and interest payments. Interest expenses cover the cost of carrying both real estate and non-real-estate debt. Non-real-estate interest covers debt for such items as machinery purchases and annual operating loans. During 2004-06, U.S. farms and ranches incurred \$12.5 billion in interest expense, with about 45 percent used to service non-real-estate debt. Although farm interest expenses have risen over the past decade, interest rates and expenses remain low relative to historical highs (Council of Economic Advisers). The low interest rates have kept this expense below the all-time nominal dollar highs experienced during the early 1980s, when short-term rates approached 20 percent. Non-real-estate interest expenses during 2004-06 were about half the peak reached during 1981-83. The lower interest rates have helped vegetable and melon growers cope with the cash-flow demands of the cost-price squeeze.

Interest expenses on all specialized vegetable and melon farms averaged \$8,217 per farm annually during 2004-06—down from \$9,765 during 2001-03. This amounted to about 3 percent of all cash expenses in 2004-06. Although the interest expense was greater for beef and dairy farms, the 2004-06 interest expense on vegetable and melons farms was greater than the average across all farms and ranches (\$4,654 per farm). This was a reflection of generally higher land and operating costs for vegetables and melons.

Much of the U.S. vegetable and melon industry is concentrated on relatively expensive land on the urban fringe and along coastal areas, which raises both land rent and interest on real estate debt. The per-acre operating costs for many vegetable and melon crops are also much greater than for field crops such as wheat, corn, or soybeans, which elevates debt-servicing costs for short-term operating loans. Interest expenses for vegetable and melon farms decline with increasing farm size, with 10 percent of cash expenses of small farms consisting of interest payments, compared with 2 percent for very large vegetable farms. This may indicate that large farms are able to self-finance a greater portion of their operations and receive more favorable interest rates.

## **Other Expense Items**

Seed and transplant expenses averaged \$10.4 billion during 2004-06—up 17 percent from 2001-03 and 42 percent from 1998-2000. Most of the increase in seed expense has been the result of higher prices for seeds and transplants, with seed prices on a steady upward trend over the past decade. Between 1998-2000 and 2004-06, seed prices increased 38 percent, driven by the widespread development and adoption of various high-cost hybrid varieties. Although seed costs are higher, these new varieties are an important source of the productivity gains that have helped sustain the favorable financial position of the vegetable and melon sector.

After labor, nonoperator landlords who rent and lease land to farmers are the second-largest stakeholders in the vegetable and melon sector. During 2004-06, the average specialized vegetable and melon farm paid \$29,192 annually to these stakeholders—10 percent of all cash expenses and the same share recorded in 1998-2000. For all of U.S. agriculture, these rental payments (excluding landlord capital consumption) averaged \$12.6 billion (6 percent) during 2004-06, unchanged from 2001-03.

## Selected Financial Ratios

Controlling production expenses, a key to the financial viability of specialized vegetable and melon farms, can be viewed in several ways. To capture the short- and long-term dimensions of farm financial viability, this analysis considers two measures of production expenses for the whole farm: (1) total cash expenses, which include variable expenses (such as seed, fertilizers, chemicals, fuel, repairs, and hired labor) plus fixed expenses (overhead items such as rent, taxes, insurance, and interest payments), and (2) economic costs, which are total cash expenses plus an allowance for depreciation and imputed returns to management, land, and operator and unpaid labor.

A farm may survive for a year if revenue covers no more than variable expenses, and perhaps for several years if revenue covers total cash expenses, particularly if the operator is able to draw on cash reserves, borrow against assets, or use income from off-farm sources. However, such measures are usually temporary. For longrun financial viability, revenue must cover economic costs. For example, in the short run, the allowance for depreciation may be deferred, and aging machines may be repaired. But in the long run, as machinery wears out, a shortage of funds for replacing machinery may affect the ability of the farm business to generate revenue.

The *cash-expense* ratio measures how much a farm operation must spend for inputs and overhead items for each dollar of income it produces (fig. 6). It is calculated by dividing total cash expenses by gross cash farm income. According to this measure, specialized vegetable and melon farms spent \$78 on inputs and overhead items for every \$100 of income produced during the 2004-06 period—about the same as for all farms and ranches. The cash-expense ratio declined as farm size increased. The largest vegetable farms incurred \$75 in cash expenses for every \$100 of income they earned in 2004-06. In contrast, expenses of the smallest vegetable farms were more than the income they produced—\$120 of cash expense for every \$100 of income. Specialized vegetable and melon farms in the Northeast, a region dominated by small farms, had the highest cash-expense ratio.

The *economic cost ratio* measures how much a farm operation must spend over the long run for all cost items (cash, noncash, and imputed expense) and is calculated by dividing total economic costs by gross farm income. According to this measure, specialized vegetable and melon farms incurred \$88 in total economic costs for every \$100 of income they earned during 2004-06. This compares with \$98 in economic costs for all U.S. farms and ranches (USDA, ERS, ARMS Briefing Room). The smallest vegetable farms incurred total expenses of almost twice the income they produced—\$193 of longrun expenses for every \$100 of income—while larger farms produced enough income to cover total economic costs. Specialized vegetable and

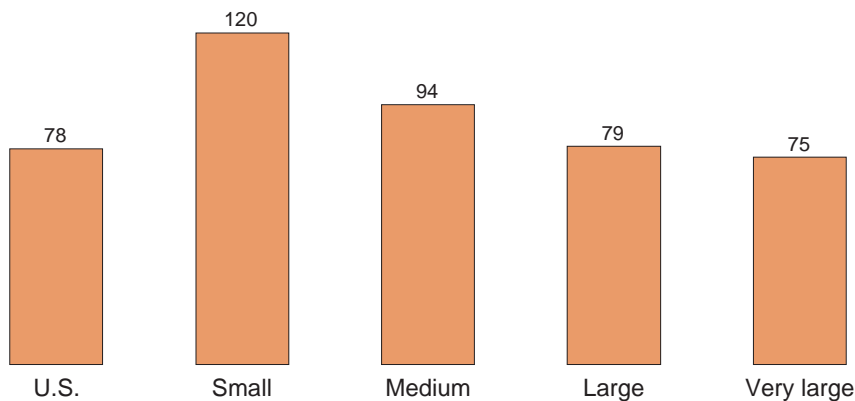
melon farms in the West, an area featuring many large farms, had the lowest economic cost ratio among the four census regions (fig. 7).

## Major Issues Could Affect Future Expense Mix

Several issues in current national focus could change the mix of crops produced by vegetable and melon growers and how these crops are produced. These issues include immigration and labor, diet and health, and environmental issues related to water and agricultural chemical use. Changes in farming operations resulting from these concerns could affect the expense profile of vegetable and melon farms. For example, if nutritional recommendations to eat 5 to 9 fruits and vegetables per day were taken to heart by consumers, more resources would need to be devoted to vegetables and melons, bidding up land costs and increasing rents. Further, if environmental

Figure 6

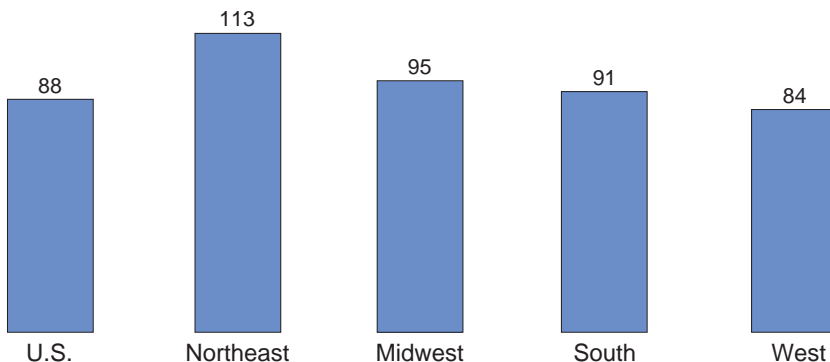
**Specialized vegetable farms: Cash expense ratio by farm size, 2004-06**  
Percent



Source: Prepared by ERS using data from USDA's 2004-06 Agriculture Resource Management Survey (ARMS).

Figure 7

**Specialized vegetable farms: Economic cost ratio by region, 2004-06**  
Percent



Source: Prepared by ERS using data from USDA's 2004-06 Agriculture Resource Management Survey (ARMS).

regulations were to dictate reductions in chemical fertilizer and pesticide use, the adoption of organic techniques or increased use of mechanical cultivation (to control weeds) would change the share of chemicals in the expense mix.

Labor, a major expense of vegetable farms, is now at the forefront of a national debate. If stepped-up enforcement of immigration laws were to reduce the labor available to vegetable farms, fresh-market production of some crops might be reduced or eventually moved to other countries. Some fresh-market crops (e.g., snap beans, sweet corn, green peas, leaf lettuce, and asparagus) might be able to switch to mechanized harvesters. Mechanized harvesters are used on most processing crops and a portion of several fresh-market crops, but are generally not as efficient or effective as hand harvesting for the fresh market. Widespread use of mechanization in the fresh market would reduce labor's share of expenses, while increasing capital and fuel costs. Ultimately, the path taken may be similar to that of processing vegetables, with total costs being reduced as efficiency increases and seed varieties are coordinated with mechanization.

## Conclusions

Specialized vegetable and melon farms accounted for more than half of all the farms producing vegetables in the United States and contributed nearly 90 percent of the total value of U.S. vegetable production during 2004-2006. Vegetable and melon growers rely on products produced by dozens of input industries in order to produce the hundreds of commodities and products important to national health and well-being. Using data from USDA's Agricultural Resource and Management Survey (ARMS), this report detailed the major expense components of specialized U.S. vegetable and melon farms by region and farm size. The total cash expense per acre for specialized U.S. vegetable and melon farms increased 32 percent between 1998-2000 and 2004-06.

Labor was found to account for 30 percent of total cash expenses of all vegetable and melon farms. For farms in the South, labor accounted for 36 percent of cash expenses. Fertilizer and agricultural chemicals made up the second-largest expense category, with 18 percent of total cash expenses—a share unchanged during each of the 3-year periods studied. For farms in the Northeast, fertilizer and chemicals accounted for 15 percent of cash expenses, also largely unchanged over the study period. Fuel and oil accounted for 5 percent of total cash expenses, with only small regional variations.

Expenses of specialized vegetable and melon farms vary by size of farm and by geographic location. Because of greater average farm size, a larger share of farm acres in vegetables and melons, and multiseason production ability in California and Arizona, farms in the West stood apart from those in the other three regions. Total average cash expenses in the West during 2004-06 were 84 percent greater than those in the next highest region (the South). The Midwest had the lowest expenses per acre because of the heavy concentration of lower cost, machine-harvested processing vegetables. In the current era of high-priced alternative field crops, growers have a choice as to which crops to produce, and the cost of producing alternative crops—as well as the price received—has a bearing on the mix of crops grown.

### The Agricultural Resource Management Survey (ARMS)

The farm-level data for this report were derived from the USDA's Agricultural Resource Management Survey (ARMS). ARMS is the only national survey that provides information on a broad range of issues about agricultural resource use, production practices, farm costs and financial conditions, and economic well-being of America's farm households—all collected in a representative sample (USDA, ERS, ARMS Briefing Room). In addition to in-depth analysis of individual sectors such as vegetables and melons, the survey also allows comparisons among various farm sectors (Livezey and Ali).

The ARMS is an annual survey designed and conducted jointly by ERS and the National Agricultural Statistics Service (NASS). More information about the ARMS can be found at [www.ers.usda.gov/briefing/ARMS](http://www.ers.usda.gov/briefing/ARMS).

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## Glossary

**Cash expenses** are variable cash expenses plus fixed cash expenses.

**Cash-expense ratio** measures how much a farm operation must spend for inputs and overhead items for each dollar of income it produces. Ratio = (Total cash expenses / Gross cash farm income)\*100.

**Economic cost ratio** measures how much a farm operation must spend over the long run for all cost items (cash, noncash, and imputed expense). Ratio = (Total economic (long-term) expenses / Gross farm income)\*100.

**Economic (long-term) expenses** are cash expenses plus noncash and imputed expenses such as depreciation, cash labor benefits, charge to operators and other unpaid labor, and charge to management.

**Farm size** is based on value of production from all commodities produced on a farm, as follows: small farm (value of production less than \$40,000), medium farm (\$40,000-\$249,999), large farm (\$250,000-\$999,999), and very large farm (\$1,000,000 or more).

**Fixed cash expenses** are those that do not vary directly with output, but remain constant. Examples include real estate and property taxes, interest, insurance payments, mortgage, rent, and lease payments.

**Gross cash farm income** is income from livestock, crops (including net CCC loans), Government payments (including commodity marketing loan gains and certificate-exchange gains), custom work and machine hire, fee income from crops and livestock removed under production contracts, land rented out, and other farm-related income.

**Gross farm income** is gross cash income plus net change in value of crop, livestock, feed, fertilizer inventory, and accounts receivable, value of farm products consumed or used on-farm, and gross imputed rental value of farm operator dwelling.

**Imputed expenses** are charges for unpaid labor and management. Examples are work done by the farm operator, partners, and family members in conjunction with the production of commodities where there is no payment for services. Though unpaid labor does not generally receive a wage, it does have an economic cost. Compensation for unpaid labor and management is based on the opportunity cost of off-farm work, or the return available in the next best alternative use of laborers' and managers' time and skills.

**Noncash expenses** include charges on depreciable assets and noncash benefits provided to labor, such as housing. Depreciation is the charge sufficient to maintain production capacity of machinery, equipment, buildings, and purchased breeding livestock. Depreciation may be regarded as a discretionary expense in any particular year. It may be deferred when income is low, but ultimately must be paid to maintain the capital stock, so that over the long term the operation remains in business.



**Regions** are as defined by the U.S. Census Bureau: Northeast, Midwest, South, and West.

**Specialized vegetable farms** are farms where vegetables and melons account for at least 50 percent of the total value of farm production.

**Value of production** is the total value from all products produced on a farm, excluding the value of intermediate products, such as corn fed to livestock.

**Variable cash expenses** are those that change in proportion to the activity of the farm. In agriculture they are primarily the money spent for inputs used during the production process. Included are seed and plants, fertilizer, chemicals, machine hire and custom work, fuels and oils, repairs, hired labor, utilities, livestock-related expenses (such as livestock purchases, feed, veterinary care, grazing fees, and bedding), supplies, transportation, storage, and general business expenses.

## Appendix tables

1. Average regional farm expenses for specialized vegetable and melon farms, 1998-2000
2. Average regional farm expenses for specialized vegetable and melon farms, 2001-03
3. Average regional farm expenses for specialized vegetable and melon farms, 2004-06
4. Average regional farm expenses for specialized vegetable and melon farms, 1998-2006
5. Average farm expenses for specialized vegetable and melon farms, by farm size, 1998-2000
6. Average farm expenses for specialized vegetable and melon farms, by farm size, 2001-03
7. Average farm expenses for specialized vegetable and melon farms, by farm size, 2004-06
8. Average farm expenses for specialized vegetable and melon farms, by farm size, 1998-2006

Appendix table 1

**Average regional farm expenses for specialized vegetable and melon farms, 1998-2000**

Item	U.S.	Northeast	Midwest	South	West
Number of farms	31,701	6,264	5,678	12,038	7,720
Average acres per farm	260	127	279	160	509
Harvested acres	182	74	206	67	431
Harvested vegetable acres	99	48	87	41	238
Share in vegetables ( <i>percent</i> )	54.4	64.9	42.2	61.2	55.2
Gross value of production ( <i>\$/farm</i> )	300,587	93,888	161,887	126,546	841,667
			<i>Dollars per farm</i>		
<b>Variable cash expenses</b>	189,865	66,442	92,931	89,805	517,309
Livestock-related <sup>1</sup>	1,210	872	1,056	734	2,381
Seed and plants	15,418	6,257	9,718	6,856	40,394
Fertilizer and chemicals	40,844	12,876	27,068	17,943	109,374
Labor	74,415	20,802	25,399	41,659	205,033
Fuels and oils	7,051	3,927	4,511	3,875	16,406
Repairs and maintenance	12,634	6,431	9,679	4,709	32,197
Machine-hire and custom work	8,524	2,339	3,497	1,596	28,041
Utilities	9,800	2,720	3,219	1,910	32,685
Other variable expenses <sup>2</sup>	19,960	10,218	8,784	10,523	50,798
<b>Fixed cash expenses</b>	40,969	18,921	28,240	13,654	110,810
Real estate and property taxes	3,578	5,015	2,660	1,796	5,866
Interest	9,573	7,398	6,855	3,542	22,742
Insurance premiums	4,812	3,197	4,560	2,074	10,578
Rent and lease payments	23,005	3,311	14,165	6,242	71,624
<b>Total cash expenses</b>	230,834	85,363	121,171	103,459	628,119
<b>Total noncash and imputed expenses</b>	45,411	30,917	42,648	27,329	87,053
Depreciation	12,677	6,229	13,896	4,920	29,105
Labor, noncash benefits	308	177	81	--	720
Charge to operator and unpaid labor	19,368	19,858	20,983	16,122	22,844
Charge to management	13,058	4,653	7,688	6,287	34,384
<b>Total economic (long-term) expenses</b>	276,244	116,280	163,819	131,007	715,170
			<i>Percent</i>		
<b>Selected financial ratios</b>					
Cash expense ratio	83.19	91.04	75.06	82.54	83.85
Economic expense ratio	96.44	118.20	99.34	100.17	92.75

-- = Insufficient data for legal disclosure or standard error is greater than 75 percent of the estimates.

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

**Average regional farm expenses for specialized vegetable and melon farms, 2001-03**

Item	U.S.	Northeast	Midwest	South	West
Number of farms	25,733	4,853	8,989	6,974	4,916
Average acres per farm	281	151	155	193	764
Harvested acres	223	94	112	136	675
Harvested vegetable acres	125	55	62	70	388
Share in vegetables ( <i>percent</i> )	56.1	58.5	55.4	51.5	57.5
Gross value of production ( <i>\$/farm</i> )	414,999	128,642	110,517	197,139	1,563,445
			<i>Dollars per farm</i>		
<b>Variable cash expenses</b>	248,828	90,911	69,218	140,199	887,216
Livestock-related <sup>1</sup>	--	922	--	692	--
Seed and plants	24,244	10,757	8,394	13,397	81,923
Fertilizer and chemicals	53,203	17,283	16,993	29,570	188,391
Labor	92,051	27,740	22,378	57,274	332,261
Fuels and oils	10,044	4,738	3,565	6,804	31,724
Repairs and maintenance	15,684	8,935	6,839	9,294	47,581
Machine-hire and custom work	12,581	3,032	--	2,418	56,181
Utilities	17,750	3,025	2,859	4,284	78,616
Other variable expenses <sup>2</sup>	22,223	14,478	5,392	16,466	68,810
<b>Fixed cash expenses</b>	50,691	15,896	18,049	25,071	181,066
Real estate and property taxes	4,959	3,924	2,159	2,425	14,697
Interest	9,765	3,797	3,783	9,858	26,463
Insurance premiums	6,054	3,942	3,107	4,084	16,323
Rent and lease payments	29,912	4,234	--	8,704	123,583
<b>Total cash expenses</b>	299,519	106,807	87,268	165,270	1,068,282
<b>Total noncash and imputed expenses</b>	65,568	49,074	41,289	45,047	155,356
Depreciation	20,266	9,536	9,557	14,811	58,176
Labor, noncash benefits	538	671	--	254	--
Charge to operator and unpaid labor	27,039	32,076	26,618	20,411	32,242
Charge to management	17,725	6,791	5,023	9,571	63,311
<b>Total economic (long-term) expenses</b>	365,088	155,881	128,556	210,317	1,223,638
			<i>Percent</i>		
<b>Selected financial ratios</b>					
Cash expense ratio	80.03	77.92	79.10	85.27	79.31
Economic expense ratio	94.94	105.97	105.12	105.09	89.97

-- = Insufficient data for legal disclosure or standard error is greater than 75 percent of the estimates.

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

Appendix table 3

**Average regional farm expenses for specialized vegetable and melon farms, 2004-06**

Item	U.S.	Northeast	Midwest	South	West
Number of farms	31,975	5,845	7,526	11,562	7,043
Average acres per farm	247	133	199	151	548
Harvested acres	197	82	154	85	521
Harvested vegetable acres	104	40	69	48	285
Share in vegetables ( <i>percent</i> )	52.8	48.8	44.8	56.5	54.7
Gross value of production ( <i>\$/farm</i> )	409,737	105,827	229,110	158,801	1,266,910
			<i>Dollars per farm</i>		
<b>Variable cash expenses</b>	240,510	82,649	98,851	115,911	727,441
Livestock-related <sup>1</sup>	1,273	1,701	412	603	2,937
Seed and plants	23,636	8,043	8,894	9,765	75,101
Fertilizer and chemicals	51,158	14,386	21,362	23,946	158,185
Labor	87,120	28,567	34,394	47,970	256,323
Fuels and oils	14,691	7,043	7,042	7,331	41,294
Repairs and maintenance	16,532	8,063	8,202	6,686	48,622
Machine-hire and custom work	8,272	1,129	4,724	2,817	26,946
Utilities	11,515	2,742	3,161	2,744	42,118
Other variable expenses <sup>2</sup>	26,315	10,973	10,658	14,048	75,915
<b>Fixed cash expenses</b>	48,079	13,023	22,970	15,727	157,113
Real estate and property taxes	4,511	4,078	3,629	1,711	10,409
Interest	8,217	2,916	4,725	3,602	23,924
Insurance premiums	6,194	3,350	3,805	3,129	16,138
Rent and lease payments	29,157	2,679	10,811	7,285	106,641
<b>Total cash expenses</b>	288,590	95,432	121,821	131,638	884,554
<b>Total noncash and imputed expenses</b>	51,370	42,377	44,813	29,539	101,679
Depreciation	14,300	6,866	10,112	5,874	38,778
Labor, noncash benefits	526	259	376	302	1,275
Charge to operator and unpaid labor	25,618	31,108	28,755	18,179	29,921
Charge to management	10,926	4,144	5,570	5,184	31,705
<b>Total economic (long-term) expenses</b>	339,960	138,049	166,634	161,177	986,232
			<i>Percent</i>		
<b>Selected financial ratios</b>					
Cash expense ratio	77.50	88.92	76.54	78.74	76.47
Economic expense ratio	87.93	112.93	95.23	91.10	83.84

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

**Average regional farm expenses for specialized vegetable and melon farms, 1998-2006**

Item	U.S.	Northeast	Midwest	South	West
Number of farms	29,803	5,654	7,397	10,191	6,560
Average acres per farm	261	136	202	165	587
Harvested acres	199	82	150	90	524
Harvested vegetable acres	108	47	71	50	292
Share in vegetables ( <i>percent</i> )	54.3	57.3	47.3	55.6	55.7
Gross value of production ( <i>\$/farm</i> )	372,551	107,946	163,875	154,846	1,174,163
			<i>Dollars per farm</i>		
<b>Variable cash expenses</b>	224,947	79,027	85,334	111,172	684,918
Livestock-related <sup>1</sup>	1,190	1,172	824	675	2,417
Seed and plants	20,897	8,160	8,902	9,448	63,190
Fertilizer and chemicals	48,090	14,658	21,052	22,866	146,582
Labor	84,034	25,463	27,226	47,607	255,172
Fuels and oils	10,645	5,233	4,986	5,850	29,139
Repairs and maintenance	14,905	7,710	8,028	6,502	41,918
Machine-hire and custom work	9,601	2,120	3,216	2,245	34,679
Utilities	12,701	2,815	3,054	2,767	47,535
Other variable expenses <sup>2</sup>	22,884	11,697	8,046	13,211	64,286
<b>Fixed cash expenses</b>	46,310	16,023	22,325	17,042	144,932
Real estate and property taxes	4,309	4,380	2,786	1,907	9,698
Interest	9,144	4,823	4,889	5,006	24,094
Insurance premiums	5,664	3,463	3,715	2,931	14,003
Rent and lease payments	27,193	3,357	10,935	7,198	97,136
<b>Total cash expenses</b>	271,257	95,051	107,659	128,215	829,850
<b>Total noncash and imputed expenses</b>	53,343	40,061	42,832	32,292	109,363
Depreciation	15,441	7,395	10,856	7,537	39,829
Labor, noncash benefits	452	347	185	258	1,145
Charge to operator and unpaid labor	23,811	27,230	25,901	17,878	27,724
Charge to management	13,639	5,089	5,890	6,619	40,652
<b>Total economic (long-term) expenses</b>	324,601	135,112	150,490	160,507	939,200
			<i>Percent</i>		
<b>Selected financial ratios</b>					
Cash expense ratio	79.95	85.69	76.92	81.78	79.46
Economic expense ratio	92.61	112.09	99.62	97.84	88.33

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

**Average farm expenses for specialized vegetable and melon farms, by farm size, 1998-2000**

Item	Value of production			
	Small Less than \$40,000	Medium \$40,000-\$249,999	Large \$250,000-\$999,999	Very large \$1,000,000 or more
Number of farms	22,055	4,300	3,533	1,813
Average acres per farm	56	243	653	2,019
Harvested acres	18	123	452	1,793
Harvested vegetable acres	7	70	213	1,055
Share in vegetables ( <i>percent</i> )	38.9	56.9	47.1	58.8
Gross value of production ( <i>\$/farm</i> )	6,662	110,917	516,029	3,906,933
	<i>Dollars per farm</i>			
<b>Variable cash expenses</b>	9,287	64,224	329,319	2,413,278
Livestock-related <sup>1</sup>	318	464	3,284	9,960
Seed and plants	935	6,649	29,786	184,449
Fertilizer and chemicals	2,126	16,303	76,022	501,588
Labor	970	18,392	116,618	1,018,687
Fuels and oils	707	5,318	18,043	66,922
Repairs and maintenance	1,766	5,939	24,765	137,100
Machine-hire and custom work	605	2,832	12,442	110,742
Utilities	556	3,311	16,732	124,152
Other variable expenses <sup>2</sup>	1,303	5,016	31,627	259,678
<b>Fixed cash expenses</b>	4,789	16,239	68,002	487,157
Real estate and property taxes	1,470	2,909	6,350	25,412
Interest	1,884	4,150	20,063	95,546
Insurance premiums	877	3,003	10,504	45,887
Rent and lease payments	558	6,177	31,085	320,312
<b>Total cash expenses</b>	14,076	80,463	397,322	2,900,435
<b>Total noncash and imputed expenses</b>	17,013	41,962	89,236	313,676
Depreciation	1,225	8,932	32,211	122,813
Labor, noncash benefits	23	152	1,191	2,416
Charge to operator and unpaid labor	15,249	26,955	30,405	29,976
Charge to management	516	5,923	25,429	158,471
<b>Total economic (long-term) expenses</b>	31,090	122,425	486,557	3,214,111
	<i>Percent</i>			
<b>Selected financial ratios</b>				
Cash expense ratio	137.95	68.26	78.30	83.83
Economic expense ratio	196.70	100.52	96.54	90.64

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

**Average farm expenses for specialized vegetable and melon farms, by farm size, 2001-03**

Item	Value of production			
	Small Less than \$40,000	Medium \$40,000-\$249,999	Large \$250,000-\$999,999	Very large \$1,000,000 or more
Number of farms	16,146	5,057	2,551	1,979
Average acres per farm	46	173	664	1,984
Harvested acres	17	105	512	1,830
Harvested vegetable acres	9	53	231	1,116
Share in vegetables ( <i>percent</i> )	52.9	50.5	45.1	61.0
Gross value of production ( <i>\$/farm</i> )	8,382	100,589	557,278	4,353,269
	<i>Dollars per farm</i>			
<b>Variable cash expenses</b>	8,944	71,974	372,070	2,499,491
Livestock-related <sup>1</sup>	483	746	805	--
Seed and plants	1,403	8,201	36,696	235,582
Fertilizer and chemicals	1,084	13,986	87,361	534,708
Labor	1,629	21,836	122,252	970,448
Fuels and oils	751	4,909	18,045	88,683
Repairs and maintenance	1,687	8,121	32,888	127,048
Machine-hire and custom work	145	2,589	18,444	132,048
Utilities	556	3,679	22,665	187,690
Other variable expenses <sup>2</sup>	1,207	7,905	32,914	216,531
<b>Fixed cash expenses</b>	3,736	13,527	79,579	491,607
Real estate and property taxes	1,358	2,423	5,814	39,731
Interest	1,421	3,904	16,300	84,411
Insurance premiums	574	3,638	14,268	46,359
Rent and lease payments	382	3,563	43,197	321,106
<b>Total cash expenses</b>	12,680	85,502	451,649	2,991,098
<b>Total noncash and imputed expenses</b>	20,906	51,004	115,364	403,070
Depreciation	1,229	9,443	47,228	168,523
Labor, noncash benefits	40	481	998	4,157
Charge to operator and unpaid labor	19,130	35,361	38,650	55,346
Charge to management	507	5,719	28,488	175,044
<b>Total economic (long-term) expenses</b>	33,584	136,506	567,013	3,394,167
	<i>Percent</i>			
<b>Selected financial ratios</b>				
Cash expense ratio	120.27	75.40	77.39	80.00
Economic expense ratio	202.17	116.18	94.04	89.61

-- = Insufficient data for legal disclosure or standard error is greater than 75 percent of the estimates.

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).



**Average farm expenses for specialized vegetable and melon farms, by farm size, 2004-06**

Item	Value of production			
	Small Less than \$40,000	Medium \$40,000-\$249,999	Large \$250,000-\$999,999	Very large \$1,000,000 or more
Number of farms	22,486	4,879	2,032	2,578
Average acres per farm	41	188	544	1,919
Harvested acres	13	97	416	1,812
Harvested vegetable acres	7	53	191	972
Share in vegetables ( <i>percent</i> )	53.8	54.6	45.9	53.6
Gross value of production ( <i>\$/farm</i> )	6,947	107,808	511,963	4,413,493
	<i>Dollars per farm</i>			
<b>Variable cash expenses</b>	8,654	92,643	358,805	2,449,263
Livestock-related <sup>1</sup>	498	1,378	2,470	6,893
Seed and plants	856	15,728	32,362	230,411
Fertilizer and chemicals	1,118	17,335	79,499	529,260
Labor	1,045	28,755	133,620	911,632
Fuels and oils	1,099	9,128	24,453	136,071
Repairs and maintenance	1,785	6,591	27,278	155,489
Machine-hire and custom work	73	1,622	11,359	89,929
Utilities	590	3,745	14,724	118,965
Other variable expenses <sup>2</sup>	1,591	8,363	33,039	270,614
<b>Fixed cash expenses</b>	3,626	16,404	68,704	479,469
Real estate and property taxes	1,577	2,769	6,989	31,442
Interest	1,170	4,680	15,600	70,554
Insurance premiums	586	3,685	14,089	53,629
Rent and lease payments	292	5,269	32,027	323,844
<b>Total cash expenses</b>	12,280	109,047	427,510	2,928,732
<b>Total noncash and imputed expenses</b>	23,696	44,259	94,368	272,313
Depreciation	1,347	6,293	29,791	130,220
Labor, noncash benefits	119	237	1,197	4,095
Charge to operator and unpaid labor	21,712	32,129	39,517	36,414
Charge to management	518	5,600	23,863	101,584
<b>Total economic (long-term) expenses</b>	35,976	153,306	521,978	3,201,045
	<i>Percent</i>			
<b>Selected financial ratios</b>				
Cash expense ratio	119.60	93.68	79.06	75.44
Economic expense ratio	192.94	124.91	94.59	80.73

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).

**Average farm expenses for specialized vegetable and melon farms, by farm size, 1998-2006**

Item	Value of production			
	Small Less than \$40,000	Medium \$40,000-\$249,999	Large \$250,000-\$999,999	Very large \$1,000,000 or more
Number of farms	20,229	4,745	2,705	2,123
Average acres per farm	48	199	629	1,968
Harvested acres	16	108	462	1,812
Harvested vegetable acres	8	58	213	1,041
Share in vegetables ( <i>percent</i> )	50.0	53.7	46.1	57.5
Gross value of production ( <i>\$/farm</i> )	7,225	106,182	527,975	4,250,632
	<i>Dollars per farm</i>			
<b>Variable cash expenses</b>	8,961	76,717	350,136	2,454,626
Livestock-related <sup>1</sup>	428	877	2,301	7,722
Seed and plants	1,030	10,312	32,603	218,938
Fertilizer and chemicals	1,475	15,833	80,456	523,078
Labor	1,173	23,167	122,645	960,368
Fuels and oils	864	6,478	19,648	101,672
Repairs and maintenance	1,752	6,938	27,947	141,421
Machine-hire and custom work	285	2,331	14,057	108,936
Utilities	569	3,591	18,094	141,790
Other variable expenses <sup>2</sup>	1,384	7,189	32,385	250,701
<b>Fixed cash expenses</b>	4,078	15,332	71,816	485,427
Real estate and property taxes	1,480	2,688	6,341	32,301
Interest	1,496	4,245	17,763	81,971
Insurance premiums	689	3,462	12,585	49,167
Rent and lease payments	413	4,937	35,127	321,988
<b>Total cash expenses</b>	13,039	92,049	421,952	2,940,053
<b>Total noncash and imputed expenses</b>	20,524	45,962	98,732	324,702
Depreciation	1,271	8,209	36,325	140,011
Labor, nonash benefits	63	298	1,132	3,636
Charge to operator and unpaid labor	18,676	31,715	35,277	40,463
Charge to management	514	5,740	25,998	140,592
<b>Total economic (long-term) expenses</b>	33,564	138,011	520,684	3,264,756
	<i>Percent</i>			
<b>Selected financial ratios</b>				
Cash expense ratio	126.38	79.50	78.18	79.09
Economic expense ratio	196.59	114.45	95.18	86.12

<sup>1</sup>Includes expenses related to the production of farm animals such as livestock purchases, feed, livestock leasing, medical supplies, veterinary, custom, pasturing, grazing, and bedding.

<sup>2</sup>Includes supplies, transportation, storage, general business expenses, and registration fees.

Source: Prepared by ERS using data from USDA's Agricultural Resource Management Survey (ARMS).