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# New York Economic Handbook 2011


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# Table of Contents



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This publication contains information pertaining to the general economic situation and New York agriculture. It is prepared primarily for use by professional agricultural workers in New York State. USDA reports provide current reference material pertaining to the nation's agricultural situation. Many of these reports are available on the internet. Click on "Newsroom" at the following website: *http://www.usda.gov/wps/portal/usdahome*

The chapters in this handbook are available in PDF format on the Applied Economics and Management outreach website: *http://aem.cornell.edu/outreach/publications.htm*

# Chapter 1. Websites for Economic Information and Commentary

William Schulze, Professor

1. http://rfe.org *Resources for Economists*
   This American Economics Association website has an encyclopedic list of all sorts of web-based economics sites.

2. http://www.economagic.com/ *Economagic -- Economic Times Series Page*
   Economagic is an excellent site for all kinds of U.S. economic data, including national income accounts, the Federal Reserve, the Bureau of Labor Statistics and more. The site includes a very useful graphing function and allows downloads to excel worksheets as well as simple statistical functions.

3. http://www.econstats.com/ *Economic Statistics*

   EconStats is another site with links to all kinds of US data. It also has links to data for many other countries.

4. http://www.whitehouse.gov/issues/economy/ *Economics Statistics Briefing Room*
   This is the White House site for overall economics statistics. This also includes links to other parts of the government.

5. http://www.cbpp.org/ *Center on Budget and Policy Priorities*
   The Center on Budget and Policy Priorities is a non-partisan web site that focuses on economic policies related to the budget and their effects on low- and moderate-income people.

6. http://www.argmax.com/ *ArgMax*
   This is an excellent site for economic news, data links and analysis.

7. http://www.econlib.org/ *Library of Economics and Liberty*
   The Library of Economics and Liberty web site features articles and links to many books and other economics related resources.

8. http://www.heritage.org/ *Heritage Foundation*
   The Heritage Foundation comments on economic policy from a conservative viewpoint. This link takes you to a very useful federal budget calculator that will help you understand what the federal government spends its money on and where they get the money from.

9. http://www.kowaldesign.com/budget/ *Budget Explorer*
   This site contains a budget explorer which I like because it allows you not only to calculate your own budget but also links to the various executive branch departments with spending authority, so you can see exactly where the money is going.

10. http://www.concordcoalition.org/ *The Concord Coalition*
    The Concord Coalition is a non-partisan group advocating a balanced budget. Their site contains very useful graphs and projections showing what current taxing and spending proposals mean for the federal budget in the years ahead.

11. http://www.economy.com/dismal/ *The Dismal Scientist*
    This is a very good web site for evaluations of current statistics and policy.

12. http://www.federalbudget.com/ *National Debt Awareness Center*
    The National Debt Awareness Center has a useful graph providing up to date information on the size of the national debt and what the Federal Government is spending money on.

13. http://www.ombwatch.org/ *OMB Watch*
    OMB Watch is another web site devoted to information on what is happening to the federal budget.

14. http://www.brook.edu/default.htm *The Brookings Institution*
    The Brookings Institution publishes lots of good articles on current economic and political policy.

15. http://www.realtor.org *National Assoc. of Realtors*
    Check this site if you want information on real estate.

16. http://www.census.gov/ *U.S. Census Bureau*
    The U.S. Census Bureau web site provides demographic and population numbers.

17. http://www.briefing.com/Investor/Index.htm *Briefing.com*
    For a more in-depth analysis of stock and bond markets and the factors that influence them, check out Briefing.com.

18. http://www.imf.org/ *International Monetary Fund*
    The International Monetary Fund is an excellent site for data on all member countries, with a particular emphasis on balance of payments, exchange rate and financial/monetary data.

19. http://worldbank.org/ *The World Bank Group*
    The World Bank has cross country data on a wide variety of subjects.

20. http://www.undp.org/ *United Nations Development Programme*
    The UNDP has cross country data with a particular focus on measures of human welfare and poverty.

21. http://www.fao.org/ *Food and Agriculture Organization of the UN*
    The Food and Agriculture Organization of the UN has cross country information on food and agriculture.

22. http://datacentre2.chass.utoronto.ca/pwt/ *Penn World Tables*
    The Penn World Tables are a useful source for a variety of economic data series not available from other sources.

23. http://www.bls.gov/fls/ *U.S. Department of Labor, Foreign Labor Statistics*
    The Foreign Labor Statistics program provides international comparisons of hourly compensation costs; productivity and unit labor costs; labor force, employment and unemployment rates; and consumer prices. The comparisons relate primarily to the major industrial countries, but other countries are included in certain measures.

24. http://aem.cornell.edu/people/profiles/schulze.php *Professor Schulze's webpage*
    Visit my faculty page on the Dyson School website at Cornell University.

# Chapter 2. The Marketing System

Kristen S. Park, Extension Associate

**Special Topic – Understanding Food Deserts and the Larger Issues of Accessibility and Demand**

The food production and distribution system in the United States is believed to be one of the most efficient worldwide. It produces the most inexpensive food to its population when measured by food expenditures as a percent of disposable income. It is also true that many people in the United States go hungry, unable to afford food. At the same time, it is also true that obesity and diet-related diseases are growing and are a major public health dilemma.

In addition to battling hunger and obesity by changing individual behaviors, focus has been directed toward changing factors that can be influenced by public policy. One such focus has been a focus on "food deserts," a term used to describe areas or communities with limited access to healthy, nutritious food. But what is a food desert, and what, if any, impact does it have on public health?

The 2008 Farm Bill defines a food desert as, "an area in the United States with limited access to affordable and nutritious food, particularly an area composed of predominantly lower income neighborhoods and communities." And Congress directed the United States Department of Agriculture (USDA) to conduct a study to analyze the extent of limited access, identify characteristics and causes of lack of access, and the effects on the population.

One frequently used measure of accessibility is the distance consumers live from a supermarket, as supermarkets provide the most abundant healthy food choices at reasonably low prices. Findings from the USDA study indicate about 5.5% of U.S. households live more than 1/2 mile away from a supermarket and do not have easy access to transportation (Table 2 – 1). Limited accessibility occurs in both rural and urban areas. An interesting finding to note is that low-income households living outside of low-income areas are farther, in general, from supermarkets than low-income people living in low-income areas.

TABLE 2 – 1. HOUSEHOLD VEHICLE ACCESS AND SUPERMARKET ACCESS

| Geographic area | Total households | Btw ½ to 1 mile from a supermarket | | More than 1 mile from a supermarket | |
|---|---|---|---|---|---|
| | *million* | number | percent | number | percent |
| Total U.S. | 104.9 | 3.4 | 3.2 | 2.4 | 2.3 |
| Low-income areas | 25.1 | 1.6 | 6.4 | 0.9 | 3.8 |
| Urban areas | 69.9 | 2.9 | 4.1 | 1.1 | 1.5 |
| Low-income areas | 15.6 | 1.3 | 8.3 | 0.4 | 2.5 |
| Rural areas | 25.3 | 0.2 | 0.8 | 1.1 | 4.4 |
| Low-income areas | 5.9 | 0.1 | 1.7 | 0.4 | 7.4 |

Source: USDA-ERS. *Access to Affordable and Nutritious Food.* Report to Congress. June 2009. http://www.ers.usda.gov/Publications/AP/AP036/AP036.pdf

Neighborhoods are served by many outlets other than supermarkets, including smaller grocery stores and convenience stores, specialty meat and produce stands, drug stores and dollar stores, and

restaurants and fast food establishments. What may be more interesting when looking at causes of obesity, is easy access and affordability to all (too many) foods.

Does better accessibility to supermarkets, and presumably a healthy food selection, cause healthier populations? The USDA report conducted a literature review to try to assess this. The literature appears to show a positive impact of better access to healthier foods and increases in these food purchases; however, when researchers try to link this to better health outcomes, such as lower Body Mass Indices (BMIs) and sustainability of better diets, they have been unable to do so. One researcher (Rose et al. 2009) has coined the phrase "food swamps" in describing areas where unhealthy foods are abundant.

Spatial proximity to healthy food is understood to be only one factor of consumer food demand. Affordability and convenience impact access to food. The demand for foods is impacted by food preparation abilities, food preferences and eating habits, awareness and knowledge about food system attributes, decision-making about access and related family and community dynamics, consumer health, capacities for growing and processing food, and others.

While it is uncertain what the real impacts and solutions are to food deserts, food system players need to be engaged in this area of social need. Actions by the food system can help find solutions by changing supply chain management to get healthy foods into communities of special need; we can work with economic development and city government to develop and/or modify retail formats; we can develop healthy and popular food assortments for ethnic or cultural communities to fit into community retail outlets; and we can help educate consumers and increase their awareness of healthy food choices.

In summary:

- Access to a supermarket is a problem for a small number of households
- Agreement does not exist on the notion of what measures adequate (or inadequate) access to a supermarket
- Easy access to all food, particularly less healthy food, may be a more important issue
- Consumer behavior, preferences and cultural issues are important factors which must be considered
- Research is lacking in establishing a causal link between access and nutritional outcomes
- Understanding the market conditions that contribute to differences in food access is essential in policy interventions

**Nontraditional Discount Food Stores**

Previous studies have indicated that food prices from nontraditional discount food retailers can be significantly lower than mainstream supermarket prices. These discount food stores include supercenters, mass merchandisers, wholesale club stores, and dollar stores. USDA-ERS released a study October 2010 with a more in-depth analysis than has previously been available.

Major findings include:

- 86% of broad food groups had lower prices in nontraditional stores than in traditional stores.
- Prices were 7.5% lower for identical UPC level products in nontraditional stores and ranged from 3% to 28% lower.
- About 28% of food dollars for food-at-home are spend at nontraditional stores.
- Meat products were discounted most heavily.
- All canned products were significantly lower, including store brand, national brand, and UPC level.
- Price differences between nontraditional and traditional store brands were larger than between national branded goods.

Nontraditional food retailers could offer a solution to accessibility in some communities. The "extreme value" or "hard discounters" such as Aldi and Save-a-lot are small footprint stores with real estate strategies that may be more compatible with urban food desert trade areas. They are lower cost operations with lower prices than even supercenters, historically operate in highly concentrated populations. About 95 % of their offerings are food and related products with limited nonfood (alcohol, tobacco, impulse merchandise) items. They look more like small neighborhood stores and target low-middle income consumers.

These extreme value retailers operate on such low prices because they have limited product assortment, offering one brand/one size per product, and 95% of their products are store brands. Stores are modestly appointed with extremely efficient store operations.

Urban areas with limited access to affordable, healthy food choices may be logical may be a logical fit with extreme value or other nontraditional food retailer.

How much lower are prices at nontraditional stores?

| | % of products in NT stores with lower prices | Dairy | Meat | Fruits & Vegetables | Grains |
|---|---|---|---|---|---|
| | | | % | | |
| Broad | 89 | 23 | 54 | 13 | 16 |
| Same Brand | 76 | 2 – 16 | 13 – 47 | 2 – 25 | 9 – 62 |
| Same Weight | 95 | 2 – 17 | 5 – 32 | 2 – 23 | 1 – 50 |
| Same UPC | 82 | 3 – 14 | 6 – 17 | 2 – 17 | 3 – 28 |

Source: USDA-ERS. *How Much Lower Are Prices at Discount Stores? An Examination of Retail Food Prices.* Economic Research Report No. (ERR-105) 51 pp, October 2010.
http://www.ers.usda.gov/Publications/ERR105/

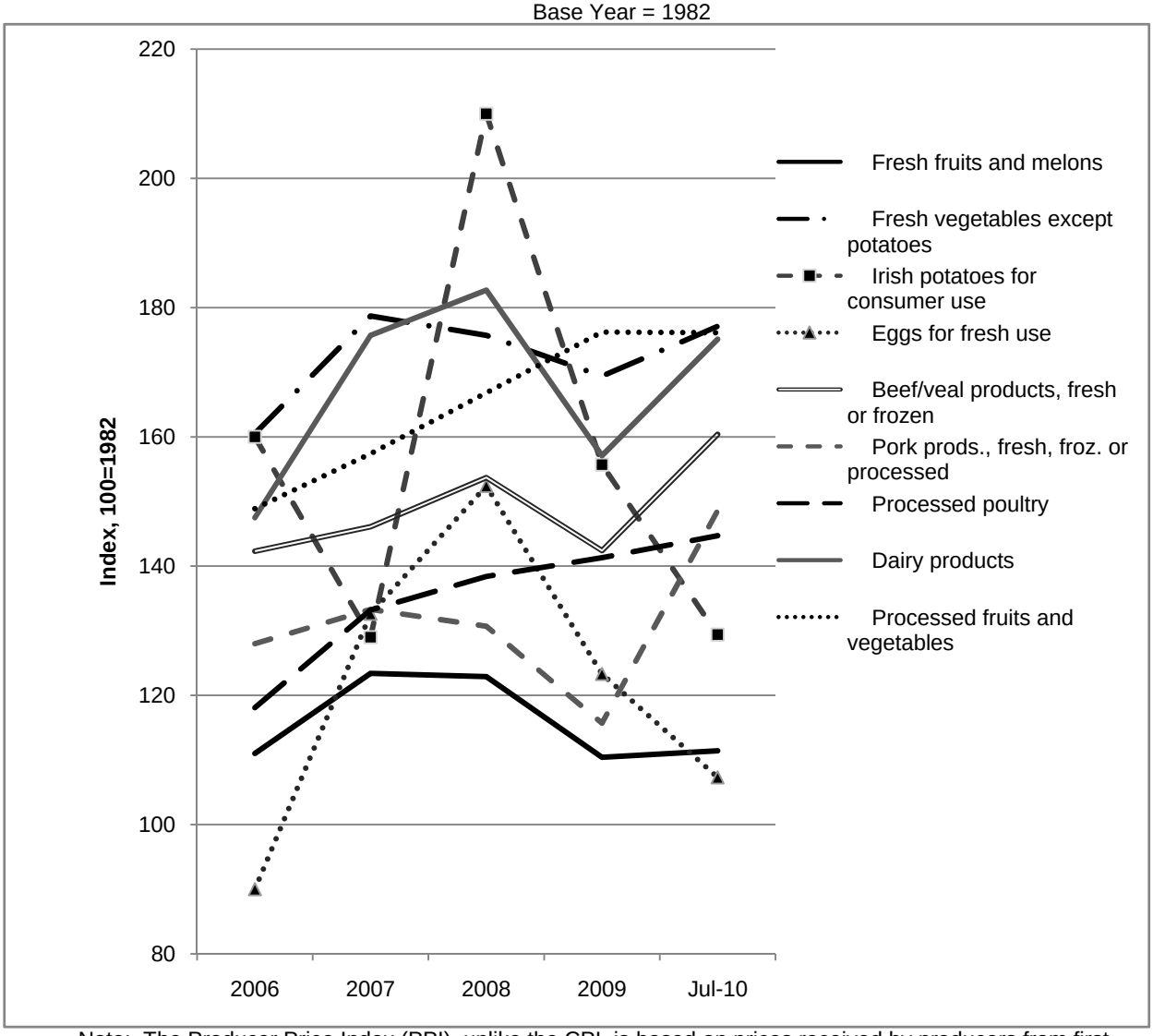
## The U.S. Food Marketing System Update

### The Producer Price Index

The Producer Price Index has demonstrated its propensity for volatility. The PPI in 2007 first started increasing for most major production groups, then plummeted in 2009. In 2010 it has now started recovering to 2007 levels (Figure 2 – 1).

FIGURE 2 – 1. PRODUCER PRICE INDICES, FARM PRODUCTS

Base Year = 1982




Note: The Producer Price Index (PPI), unlike the CPI, is based on prices received by producers from first point of sale. This index is based off the year 1982. For example, a PPI of 100.0 reflects a farm price equal to that of the base year, 1982.

Source: USDA-ERS, Agricultural Outlook http://www.ers.usda.gov/publications/Agoutlook/AOTables/ last updated October 2010.

When the farm value of food produced and consumed in the United States is compared to its retail value the data historically show continuous declines in farm value share (Table 2 – 2). Rebounding producers prices in 2010 may have had a temporary effect, but unless farmers capture more of the marketing system costs assessed beyond the farm gate, the value-added stage of the food system, farm shares will continue to decline.

TABLE 2 – 2. FARM VALUE AS A PERCENT OF RETAIL VALUE

| | 2007 | 2008 | 2009 |
|---|---|---|---|
| | *% of retail value* | | |
| Market basket[1] | 23.6 | 22.9 | 19.8 |
| Meat products | 32.4 | 31.2 | 28.8 |
| Dairy products | 37.7 | 33.2 | 25.3 |
| Poultry | 43.3 | 41.4 | 38.4 |
| Eggs | 44.8 | 46.3 | 38.0 |
| Cereal and bakery products | 8.2 | 9.6 | 6.9 |
| Fresh fruit | 16.6 | 15.8 | 14.9 |
| Fresh vegetables | 19.6 | 18.7 | 19.0 |
| Processed fruits and vegetables | 17.2 | 17.2 | 17.0 |

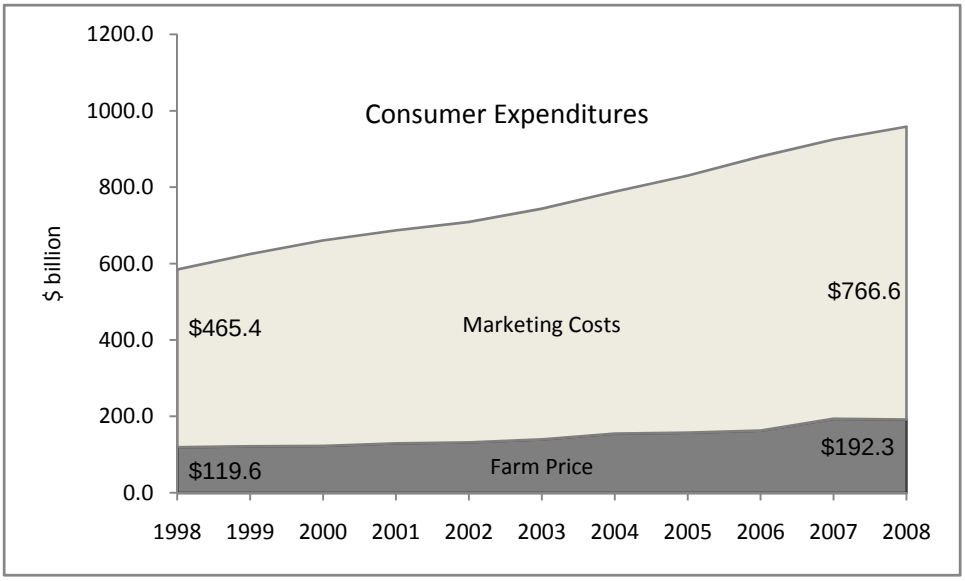
[1] Retail costs are based on CPI-U of retail prices for domestically produced farm foods, published monthly by the Bureau of Labor Statistics (BLS). Farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for by-product. Farm values are based on prices at first point of sale, and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail value and farm value, represents charges for assembling, processing, transporting, and distributing.

Source: USDA-ERS, Agricultural Outlook: Statistical Indicators, Table 8. Farm – Retail Price Spreads http://www.ers.usda.gov/publications/Agoutlook/AOTables/

**The Marketing System**

The Marketing System in the United States is responsible for all the costs incurred in getting food from the farmers gate into the hands of the consumer. It covers transportation and storage, processing, handling, distribution, marketing, and retail. As the U.S. consumer has demanded food in more convenient forms, these costs have increased at a faster rate than farmers costs and profits. USDA calculates marketing costs for food produced and consumed in the United States. In 2008, the latest data, consumer expenditures for food produced in the U.S. totaled $958.9 billion (Figure 2 – 2). The farm value portion was $192.3 billion or 20% of expenditures. The remainder of food expenditures, $766.6 billion, are associated with marketing costs, including labor, packaging, transportation, energy, profits, advertising, depreciation, rent, interest, repairs, business taxes, and other costs.

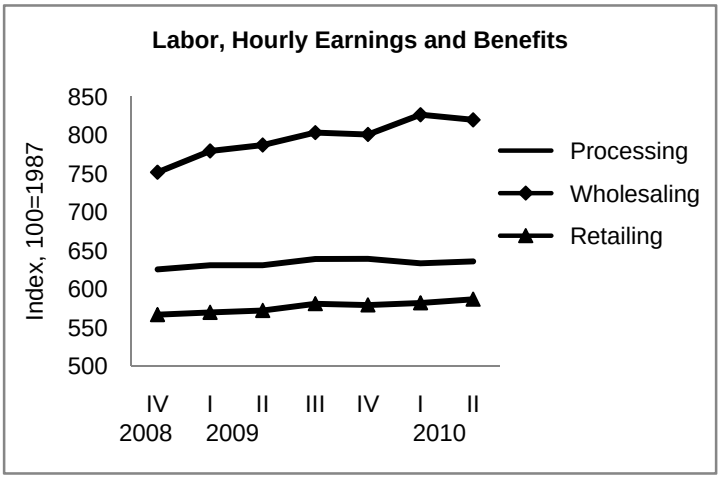
FIGURE 2 – 2. MARKETING COSTS: FARM BILL AND CONSUMER EXPENDITURES

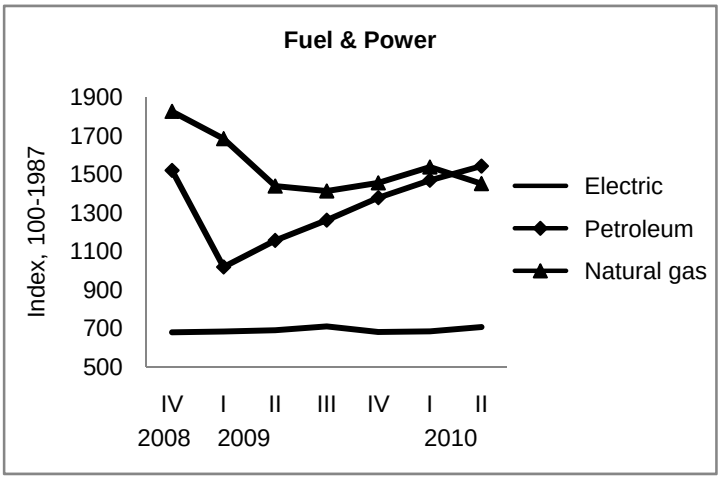



Source: USDA-ERS. Briefing Room, Food Marketing System in the U.S. Price Spreads from Farm to Consumer, http://www.ers.usda.gov/Data/FarmToConsumer/marketingbill.htm. updated November 29, 2010.

Labor costs are the greatest portion of all marketing system costs, roughly 38%. Wage rates in the food marketing industries drive the labor costs. Apparently, wholesale wage rates indexed off of 1987 rates show actual increases in the last 2 years, although processing and retail wage rates remain relatively stagnant (Figure 2 – 2). Energy costs are roughly only 4% of marketing costs, yet have shown extreme volatility in the past. Energy costs have risen sharply this quarter which are not reflected in Figure 2 – 3.

FIGURE 2 – 3. PRICE INDEXES OF SELECTED FOOD MARKETING COSTS




Source: USDA-ERS, Agricultural Outlook: Statistical Indicators, Farm-Retail Spreads, Table 9 http://www.ers.usda.gov/Publications/AgOutlook/AOTables/

**The Consumer Price Index**

The recession hit every household income bracket in 2009. While 2008 may have seen the greatest food inflation in recent decades, 2009 saw food sales slip in several prime food store departments. In 2010 food inflation is anticipated to return to about 2.0% – 3.0%, levels normally seen from 1997 – 2007.

Two major factors contributing to a return to food price inflation are an increase in commodity prices for grains and a sharp increase in energy prices. While inflation is not necessarily bad, unemployment levels and wage rates may not be in line with anticipated inflation rates, especially in energy prices.

In 2011, fruits and vegetables, both processed and fresh, as well as meats and eggs should see retail price increases on average of 2.5%-3.5% (Table 2 – 3). Dairy prices at retail are estimated to have the highest CPI of the major food groups, 4.5%-5.5%.

TABLE 2 – 3. CHANGES IN FOOD PRICES, 2008 THROUGH 2011

| Consumer Price Indexes | 2008 | 2009 | 2010 est. | 2011 est. |
|---|---|---|---|---|
| | | *Percent Change* | | |
| **All food** | 5.5 | 1.8 | 0.5 to 1.5 | 2.0 to 3.0 |
| Food away from home | 4.4 | 3.5 | 1.0 to 2.0 | 2.0 to 3.0 |
| Food at home | 6.4 | 0.5 | 0.5 to 1.5 | 2.0 to 3.0 |
| Meats, poultry, and fish | 4.2 | 0.5 | 1.5 to 2.5 | 2.5 to 3.5 |
| Meats | 3.5 | -0.6 | 2.0 to 3.0 | 2.5 to 3.5 |
| Beef and Veal | 4.5 | -1.0 | 2.5 to 3.5 | 2.5 to 3.5 |
| Pork | 2.3 | -2.0 | 4.5 to 5.5 | 3.0 to 4.0 |
| Other meats | 3.1 | 2.3 | 0.0 to 1.0 | 1.5 to 2.5 |
| Poultry | 5.0 | 1.7 | 0.0 to 1.0 | 2.0 to 3.0 |
| Fish and seafood | 6.0 | 3.6 | 1.0 to 2.0 | 2.5 to 3.5 |
| Eggs | 14.0 | -14.7 | 1.5 to 2.5 | 2.5 to 3.5 |
| Dairy products | 8.0 | -6.4 | 1.5 to 2.5 | 4.5 to 5.5 |
| Fats and oils | 13.8 | 2.3 | 0.0 to 1.0 | 2.0 to 3.0 |
| Fruits and vegetables | 6.2 | -2.1 | 0.5 to 1.5 | 2.5 to 3.5 |
| Fresh fruits & vegetables | 5.2 | -4.6 | 0.5 to 1.5 | 2.5 to 3.5 |
| Fresh fruits | 4.8 | -6.1 | 0.0 to 1.0 | 2.5 to 3.5 |
| Fresh vegetables | 5.6 | -3.4 | 1.5 to 2.5 | 2.5 to 3.5 |
| Processed fruits & vegetables | 9.5 | 6.6 | 0.0 to 1.0 | 2.5 to 3.5 |
| Sugar and sweets | 5.5 | 5.6 | 2.0 to 3.0 | 1.5 to 2.5 |
| Cereals and bakery products | 10.2 | 3.2 | 1.0 to 2.0 | 2.0 to 3.0 |
| Nonalcoholic beverages | 4.3 | 1.9 | 0.0 to 1.0 | 1.0 to 2.0 |
| Other foods | 5.2 | 3.7 | 0.0 to 1.0 | 2.0 to 3.0 |

Source: USDA-ERS, Food CPI, Prices, and Expenditures,
http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/cpiforecasts.htm

**Retail Sales**

The New Economy is feeling pretty old for many consumers. The term, which was coined last year describing consumers' extremely conservative shopping behavior, has lost some of its impact as consumers begin to replenish items they may have delayed purchasing, such as a new vehicle.

Sales in many retail outlets were up compared to year ago (Table 2 – 4). And yet, the economy does not feel secure. Although sales are up from year ago, we must remember that year ago sales had plummeted and we are probably just seeing recovery to levels similar to 2008. Some sales, for instance food, remain extremely modest. The 3.8% increase in sales in supercenters and warehouse clubs is likely pilfered from supermarket sales as consumers continue to shift their food purchases to lower-priced, nontraditional discount stores.

Sales from Electronic shopping and mail order houses increased 15.1% in 2009 and look like they will increase another roughly 15.6% in 2010. What we don't know without further investigation is what items from these sites have shown the large increases. For example, in the last 2 years, Amazon has been

expanding the assortment of food available off its site. Have increases in electronic sales been for traditional clothing, electronics, or books, or maybe food?

TABLE 2 – 4. ANNUAL RETAIL AND FOOD SERVICE SALES, PERCENT CHANGE FROM YEAR AGO

| Kind of Business | % change from year ago | | | |
|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 est. year to date |
| Retail and food services sales, total | 3.4 | -0.4 | -6.4 | 6.2 |
| Automobile dealers | 0.8 | -14.9 | -13.4 | 10.3 |
| Building mat. and supplies dealers | -4.0 | -6.5 | -15.8 | 0.0 |
| Supermarkets and other grocery (except convenience) stores | 4.7 | 5.1 | -0.8 | 1.6 |
| Beer, wine, and liquor stores | 5.9 | 6.3 | -2.2 | 2.6 |
| Pharmacies and drug stores | 4.9 | 3.1 | 7.1 | 2.2 |
| Gasoline stations | 5.9 | 9.6 | -22.1 | 17.9 |
| Clothing stores | 4.8 | -2.2 | -4.0 | 4.0 |
| Hobby, toy, and game stores | 3.5 | 6.7 | -6.4 | 11.2 |
| Department stores(excl. discount department stores) | -3.0 | -7.0 | -17.2 | 0.7 |
| Warehouse clubs and superstores | 9.1 | 8.5 | 1.7 | 3.8 |
| Used merchandise stores | 7.4 | 5.3 | -7.6 | 15.5 |
| Electronic shopping and mail-order houses | 8.7 | 2.5 | 15.1 | 15.6 |
| Food services and drinking places | 4.8 | 3.5 | 1.4 | 2.5 |

Source: US Department of Commerce, Census Bureau. *Monthly Retail Trade and Food Service Survey*, October 2010. http://www.census.gov/mrts/www/mrts.html

Although food inflation is forecast for 2011 at relatively normal levels, food retailers' pricing strategies as a reaction to food inflation will be difficult. The factors driving the food inflation are increases in food costs and not increases in consumer wages or spending. The combination equals higher costs and weak demand.

Discount retailers, such as Wal-Mart and Target as well as Aldi, will continue with highly competitive pricing strategies. Supermarkets will also have to price competitively and will likely not be allowed to pass on all of the higher food commodity and production costs to consumers.

Because of weak demand, consumers will not increase purchasing in reaction to sales but will shop conservatively and shop multiple locations in order to find the best buys. Because food retailers will likely price very competitively and on small margins, therefore, some speculate that the CPI will not reflect all of the inflation taking place in the supply chain.

**Consumer Food Expenditure Metrics**

Food and beverage sales from retail outlets in 2009 were stagnant. While growth in sales is usually around 3%, total food and beverage sales grew less than 1% (Table 2 – 5). Food away from home and alcoholic beverage sales even slipped and experienced negative growth.

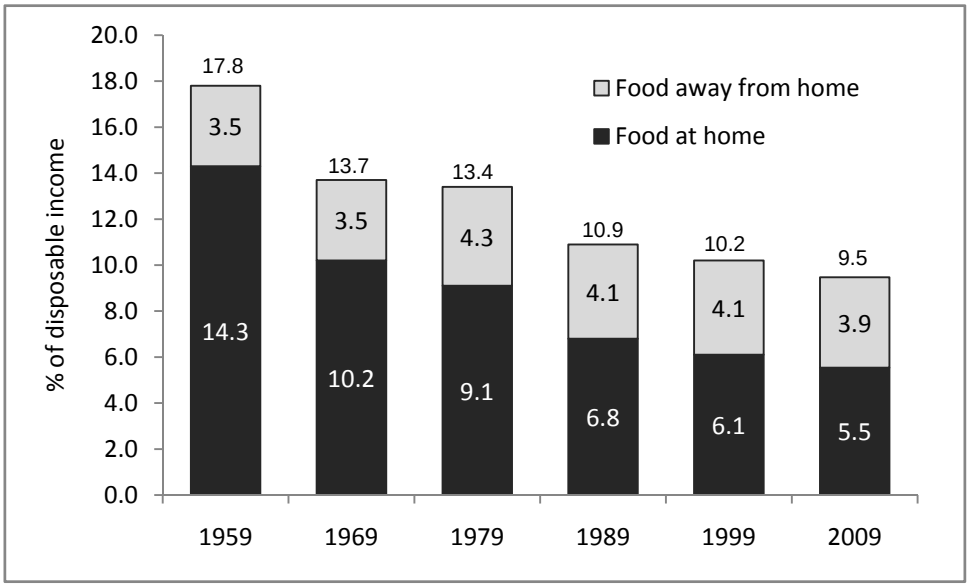
TABLE 2 – 5. FOOD SALES[1]

| Sector | 2008 | Sales 2009 | Increase | Growth |
|---|---|---|---|---|
| | *--$ billion--* | | | |
| Total food and beverage sales | $1,286,235 | $1,293,680 | $7,445 | 0.6% |
| Total food sales (excluding alcohol) | 1,117,897 | 1,126,652 | 8,754 | 0.8 |
| Food at home sales | 589,828 | 600,207 | 10,379 | 1.8 |
| Food away from home sales | 528,069 | 526,445 | (1,625) | (0.3) |
| Alcoholic beverage sales | 168,338 | 167,028 | (1,310) | (0.8) |

[1] Sales only. Does not include home production, donation, or school lunch program expenditures
Source: USDA-ERS, http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/table1.htm. updated June 11, 2010.

Despite the economy, food expenditures as a percent of disposable income remain low. Fifty years ago, families and individuals spent almost 18% of their disposable income on food, while in 2009, food costs only 9.5% of our disposable income (Figure 2 – 4).

FIGURE 2 – 4. FOOD EXPENDITURES AS A SHARE OF DISPOSABLE PERSONAL INCOME




Source: USDA-ERS, Food CPI, Prices and Expenditures.
http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/table1.htm updated June 11, 2010.

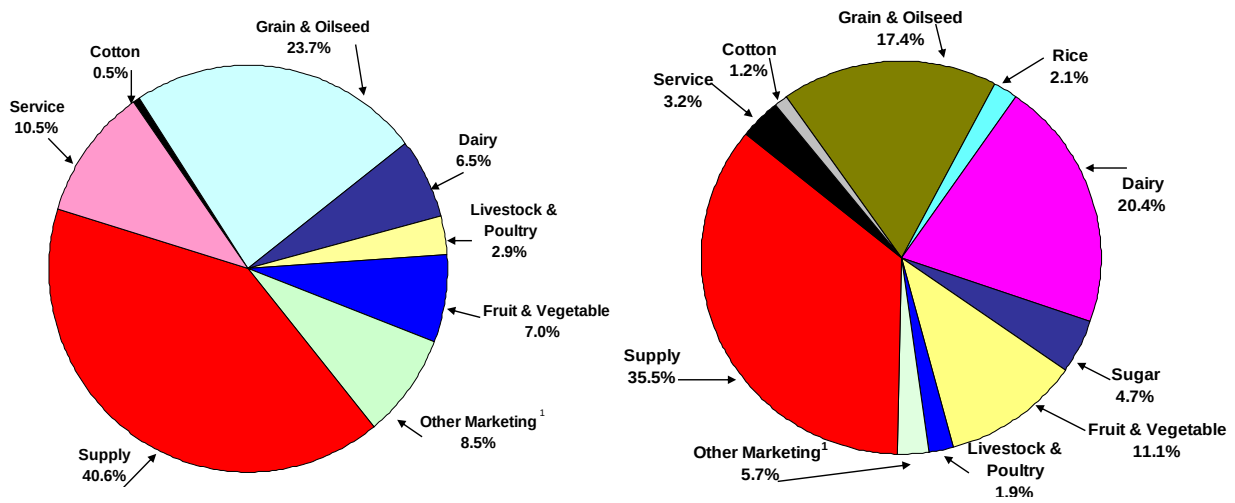
# Chapter 3. Cooperatives

Brian M. Henehan, Sr. Extension Associate, and Todd M. Schmit, Assistant Professor

## U.S. Situation – Farmer Cooperatives

The current distribution of farmer cooperatives (excluding Farm Credit System cooperatives) is shown in Figure 3-1. As of 2009, 2,389 farmer cooperatives in the United States employed 122,600 full-time employees. By number of firms, farm supply (40.6%), grain and oilseed (23.7%), and service (10.5%) were the most abundant. However, when viewed from a size point of view (here, full-time employees), farm supply (35.5%), dairy (20.4%), and grain and oilseed (17.4%) make up the top three. The number of full-time employees should represent a reasonable proxy for business volume. Farm supply cooperatives are prevalent throughout the U.S.; however, grain and oilseed cooperatives are more prominent in the central plains, and dairy cooperatives in the Midwest and Northeast.

FIGURE 3-1. DISTRIBUTION OF NUMBER OF COOPERATIVES AND NUMBER OF FULL-TIME EMPLOYEES, BY COOPERATIVE TYPE, UNITED STATES, 2009.




Source: *Cooperative Statistics 2009*, USDA Rural Development, Service Report 70, November 2010.

Although 2009 brought lower commodity and input prices, U. S. farmer, rancher and fishery cooperatives still experienced the second highest sales and net income below the previous record highs in 2008 (Table 3-1). Gross business volume of $170 billion in 2009 was down 11 percent from the previous year. Net income of $4.4 billion was also the second best showing ever for farmer cooperatives.

Gross marketings of U.S. cooperatives in 2009 were down 13 percent from the previous year. Dairy product sales had the largest decline down more than $9 billion from 2008; followed by declines in grain and oilseed marketing by almost $3 billion; and cotton sales declined by more than $1 billion. A major reason for the decreased value of sales was due to decreased prices for dairy, grain and oilseed products, as well as a decline in total cotton production. However, there were increased cooperative marketings of processed fruits and vegetables, sugar, and tobacco.

Across all cooperatives, the value of total assets decreased by 11 percent, with much of the decrease reflecting lower priced inventory values and receivables. Liabilities fell by 19 percent, while equity capital held by cooperatives increased 4 percent to nearly $24 billion, financing 39 percent of all assets. Patronage income, which is total refunds received from doing business with other cooperatives, grew almost 5 percent to $904 million from $864 million in 2008. In many U.S. rural communities, cooperatives represent the largest employer. The total number of full time employees decreased slightly in 2009 to 123,000 while the use of part-time and seasonal employees increased 7 percent to 58,000.

Memberships in cooperatives decreased 6 percent from 2.4 million in 2008 to 2.2 million in 2009. The decline in memberships has followed an ongoing decline in the number of farms operating in the U.S. Many farmers belong to more than one cooperative, and so farms numbers and memberships are not strictly comparable. The number of cooperatives declined 3 percent from the previous year, continuing a long term trend in mergers and consolidations resulting in larger-sized cooperatives.

Importantly, these statistics do not include cooperative contributions from the Farm Credit System (FCS). As of 2007, the FCS accounted for 37% of total farm debt with 42% in real estate and 31% in non-real estate activities (Deller et al. 2009). Each bank and association of the FCS is its own cooperative, and thus has its own member-elected board of directors. As of 2007, the FCS had over $186 billion in assets, nearly $12 billion in sales revenue, and over $1 billion in wages in benefits. There are approximately 400,000 memberships and 11,000 employees (Deller et al. 2009).

TABLE 3-1. U.S. FARMER COOPERATIVES, COMPARISON OF 2008 AND 2009.

| Item | 2008 | 2009 | Change |
|---|---|---|---|
| | *($ billion)* | *($ billion)* | *percent* |
| **Gross Business Volume** | | | |
| Marketing | 116.8 | 102.1 | -12.6 |
| Farm Supplies | 70.2 | 63.2 | -10.1 |
| Services | 4.8 | 5.0 | 3.4 |
| **Total** | **191.9** | **170.2** | **-11.3** |
| **Balance sheet** | | | |
| Assets | 69.1 | 61.2 | -11.4 |
| Liabilities | 46.1 | 37.3 | -18.9 |
| Equity | 23.0 | 23.8 | 3.7 |
| **Income Statement** | | | |
| Sales (Gross) | 191.9 | 170.2 | -11.3 |
| Patronage income | 0.9 | 0.9 | 4.6 |
| Net income before taxes | 4.8 | 4.4 | -8.9 |
| **Employees** | *(Thousand)* | (Thousand) | |
| Full-time | 124.4 | 122.6 | -1.5 |
| Part-time, seasonal | 53.8 | 57.8 | 7.5 |
| **Total** | **178.2** | **180.4** | **1.2** |
| **Membership** | (Million) 2.4 | (Million) 2.2 | -6.0 |
| **Cooperatives** | (Number) 2,473 | (Number) 2,389 | -3.4 |

Source: *Cooperative Statistics 2009*, USDA Rural Development, Service Report 70, November 2010.

## New York State Situation

Table 3-2 summarizes cooperative numbers, membership, and business volume for New York State. The total number of cooperatives continued to decline, reflecting a national trend resulting from mergers, acquisitions or dissolutions. In 2006, New York agricultural cooperatives numbered 71, this number has dropped to 34 in 2009, primarily due to consolidation of dairy cooperatives. Memberships, however, have been relatively stable. A small drop in memberships over the past few years is primarily the result of declining farm numbers. Note that producers may belong to more than one cooperative, so the numbers of memberships can exceed the number of farms.

Total net business volume for New York based marketing cooperatives declined year over year by almost $121 million primarily due to lower dairy cooperative volume. Fruit and vegetable marketing cooperatives reported an increase in net business volume. Supply cooperatives net business volume increased by $16 million with an increase in all farm inputs except petroleum products. The net business volume related to services declined to $18,700,000 in 2009. As above, these economic contributions do not include those made by the Farm Credit System, an active agricultural lender in the state.

TABLE 3-2. NEW YORK STATE AGRICULTURAL COOPERATIVE NUMBERS, MEMBERSHIPS AND NET BUSINESS VOLUME, 2008 and 2009[1]

| Major Business Activity | Number & Membership (000) Headquartered in State | | | | Net Business Volume | |
|---|---|---|---|---|---|---|
| | 2008 | | 2009 | | 2008 | 2009 |
| | No. | Members (000) | No. | Members (000) | ($ million) | |
| Marketing: | | | | | | |
| Dairy | 34 | 3.7 | 34 | 3.5 | 1,910.5 | 1,783.4 |
| Fruit & Vegetable | 9 | 1.0 | 10 | 1.1 | 68.6 | 75.1 |
| Other Products[2] | 3 | 0.3 | 3 | 0.2 | 143.8 | 143.5 |
| TOTAL MARKETING | 46 | 5.0 | 47 | 4.8 | 2,122.9 | 2,002.0 |
| Supply: | | | | | | |
| Crop Protectants | | | | | 3.7 | 12.6 |
| Feed | | | | | 73.4 | 72.2 |
| Fertilizer | | | | | 22.4 | 28.4 |
| Petroleum | | | | | 5.5 | 2.5 |
| Seed | | | | | 1.6 | 2.8 |
| Other Supplies | | | | | 23.7 | 28.1 |
| TOTAL SUPPLY | 6 | 1.4 | 6 | 1.4 | 130.4 | 146.6 |
| TOTAL SERVICE[3] | 4 | 0.3 | 2 | 0.2 | 26.6 | 18.7 |
| TOTAL | 56 | 6.7 | 55 | 6.4 | 2,296.8 | 2,167.3 |

Source: *Cooperative Statistics 2009*, USDA Rural Development, Service Report 70, November 2010.
[1] Totals may not add due to rounding.
[2] Includes wool, poultry, dry bean, grains, livestock, maple syrup, ethanol, and miscellaneous cooperatives.
[3] Includes those cooperatives that provide services related to cooperative marketing and purchasing.

## U.S and Northeast Cooperative Economic Impact

The economic impact of cooperatives in the U.S. economy is often overlooked. Last year, we provided a glimpse of the number of U.S. cooperatives by economic sector based on a multi-year research study being conducted by the University of Wisconsin Center for Cooperatives (more information available at

http://uwcc.wisc.edu). The Wisconsin study identified the revenue generated; income paid to owners and workers (wages, benefits, patronage refunds, and dividends); and numbers of jobs. They then used input-output analysis to examine how these direct economic impacts ripple through the economy to generate additional indirect and induced impacts. Indirect impacts measure the ripple effect that results from connections with other businesses, while the induced impacts measure spending by the cooperative's labor force (and related industries) and its owners with the wages and dividends (or "patronage refunds") earned.

At Cornell, we have begun to collect and assess the data generated from this research study, with particular emphasis on cooperative activity in New York State and the Northeast. This year, we highlight the economic impacts by farm supply and marketing cooperatives (FSMCs). Understanding the true value of agricultural cooperatives is difficult, given contributions beyond the more straightforward metrics of output, income, and employment. While we ignore these important attributes for this chapter, the benefits are described succinctly in the Wisconsin report:

> "Cooperatives play a key role in agricultural markets not only because they account for a significant fraction of economic activity in this sector, but also because they are believed to generate a pro-competitive effect in imperfectly competitive markets. Cooperatives play other socially beneficial roles in the agricultural sector. They provide an opportunity for farmers to share risk and to control managerial decision-making for their direct benefit. Additionally, they offer a credence attribute—farmer ownership—which can be attached to farm commodities, thus providing additional value to some consumers." (Deller et al. 2009)

Table 3-3 provides a summary of economic indicators for FSMCs in the United States, New York, and New England (CT, MA, ME, NH, RI, and VT), based on 2006 data. For purposes of definition, marketing cooperatives generally provide processing and/or marketing services to farmers, along with logistical support to aggregate farm supply. Supply cooperatives provide services and inputs to famers needed for the production of their goods. In this way, farmers can collectively negotiate better terms of purchase. Also included in this category are cooperatives providing information services (e.g., record keeping) to farmers.

Over 2,500 U.S. FSMCs had nearly 2.5 million farmer members with nearly $45 billion in assets and produced $119 billion in annual revenues. Supporting nearly 148,000 employees, over $6 billion in wages and benefits were distributed, or $41,550 per employee. The average cooperative had nearly $50 million in revenue, with about 100 members and 60 employees. There was a wide distribution in sizes from rather small to very large; e.g., less than one full time employee to a workforce of over 7,500 employees.

FSMCs were, on average, smaller in New York than the national average, but New England cooperatives were larger (Table 3-3). On average, the number of employees per cooperative was nearly twice as large in New England as in New York. However, in total, both areas support substantial jobs, about 6,200 combined. Total memberships were 6,870 and 11,240 in New York and New England, respectively. Combined, these FSMCs produced nearly $5 billion revenues/output in 2006.

By using multipliers we can assess the level of linkages between cooperatives and the larger economy, and identify the additional impacts reverberated through the economy based on the direct contributions illustrated in Table 3-1. In other words, this rippling effect can be measured and applied to assess how a change in one part of the economy affects the whole of the economy. These economy-wide impacts by FSMCs on total revenues, wages, and employment are summarized in Table 3-4.

Focusing on New York, the $2.7 billion in revenue generated in 2006 by FSMCs expands to $2.9 billion when indirect contributions of up-stream suppliers and spending are accounted for. Similarly, the $110 million in directs wages and benefits provided to employees, when rippled through the economy, represents a total contribution of $163 million in wages supported by this cooperative sector. The nearly 2,900 jobs directly

supported by FSMCs in New York expand to over 4,000 jobs when all inter-industry linkages are accounted for. Clearly, the contributions agricultural cooperatives make to the New York State economy are substantial.

TABLE 3-3. FARM SUPPLY AND MARKETING COOPERATIVES, SUMMARY OF KEY INDICATORS, 2006.[1]

| Area/Type | Firms[2] | Establish-ments | Assets ($M) | Revenue ($M) | Wages[3] ($M) | Employees (000) | Memberships (000) |
|---|---|---|---|---|---|---|---|
| United States: | | | | | | | |
| Total | 2,535 | 4,479 | 44,394 | 119,074 | 6,014.15 | 147.78 | 2,484.10 |
| Firm Average | | 1.76 | 17.53 | 46.97 | 2.43 | 0.06 | 0.99 |
| New York: | | | | | | | |
| Total | 66 | 71 | 667 | 2,690 | 109.97 | 2.83 | 6.87 |
| Firm Average | | 1.08 | 10.11 | 40.75 | 1.77 | 0.04 | 0.11 |
| New England:[4] | | | | | | | |
| Total | 42 | 42 | 1,140 | 2,293 | 204.49 | 3.38 | 11.24 |
| Firm Average | | 1.0 | 27.14 | 54.60 | 5.24 | 0.08 | 0.28 |

[1] Source: Deller, S., A. Hoyt, B. Hueth, and R. Reka Sundaram-Stukel. 2009. "Research on the Economic Impact of Cooperatives." Univeristy of Wisconsin Center for Cooperatives, Unvierstiy of Wisconsin-Madison. All data are based on the year 2006 calendar year. Due to numerous missing data, patronage refunds were excluded.

[2] Firms represent the number of reporting cooperative firms. For the farm supply and marketing sector, this represents nearly all cooperatives enumerated. As such, no extrapolation to the population of cooperatives was conducted.

[3] The implied average annual wages (with benefits) per employee are $41.55, $40.17, and $65.25 for the United States, New York, and New England, respectively (in thousand dollars)

[4] New England includes the states of CT, MA, ME, NH, RI, and VT.

TABLE 3-4. TOTAL ECONOMIC IMPACTS FOR FARM SUPPLY AND MARKETING COOPERATIVES, 2006.[1]

| | United States | | New York | | New England | |
|---|---|---|---|---|---|---|
| Economic Impact | Direct | Total | Direct | Total | Direct | Total |
| Revenue ($M) | 119,074 | 128,362 | 2,690 | 2,900 | 2,293 | 2,472 |
| Wages ($M) | 6,014 | 8,895 | 110 | 163 | 204 | 302 |
| Employment (jobs) | 147,775 | 210,579 | 2,826 | 4,027 | 3,375 | 4,809 |

[1] Source: Deller, S., A. Hoyt, B. Hueth, and R. Reka Sundaram-Stukel. 2009. "Research on the Economic Impact of Cooperatives." Univeristy of Wisconsin Center for Cooperatives, Unvierstiy of Wisconsin-Madison. Total effect equals direct effect plus indirect and induced effects. Total effects based on national multipliers in Deller, et al. (2009); i.e., 1.078, 1.479, and 1.425 for revenue, wages, and employment, respectively.

[2] New England includes the states of CT, MA, ME, NH, RI, and VT.

## Cooperative Outlook

Most cooperatives operating in New York State have the potential to build on the positive results from 2010. Declining milk prices in 2009 and the first quarter of 2010 created more uncertainty and challenges for the performance of dairy marketing and related-service cooperatives. Milk prices and dairy farm income declined dramatically from the relatively high levels of 2008. Dairy producers have seen their costs of production increase with higher feed and energy expenses while milk prices declined resulting in very tight or negative margins. Dairy farm numbers have been on a long-term decline, but recent years have seen a higher

number of exits. Dairy cooperatives are experiencing a loss of farmer-members as some farmers cease farming due to increased financial stress.

The cooperative bank that is a primary lender to rural cooperatives in the U.S. and New York continued to report record results again during the most recent year that data are available. Net income, cash patronage distributions, and member equity all increased from the previous record year. That strong performance is expected to continue into 2011, although recent fluctuations in commodity markets, ethanol prices, and capital markets have created a higher level of financial uncertainty.

Dairy cooperatives with value-added operations have experienced increasing costs for processing milk, packaging, transportation, and some ingredients. However, lower prices for milk can result in improved margins for these types of cooperatives as milk itself is a major expense for cooperatives involved in dairy product manufacturing. It remains to be seen how milk and energy prices unfold in 2011, but demand for most of the dairy products produced in the Northeast remain high.

Domestic consumer concerns over rising food prices and an economic recession have shifted purchasing to lower priced food product outlets, as well as resulted in less food consumed away from home. As the impact of the recession lessens, demand for dairy products should strengthen. On the export side, as the global economy recovers and the value of the dollar remains competitive, there appear to be opportunities for increased exports in 2011. The dairy industry and dairy marketing cooperatives have relied on increasing exports to help bolster domestic farm prices and overall cooperative sales and margins.

Relatively new management in the marketing arm of the major grape juice processing cooperative continues to develop strategies to grow patronage proceeds to grape grower members. Initial signs point toward improved performance for this commodity. Significant changes have occurred in the processed fruit and vegetable industry as a major cooperative who partnered with a private equity firm have sold their interest in a major brand and marketing operations. The proceeds of the sale will generate significant gains to both the private equity firm and the cooperative. Cooperative members that had an equity position in the company will reap capital gains through the sale. The exact level of returns is yet to be determined.

Although 2010 has brought a number of challenges for cooperatives operating in New York State - declining milk prices, downward pressure on farm income, shifting consumer purchasing patterns and an ongoing slow recovery from the recession, most cooperatives operating in New York State remain well positioned for solid performance in 2011.

# Chapter 4. Finance

Calum G. Turvey, Professor

2009 and 2010 have seen considerable deterioration in the quality of agricultural credit held by banks and the farm credit system and by the deteriorating financial condition of certain sectors of the farm economy. A classical cost-price squeeze is at play with milk prices on futures exchanges largely staying below $15.20/cwt for much of the year and rising above $16/cwt for only a few weeks. Meanwhile corn which languished below $4 for much of the year suddenly rose in mid- summer to nose up against $6/bu. Meanwhile soybeans which remained below $10 for much of the year rose in unison with corn to touch $13.50. While this is great for grain and oilseed farmers, stagnation in milk prices combined with rising feed costs on dairy farms is putting many farmers under pressure.

The relationship between the business risks faced by farmers and the financial risks that they entail are well defined, but in the past few years these risks have not been so easily overcome. Indeed, the September 2010 Annual Report of Farm Credit East[1] reported not only fairly flat sales but also an increase of $12.5 million in loan loss provisions to deal with a weakening credit market. Potential losses are mostly coming from the dairy sector (about 25%) but other stresses including nurseries are also present. All told Farm Credit East is reporting on accrual loans of about 1.5% of its portfolio representing about $60.2 million. To put this in perspective, First Pioneer Farm Credit reported non accruing loans of 1.3% in 2009, 0.9% in 2008 and 0.4% in 2007. About 42% of First Pioneer's loans were issued to New York farmers. Likewise, Farm Credit of Western New York reported non accruing loans of 1.33% in 2009, 1.01% in 2008 and 0.49% in 2007[2].While much of these loans are collateralized, that is little comfort to those farmers in trouble. On the other hand, what is occurring in the agricultural sector pales in comparison to the unfolding disaster in the sub-prime home mortgage market for which the Farm Credit System emerged largely unscathed. However, many rural banks that served farmers went under.

It is difficult to fully comprehend what is actually happening in the farm sector beyond the abstract. To glimpse at the outlook for dairy farmer in 2010 we built a farm simulation model that would not be untypical in New York. The representation we use is found in Figures 4-1 and 4-2 for the income statement and balance sheet. We then added risk to the model to examine how randomness in milk prices, corn and soybeans affected farm performance. Corn and soybeans entered the model to build the feed costs. We were particularly interested in the relationship between the price of milk and financial risk.

[1] https://www.farmcrediteast.com/About-Us/Inside-Farm-Credit-East/~/media/092010Quarterly.ashx
[2] https://www.farmcrediteast.com/About-Us/Inside-Farm-Credit-East/~/media/Files/AboutUs/Financials/FCWNY09ARFinal.ashx

**FIGURE 4-1: INCOME STATEMENT FOR TYPICAL 50-COW DAIRY IN NEW YORK**

| | | 2010 |
|---|---|---|
| Sales | | |
| | Milk Sale | 195,291 |
| | Option Payout | 138 |
| | cull cow sale | 9,630 |
| | calf Sale | 1,389 |
| | crop sale | 0 |
| | other income | 6,150 |
| total | | 212,598 |
| | | |
| Expense | | |
| operating expense | | |
| | Fertilizer & Lime | 7289 |
| | Seed & Plants | 4311.24 |
| | Spray | 3068.04 |
| | Professional Fee | 440 |
| | dairy grain & concentration(corn,soybean, other | $31,382.15 |
| | Dairy roughage(hay,corn silage) | $16,938.37 |
| | Fuel & Oil | 13878.24 |
| | breeding costs | 3200 |
| | vet and medicine | 8200 |
| | supplies | 4750 |
| | land rent | 3850 |
| | utility | 43 |
| | calf start cost | 771.4285714 |
| | other expense | $2,700.00 |
| administrate expense | | |
| | hired labor cost | 18701.76 |
| | insurance | 3793.515 |
| | repair | 22039 |
| deprieciation | | |
| | | 30025 |
| Tax | | |
| | | 7270 |
| interest | | |
| | | $11,600.66 |
| Net Income | | 18,347 |

**FIGURE 4-2: FARM BALANCE SHEET**

| Balance Sheet | | | |
|---|---|---|---|
| | | 2010 beginni | 2010 end |
| current assets | | | |
| | cash & equivlent | 1,200 | 30,612 |
| | accounts receivable | 10,000 | 12,756 |
| long term | | | |
| | Livestock | 103,350 | 103,350 |
| | Machinary | 204,300 | 183,870 |
| | Building | 191,900 | 182,305 |
| | Land | 171,600 | 171,600 |
| total | | **682,350** | 684,493 |
| current liability | | | 0 |
| | accounts payable | 2,700 | 2,838 |
| | operating loan | 4,000 | 0 |
| intermediate | | | |
| | structured debt | 75,800 | 69,432 |
| long term | | | |
| | long term debt | 192,500 | 186,526 |
| total | | **275,000** | **258,796** |
| farm networth | | | |
| | Net Income | 407,350 | 425,697 |
| | other comprehensive income(natural growth in livesto | | |
| | | **407,350** | **425,697** |

We simulated the farm cash flows, taking into account for production seasonality and responsiveness of feed cost to corn and soybean prices. It was assumed from the historical record that the yearly standard deviation of the percentage change in prices was 29%, 34.2% and 37.95% for Class III milk, corn and soybeans respectively. We then simulated the path of prices on a monthly basis for 2010.

Figure 4-3 shows the probability distributions of Class III milk prices and the NY All-Milk spot price. It represents an anything-can-happen approach. For example it is possible that milk prices could hit $45 but this would be highly unlikely, There was a 50% chance that the Class III milk price would fall between $12.48 and $18.40 and a 55.2% chance that the All-Milk price would fall in the same range.

**FIGURE 4-3: PROBABILITY DISTRIBUTION OF AVERAGE MILK PRICES, 2010**

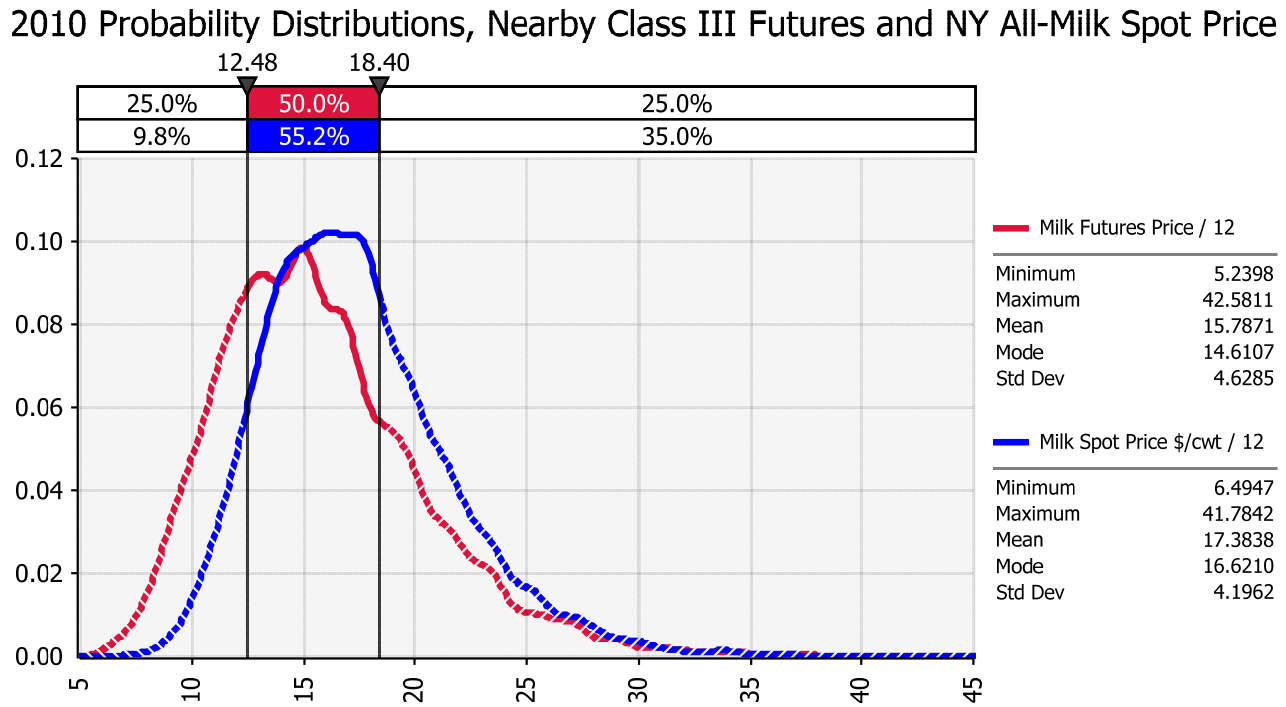



Figure 4-4 shows the 'path of uncertainty' in the all-milk price while Figure 4-5 shows the 'path of uncertainty' for feed prices, which include corn and soybeans.

**FIGURE 4-4: PATH OF UNCERTAINTY IN NY ALL-MILK CASH PRICE**

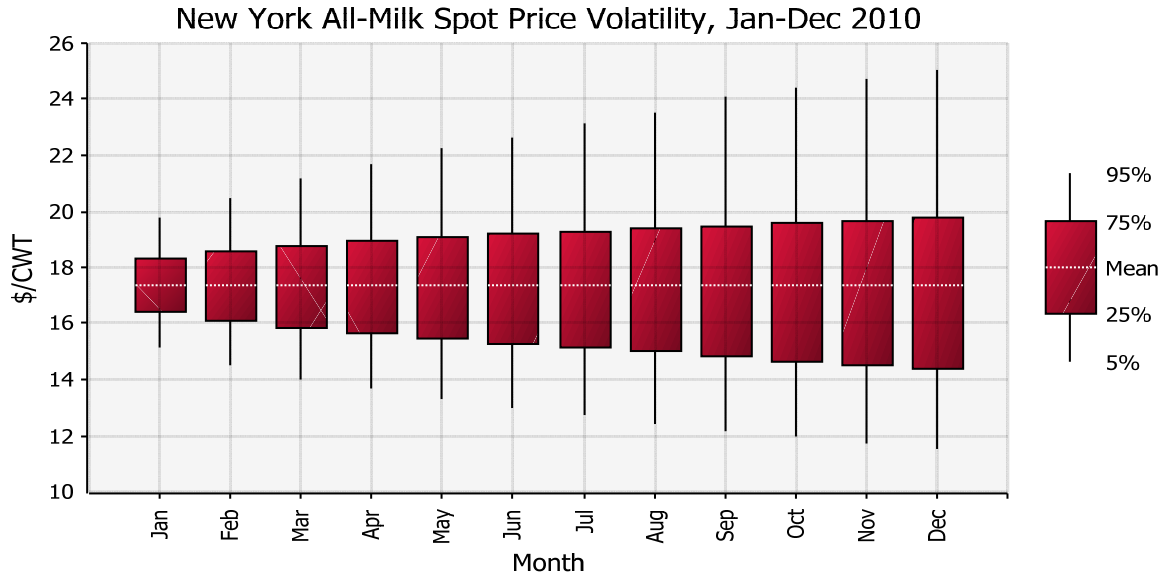
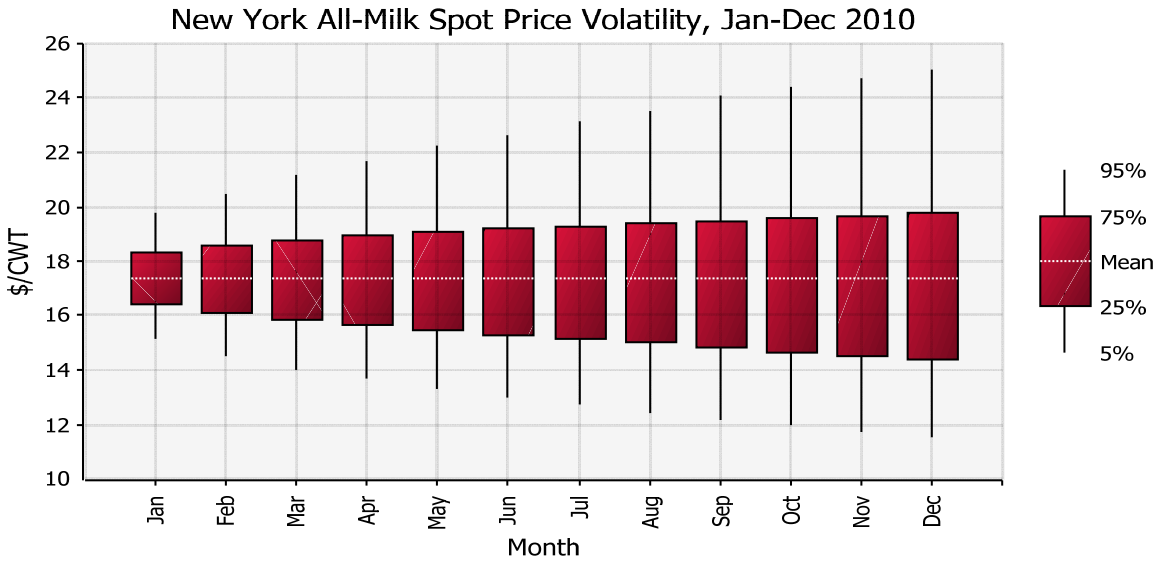


**FIGURE 4-5: PATH OF UNCERTAINTY IN FEED PRICES**




Given these risk characteristics we can get a picture of how risk affects farm profitability and financial risks. Figure 4-6 shows the correlations (scatter) between net income and milk sales while Figure 4-7 shows the correlations between net income and feed costs. While feed costs are clearly a significant source of risk their impact is significantly less, in a probabilistic sense, than milk sales which has a much more direct impact.

**FIGURE 4-6**

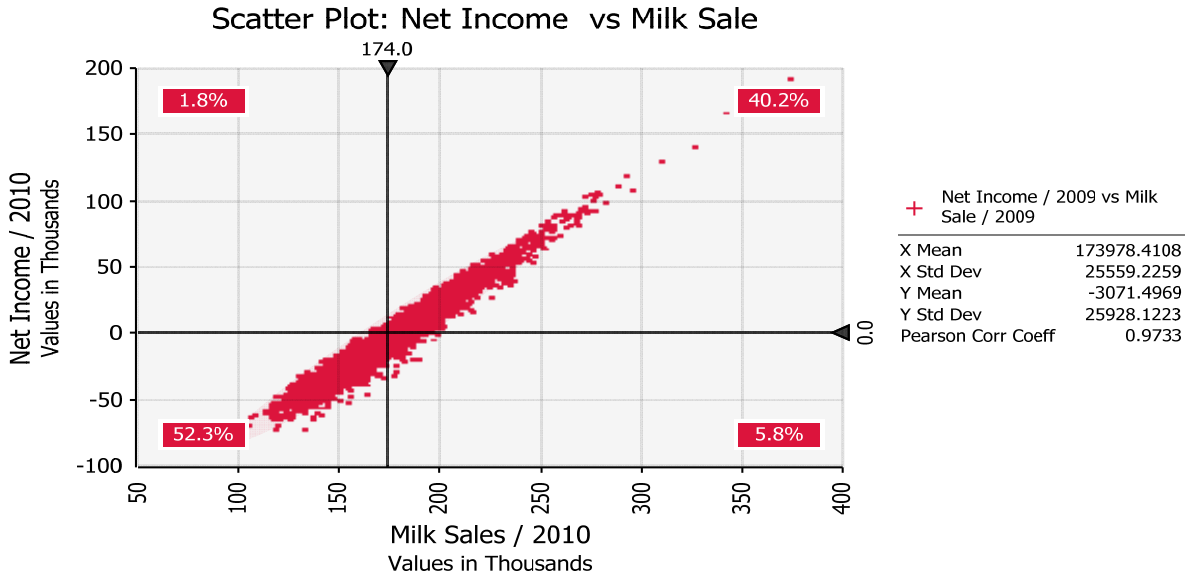
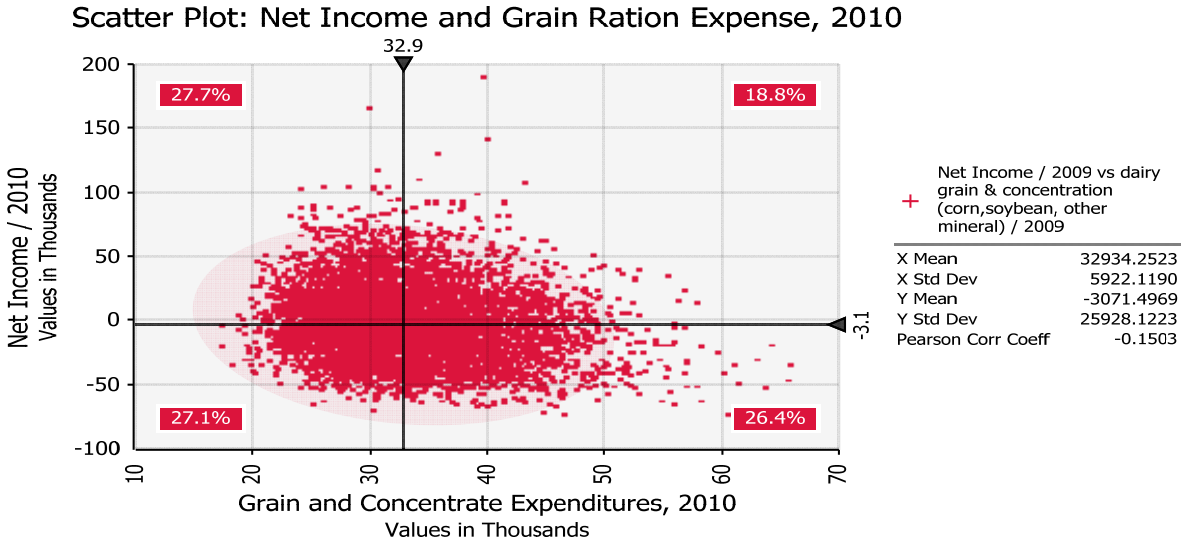


**FIGURE 4-7**




How these sources of risk might have created hardship for New York dairy farmer in 2010 can be seen by defining what I refer to as the critical return on assets (CROA). The CROA is simply the average interest rate on loans times the debt to asset ratio. It measures the point of breakeven, below which a loan might become non-accruing and above which at least interest expenses can be paid in full. Table 4-1 shows the CROA for a number of different debt structures ranging from $1,000/cow to $6,000/cow.

**TABLE 4-1: CRITICAL RETURNS ON ASSETS FOR DIFFERENT LEVERAGE**

| Debt/Cow | Critical ROA |
|---|---|
| 1,000 | 0.439% |
| 2,000 | 0.874% |
| 3,000 | 1.318% |
| 4,000 | 1.759% |
| 5,000 | 2.198% |
| 5,500 | 2.418% |
| 6,000 | 2.638% |

What is so critical about Table 4-1 is that it shows that the greater amount of debt the greater is demanded by the return on assets to meet debt obligations. The low debt farm will survive as long as profitability results in an ROA greater than 0.439%. The high debt farm requires an ROA in excess of 2.638%. Figures 4-8 and 4-9 show the relationship between ROA and the price of milk. As would be expected the ROA increases with the price of milk. To see why increasing numbers of NY dairy farmers are facing financial stress we note that the low debt farm had a 50% chance of a ROA greater than its CROA when the price of milk was as low as $16.94. But the farm leveraged to $5,500 had only a 27.3% chance when prices

were as low a $16.94. Looked at another way, Figure 4-10 shows the probability distribution of the average price that could have expected to be received by NY dairy farmers in 2010. It shows that the probability of the average price being greater than $16.94 was 53.8%.

**FIGURE 4-8: RELATIONSHIP BETWEEN MILK PRICE AND ROA FOR LOW-DEBT FARM**

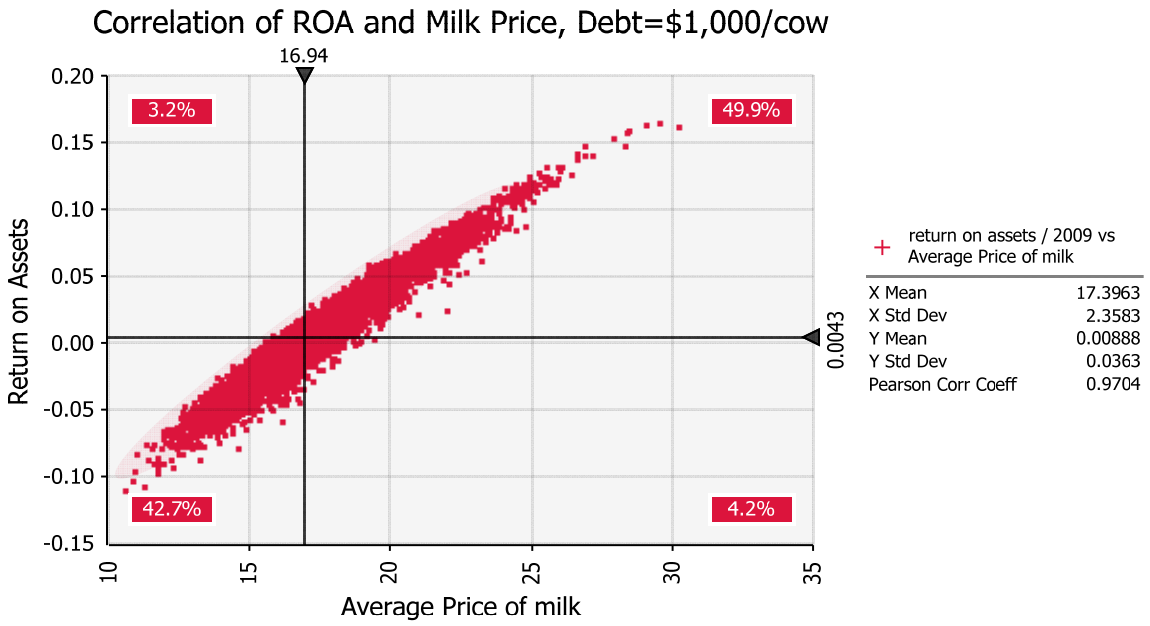



**FIGURE 4-9: RELATIONSHIP BETWEEN MILK PRICE AND ROA FOR HIGH-DEBT FARM**

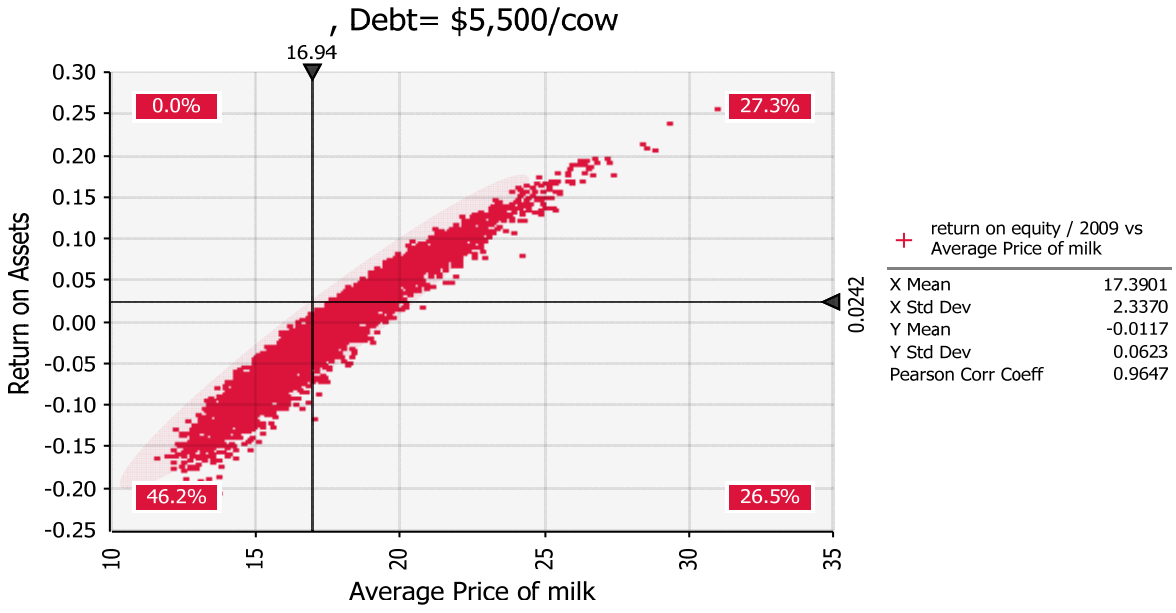
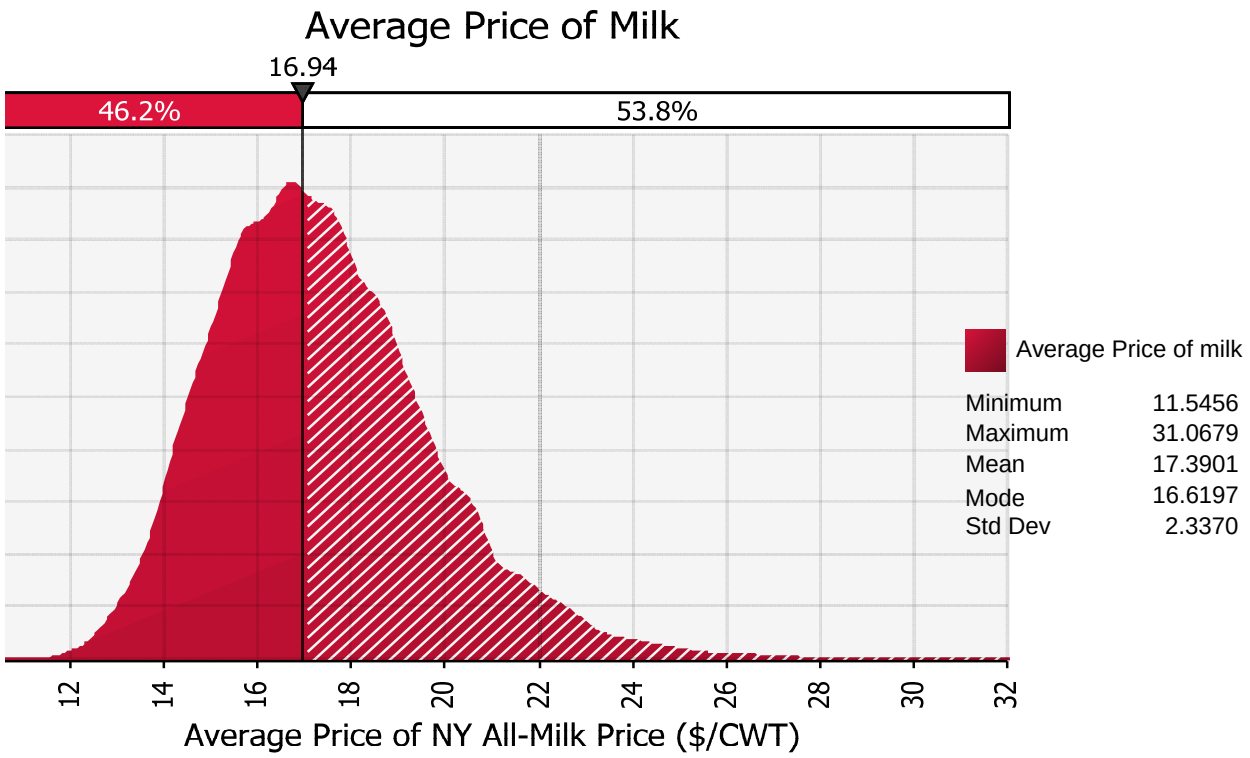


**FIGURE 4-10: PROBABILITY DISTRIBUTION OF AVERAGE MILK PRICES**

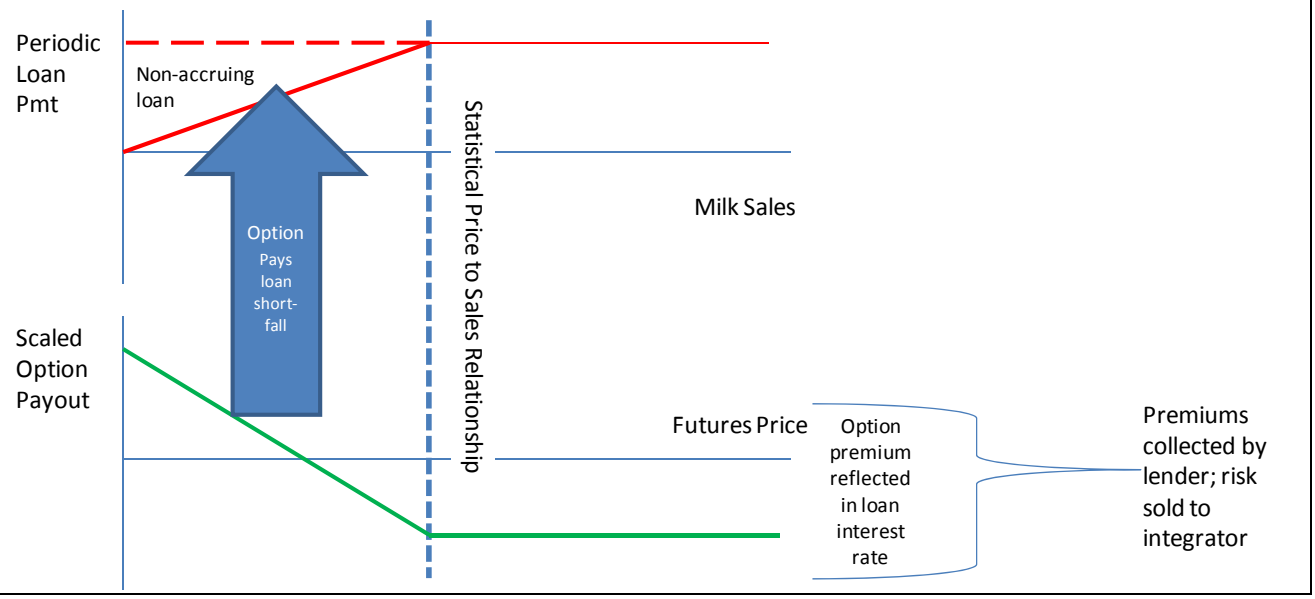



## Risk Management with Commodity-Linked Credit

The relationship between commodity price variability, business risk and financial risk is straight forward. In 2010, while our representative farm required prices substantially above $17 to see profits and meet financial obligations, this price was barely reached and this is where much of the current problems stem, especially with higher debt farms.

Given this environment is important to broaden our view of agricultural credit and ask whether the current suite of credit products made available to farmers adequately meet not only their credit needs but also their risk management needs. To balance the relationship between business risk and financial risk we have been examining the application of 'Risk-Contingent Credit' by designing 'Commodity-Linked Credit' products to address the New York dairy problem. A commodity linked credit is one in which the pay off structure of a loan, mortgage or bond is contingent on the price of the underlying risk, e.g. milk prices. In essence we attach a 'put' option to the credit so that should the price of milk fall below a fixed price the option part 'insures' the loan. Figure 4-11 shows a schematic of this relationship.

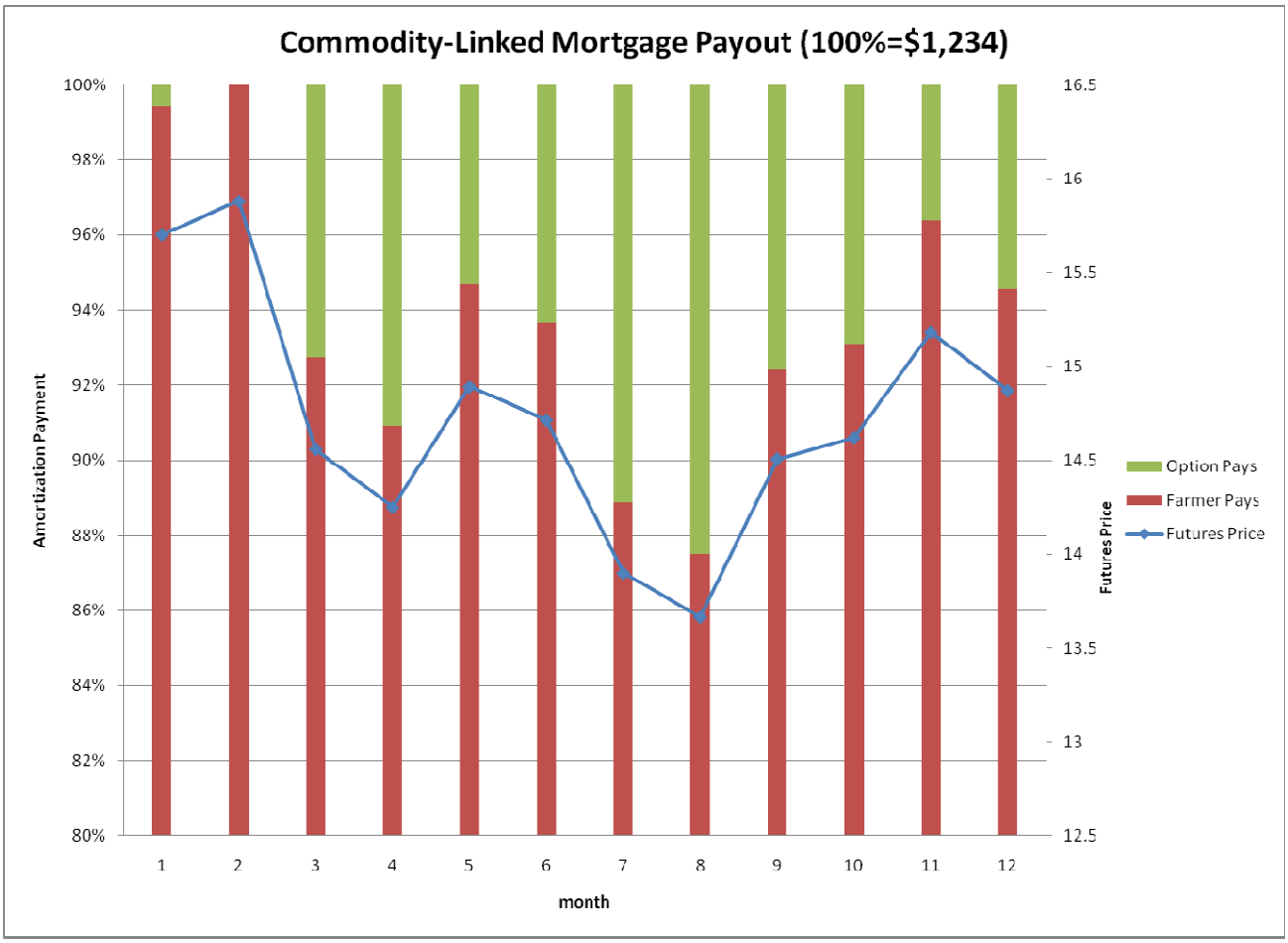
**FIGURE 4-11: SCHEMATIC OF PAYOFF STRUCTURE OF RISK-CONTINGENT CREDIT**




To illustrate how this works we designed a mortgage contract with an imbedded put option that would pay the loan down if prices fell below $15.70. We used a base mortgage rate of 3.75% on a $192,000, 20 year mortgage for the high risk farmer. The average monthly value of the put options on Class III milk as of January 1, 2010 was $1.284. Using these numbers we calculated that the interest rate on the risk-contingent mortgage would have to increase from 3.75% to 4.66% to reflect the market risks. This increase is quite small and the monthly mortgage increased from $1,141 to $1,234 as a result.

Figure 4-12 shows the mortgage repayment structure for a simulated sequence of milk prices. In fact this graph was selected because the pattern of prices is very similar to what was observed throughout 2010. It can be seen that as the futures price falls below $15.70 the option part kicks in. For example in month 8 (August) when the price bottomed at about $13.75 the farmer would only have had to pay less than 88% of that month's mortgage with the remaining 22% being paid from the option. Since the option part, by design, is applied directly to the mortgage payment, at no time should the loan fall into arrears. The lender gets paid with virtual certainty and the farmer, facing low prices gets some financial relief. Although the cost of the loan is higher, this is more easily affordable at higher prices.

**FIGURE 4-12: LOAN REPAYMENT WITH A COMMODITY-LINKED MORTGAGE**

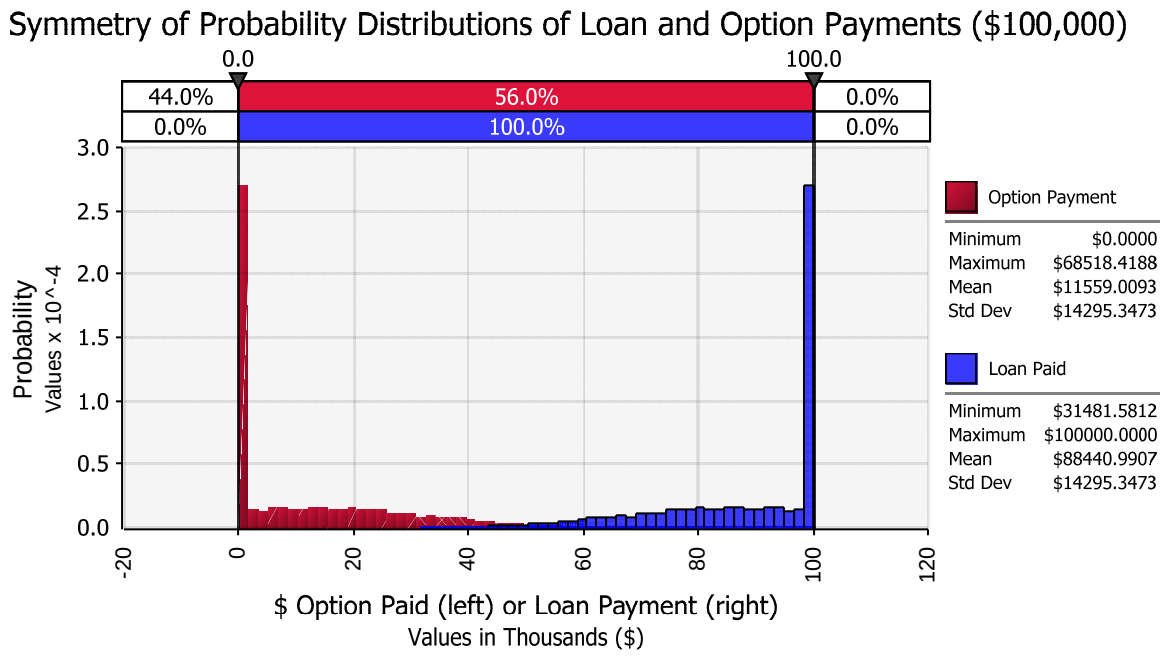



We also investigated linkage to operating loan. The simplest and least costly structure is for a lump-sum loan that a farmer would borrow in full and repay at a prescribed date, say in one year. Operating lines of credit are more difficult because the operating line balance is not known in advance so establishing a pricing mechanism to protect balances when both prices and line balances are moving is very costly and sometimes requires monthly interest rates that would be unacceptable to any farmer or lender. However the fixed amount, fixed term periodic loan works nicely, although it is more expensive than an amortized mortgage loan.

We assume in Figure 4-13 a $100,000 operating loan with a one year duration and a base interest rate of 6%. To imbed an option the interest rate would have to rise to 16.36%. This is higher than an unsecured loan, but lower than most credit card rates. Nonetheless, it has the advantage that if prices fall the farmer does not have to pay the operating loan in full while the lender receives full payment. In addition, the embedded 'insurance' can act as a substitute for collateral. Figure 4-13 shows the distribution of loan repayment and option payment side by side. The symmetry is clear.

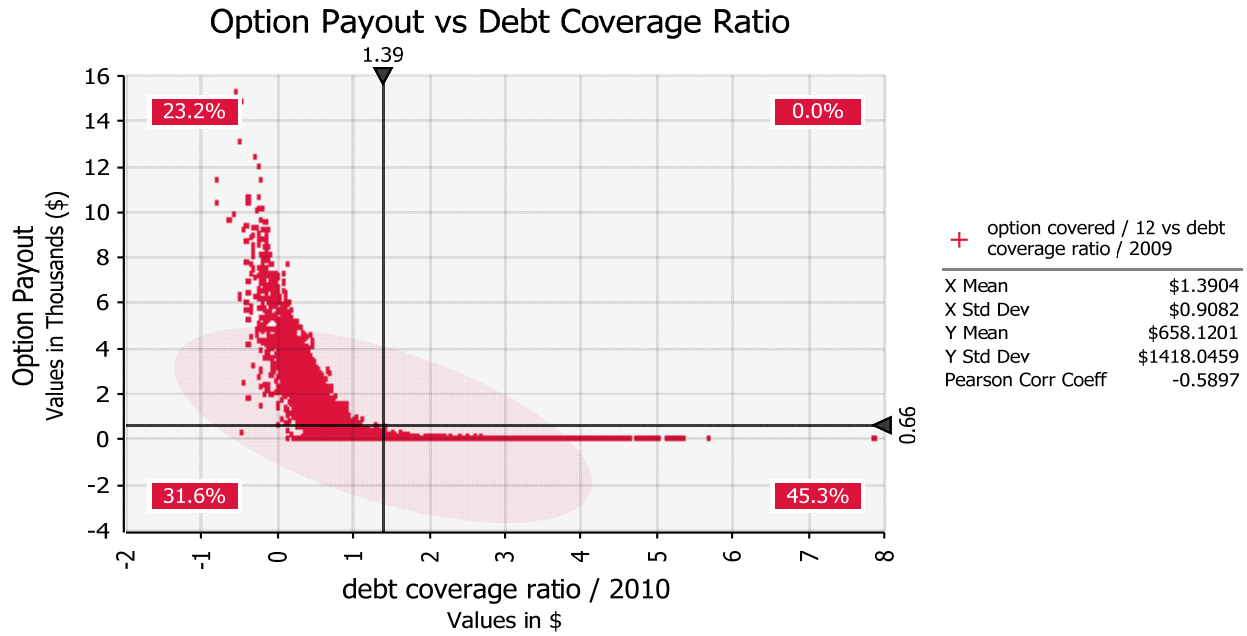
In all likelihood the most frequent outcome is that the farmer pays the loan in full, but as prices fall it can be seen that in the worst case scenario the option part pays $68,518 while the farmer pays only $31,481. Given outcomes like this an interest rate of 16-17% may not seem so unreasonable. Indeed when one looks at the difference in the means, on a $100,000 loan the farmer would expect to pay only $88,440. The expected or average option payment of $11,599 is almost equal to the 10.36% additional interest on the base loan. (In fact when the interest rates are continuously compounded the annualized effective interest rates are 6.183% and 17.774%. The difference of 11.590% applied to $100,000 is $11,590.)

**FIGURE 4-13: LOAN REPAYMENT AND OPTION PAYMENT ON OPERATING LOAN**




What this means in terms of debt repayment is illustrated in Figure 4-14 which shows the statistical relationship between the debt coverage ratio and the option payout. What can be seen is that the debt coverage ratio would fall well below 1.0 when milk prices fall, but when the risk contingent credit is applied it is precisely in these risky states that the option part kicks in. Consequently the chance that the farms debt coverage ratio falls below 1.0 is greatly reduced. This added certainty to repayment should be very attractive to lenders while relieving farmers from undue stress when commodity markets fail them.

**FIGURE 4-14: RELATIONSHIP BETWEEN DEBT COVERAGE RATIO AND OPTION PAYOUT**




**Final Thoughts**

With Farm Credit East reporting 1.5% of all loans being non-accrual the conditions faced by many farmers today is dire. This 1.5% represents a nearly 4-fold increase in credit risk since 2007. And while Farm Credit East reports that this rate of non-accruals as well as non-performing loans is within the 'long-term' range these rates have not been observed since about 1994. Fortunately, conditions in New York appear to be better than the nation as a whole.

It is expected that throughout 2011 the Federal Reserve will continue to intervene in money and credit markets to keep interest rates low so that commercial lenders have sufficient liquidity to make new loans. Since Farm Credit System loans are closely tied to US treasury bonds, it is expected that Farm Credit rates will remain at about current levels.

Nonetheless, the rising number of farmers facing financial stress is important and requires innovative thinking to design new financial products that better meet the needs of farmers under stressful conditions while simultaneously reducing the credit risk faced by lenders. For New York dairy farms we have shown that the major stressor is in milk price volatility and to a lesser, but not insignificant extent, the prices of corn and soybeans as they relate to feed costs. Using the futures prices on Class III milk it was shown how structured financial products can be designed to balance both the business and financial risks facing farmers. Although these products come with a higher interest rate, their potential to reflect the true market price of risk is beneficial to both borrowers and lenders alike. Removing commodity price risk can therefore beneficially improve credit demand because pledged collateral comes with much lower risk of loss, while lenders would increase supply because of the lower credit risk.

# Chapter 5. Grain and Feed

Todd M. Schmit, Assistant Professor, and William G. Tomek, Professor Emeritus

High and volatile grain and oilseed prices have been a feature of commodity markets since this past summer, with the potential for even more volatility and higher prices in 2011 if production concerns and tightening world stocks materialize. While the ability of markets to ration supplies with volatile and growing demands has garnered much attention in recent years, production problems abroad and unexpected reductions in domestic supplies have been key drivers in more recent volatility and price increases. That said, a U.S. economy that has shown signs of a rebound from the economic recession, more favorable exchange rates, and higher energy/oil prices are improving demand prospects and raising concerns about whether growing demands can be met without continued increases in commodity prices.

The outlook for the coming year is still one of considerable uncertainty about economic conditions, and prices continue to vary from day to day as news arrives in the market. Thus, this Chapter should be viewed as a status report as of mid-November 2010. After reviewing the wheat, corn, and soybean markets, we discuss the implications for feed prices in 2011.

## Wheat

U.S. wheat acres continue a downward trend since the early 1980s, ending at 47.6 million acres harvested in 2010 (Table 5-1). However, higher forecasted yields leave total production reasonably unchanged from the previous year and within the range of experience for the last eight years. Global wheat supplies (production plus carry-in) are projected to be about 9.7 million metric tons below last year, reflecting poorer growing conditions and reduced supplies in former Soviet Union countries and parts of the European Union, among a few other countries. In terms of annual production, the U.S. produces less than 10% of total world supplies (around 9% for 2010/11).

U.S. carry-in stocks in 2010 were well above year-ago levels, and this higher carry-in drove the increase in total domestic supplies of 301 million bushels. Domestic use is in line with historical experience (primarily for food use), but particularly strong U.S. exports, nearly 400 million bushels above last year's pace, will result in lower expected carry-out and a drop in the stocks-to-use ratio to 34.7%. While lower, stocks are still much higher than in 2006/07 and 2007/08, when the ratios were both below 20 percent. World wheat stocks are also diminished, but still above the record low ending stock levels in 2007/08. Stronger U.S. exports are supported by lower global production and strong early-season export sales.

Continued wheat production and quality problems in key production areas abroad, combined with dryer soil conditions for winter wheat production in the Great Plains, provide ongoing support for wheat prices going into 2011. Tightening world stocks and strong U.S. export markets are expected to push farm prices well above levels in 2009/10, although still moderated from those experienced in 2008/09. Stronger energy/oil prices this year are another key factor in this year's outlook report, but are generally reflected more directly in the corn and soybean sectors. Futures markets' prices imply strong concerns about the ability of future supplies to meet growing demands. Given current and expected supply and demand levels, as of 17 November 2010, December 2010 futures contracts show strong year-over-year gains trading at over $6.50 per bushel, with one- and two-year-out contracts trading in excess of the $7.50 mark (Table 5-2). Of course, expectations can change quickly with new market information. In short, keep your eyes on growing conditions and wheat quality in major world wheat producing areas for 2011, as further tightening in stocks could make this an even more volatile market in the months ahead.

| TABLE 5-1. U.S. SUPPLY AND DEMAND BALANCE SHEET FOR WHEAT[a] | | | |
|---|---|---|---|
| | 2008-09 | 2009-10E | 2010-11F |
| Supply: | | | |
| Harvested Acres (million) | 55.7 | 49.9 | 47.6 |
| Yield (bushels per acre) | 44.9 | 44.5 | 46.4 |
| | | (Million bushels) | |
| Beginning Stocks | 306 | 657 | 976 |
| Production | 2,499 | 2,218 | 2,208 |
| Imports | 127 | 119 | 110 |
| Total Supply | 2,932 | 2,993 | 3,294 |
| Use: | | | |
| Food | 927 | 917 | 940 |
| Seed | 78 | 69 | 76 |
| Feed & Residual | 255 | 150 | 180 |
| Total Domestic Use | 1,260 | 1,137 | 1,196 |
| Exports | 1,015 | 881 | 1,250 |
| Total Use | 2,275 | 2,018 | 2,446 |
| Ending Stocks | 657 | 976 | 848 |
| Stocks/Use Ratio | 28.9% | 48.4% | 34.7% |
| Avg. farm price, U.S., $ per bushel | 6.78 | 4.87 | 5.50 |
| Avg. farm price, NYS, $ per bushel | 6.16 | 4.84 | -- |

Note : Totals may not add due to rounding; marketing year beginning June 1.
[a]Data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2010) WASDE-488, P.11.

| TABLE 5-2. FUTURES PRICES FOR WHEAT, CHICAGO MERCANTILE EXCHANGE, 17 NOVEMBER 2010 | |
|---|---|
| Contract Month | $ per bushel |
| December 2010 | 6.512 |
| March 2011 | 6.904 |
| May 2011 | 7.164 |
| July 2011 | 7.284 |
| September 2011 | 7.454 |
| December 2011 | 7.654 |
| December 2012 | 7.586 |

## Corn

The U.S. is the world's dominant producer of corn (i.e., nearly 40% of forecast world production in 2010/11). Table 5-3 provides a supply-demand balance sheet for corn in the U.S. as of 9 November 2010. This year, U.S. corn acreage is expected to push beyond the 80 million acre threshold to settle at 81.3 million

harvested acres. However, the second highest acreage on record was accompanied by a downward USDA yield estimate to 154.3 bushels per acre. Combined, these estimates translate into a 2010 production estimate of just over 12.5 billion bushels, down 570 million bushels from the record high in 2009-10.

While still the third-largest production level on record (and second highest harvested acres), downward yield forecasts, combined with already tight world markets, have reverberated into strong and abrupt price gains. Since August, the projected 2010/11 supply (excluding imports) has dropped by a total of 594 million bushels. Up-the-limit price increases have occurred on more than one occasion this fall following USDA report releases. The news is emphasizing the supply effect on price, but it is more precise to say that expected supply is small relative to expected demand over the forthcoming year and beyond.

TABLE 5-3. U.S. SUPPLY AND DEMAND BALANCE SHEET FOR CORN[a]

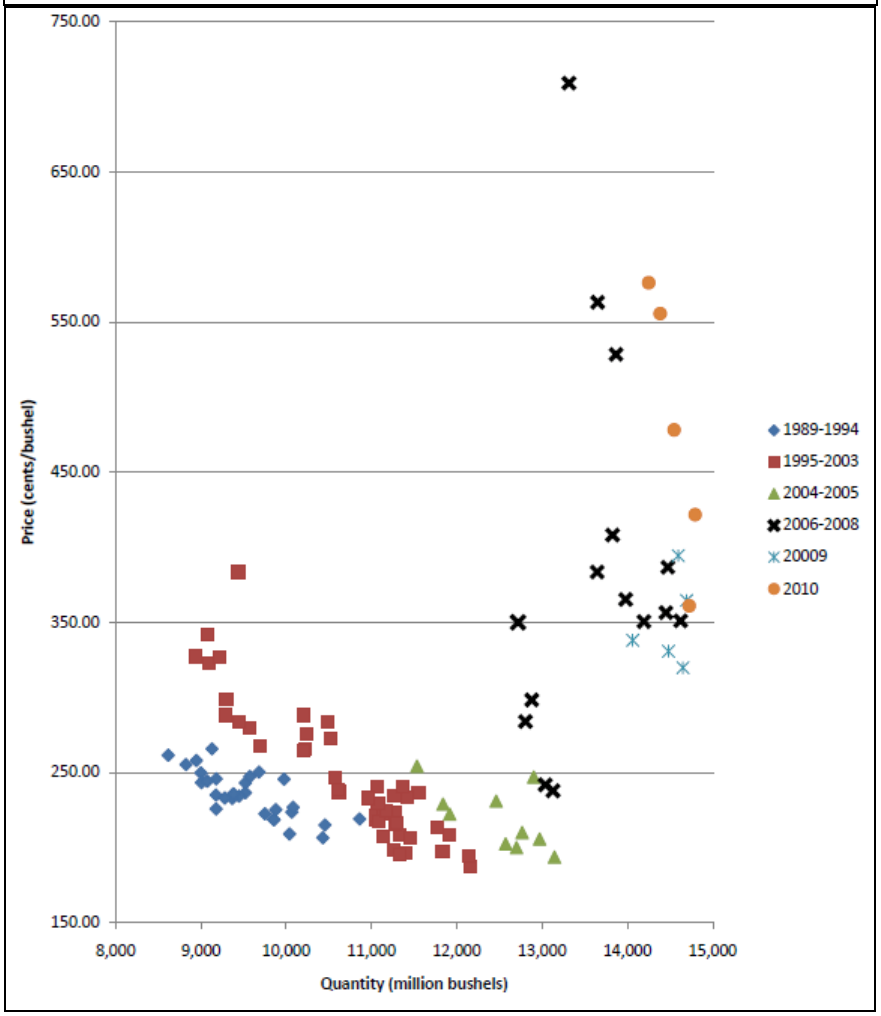
| | 2008-09 | 2009-10E | 2010-11F |
|---|---|---|---|
| Supply: | | | |
| Harvested Acres (million) | 78.6 | 79.6 | 81.3 |
| Yield (bushels per acre) | 153.9 | 164.7 | 154.3 |
| | | (Million bushels) | |
| Beginning Stocks | 1,624 | 1,673 | 1,708 |
| Production | 12,092 | 13,110 | 12,540 |
| Imports | 14 | 8 | 10 |
| Total Supply | 13,729 | 14,792 | 14,257 |
| Use: | | | |
| Feed & Residual | 5,182 | 5,159 | 5,300 |
| Food, Seed and Industrial | 5,025 | 5,938 | 6,180 |
| Ethanol for Fuel[b] | 3,709 | 4,568 | 4,800 |
| Total Domestic Use | 10,207 | 11,098 | 11,480 |
| Exports | 1,849 | 1,987 | 1,950 |
| Total Use | 12,056 | 13,084 | 13,430 |
| Ending Stocks | 1,673 | 1,708 | 827 |
| Stocks/Use Ratio | 13.9% | 13.0% | 6.1% |
| Avg. farm price, U.S., $ per bushel | 4.06 | 3.55 | 5.20 |
| Avg. farm price, NYS, $ per bushel | 4.32 | 3.95 | - |

Note : Totals may not add due to rounding; marketing year beginning September 1.
[a]Data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2010) WASDE-488, p. 12.
[b]Ethanol for fuel is included in the food, seed, and industrial category and presented for illustrative purposes.

The demand for corn has grown since the 2005/06 marketing year, faster than expected supply. This can be seen in Figure 5-1, which plots supply estimates for corn (made by the USDA) on the horizontal axis and the subsequent settlement prices for December corn futures on the vertical axis. There are five observations per year, corresponding to the monthly USDA estimates from July through November. The December contract prices reflect the CME settlement price the day the estimates are released. Within each year, one can see how prices have varied as the new crop reports are released; i.e., how prices respond to changing expectations about supply. In addition, comparisons across years demonstrate how expected demand has shifted to the right in recent years.

To help isolate price effects from changes in expected supply and expected demand, Chua and Tomek have estimated the relationship of expected supply and demand to futures prices (AEM staff paper available at http://www.dyson.cornell.edu/research/researchpdf/sp/2010/Cornell_Dyson_sp1001.pdf). By using their model, we estimated the price for December futures that accounts for the November supply and is consistent with demand levels experienced in 2008. This price was $3.89 per bushel, well below the quoted settlement price on 9 November 2010 of over $5.76 per bushel. The 2010 prices for September through November are outliers relative to the 2009 experience; i.e., prices for December delivery are high given the estimated supply. Qualitatively this appears as a positive shift in expected demand, but it could also reflect, to some degree, concern about expected supply in the next crop year.

FIGURE 5-1. EXPECTED SUPPLY ESTIMATES, DECEMBER FUTURES PRICE, CORN, JULY-NOVEMBER, 1989-2010.



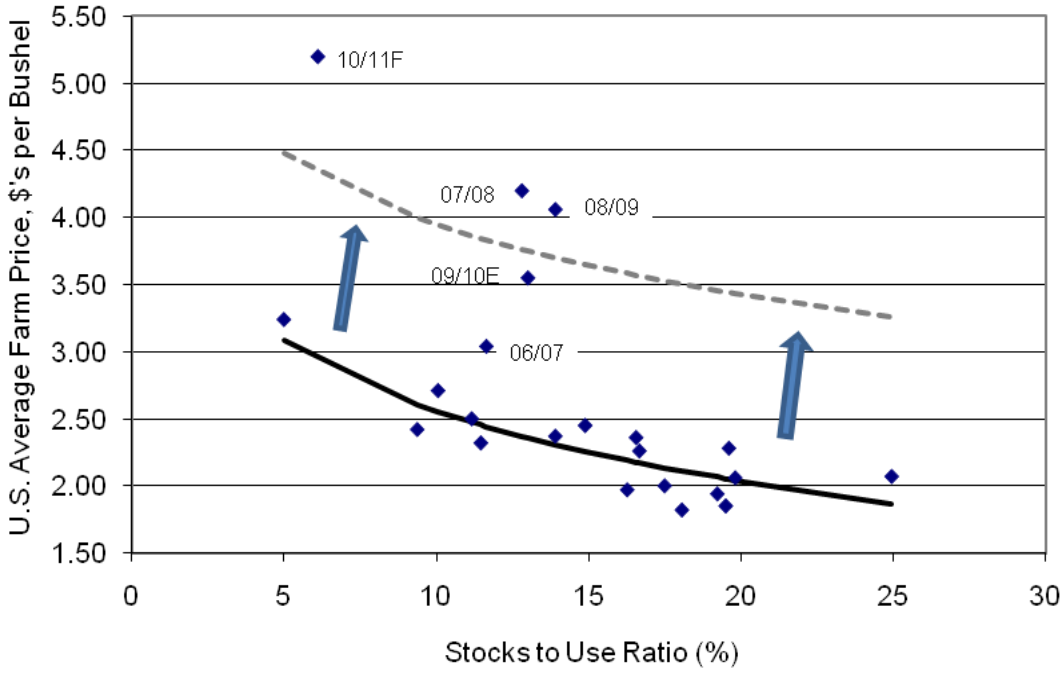

Indeed, the demand for corn is expected to be larger in 2010/11, with gains in all domestic use categories (Table 5-3). With improved livestock commodity prices, feed use is expected to remain strong despite a large price increase in corn, presumably reflecting price appreciation in other feed commodities. However, extended increases in feed commodity prices will reduce livestock margins if not compensated by output price enhancements. Should this occur, expect lower derived demands for feed next year and an accompanying reduction in livestock output, eventually putting downward pressure on feed crop prices.

Higher energy/oil prices are providing support for maintaining improved ethanol returns in the face of rising corn prices. Corn for ethanol is expected to utilize 4.8 billion bushels, or over 38% of total production. While ethanol production growth is tempering, modest annual increases in the U.S. mandate for renewable fuels should provide a base of support moving forward, along with government policy support to increase the mandated blend rate to 15% ethanol. However, continued corn price increases could have similar related-market effects for ethanol producers if energy and ethanol prices soften in 2011.

While wheat and soybean exports are well ahead of last year's pace, higher prices are a limiting factor for exports, especially for corn. Assuming export shipments in 2010/11 remain near 2009/10 levels, carry-in stocks at the end of this marketing year will be less than half of the 31 August 2010 level. The forecast stocks-to-use ratio is 6.1% (Table 5-3). This compares with the historic low of 5.0% in 1995/96. Should production expectations decline further, corn prices could become even higher and more volatile. One wild card is China, which has not historically been a significant buyer of U.S. corn, but has already made some purchases in the 2010/11 marketing year. With projected increases in China's corn production to all time highs, only time will tell if these purchases will continue to any significant degree.

A way to combine supply and demand is to plot the stocks-to-use ratio against the average farm price of corn for the year (Figure 5-2). The observations for 1989/90 through 2005/06 have a constant relationship, consistent with the relatively stable demand for those years implied by Figure 5-1. A small upward shift is observable in 2006/07, followed by a big jump in 2007/08 and 2008/09. After prices settled down some last year, using the USDA projection for the average farm price in 2010/11, it appears that prices will be record levels. We estimate that the net effect of shifts in demand and supply is to increase the average farm-price of corn about 140 cents per bushel for the past three years relative to the earlier period, and the predicted 2010/11 farm price is even higher relative to historical experience.

FIGURE 5-2. HISTORICAL RELATIONSHIP BETWEEN CORN PRICES AND THE STOCKS-TO-USE RATIO, 1989-2010.



The world's use and stock balances for corn are summarized in Table 5-4. Clearly, the total use of corn has trended upward and is projected to be nearly 840 million metric tons in 2010/11. The variation in ending stocks in recent years is an indicator of the ability of supply to balance use. Indicative of low U.S. stocks, a world stocks-to-use ratio of 15.4% is projected for 2001/11, a relatively low level for the world and second-lowest to the 14.9% observed in 2006/07.

TABLE 5-4. WORLD SUPPLY-DEMAND BALANCE FOR CORN, 2004-05 to 2010-11[a]

| Marketing Year | Domestic Use | Ending Stocks | Stocks/ Use Ratio |
|---|---|---|---|
| | (Million metric tons) | | (%) |
| 2004 – 05 | 684.97 | 131.23 | 19.1 |
| 2005 – 06 | 704.03 | 123.02 | 17.5 |
| 2006 – 07 | 728.53 | 108.69 | 14.9 |
| 2007 – 08 | 771.23 | 129.72 | 16.8 |
| 2008 – 09 | 781.10 | 147.99 | 18.9 |
| 2009 – 10E | 813.68 | 147.95 | 18.2 |
| 2010 – 11F | 837.31 | 129.16 | 15.4 |

[a]Data from USDA, "World Agricultural Supply and Demand Estimates". Various issues.
E = preliminary, F = forecast

Price quotations for corn futures for nearby and distant contracts, as of 17 November 2010, help summarize the current situation (Table 5-5). Research suggests that these prices are as good a forecast as any alternative, but like all forecasts, the futures quotes are imprecise, especially for the more distant time periods. Clearly market expectations are bullish for the nearby months; however one- and two-year-out prices suggest a softening in prices, albeit well above levels experienced in the last few years. Since the USDA November report release, corn prices have come down a little, but remain highly variable from day to day. Competition for acreage with soybeans and wheat remain strong for 2011/12 with across-the-board higher prices. Keep an eye on crop production forecasts for 2011 and on the implementation of increased blending (E-15) of ethanol in gasoline.

TABLE 5-5. FUTURES PRICES FOR CORN, CHICAGO MERCANTILE EXCHANGE, 17 NOVEMBER 2010

| Contract Month | - $ per bushel- |
|---|---|
| December 2010 | 5.256 |
| March 2011 | 5.386 |
| May 2011 | 5.456 |
| July 2011 | 5.494 |
| September 2011 | 5.200 |
| December 2011 | 4.950 |
| December 2012 | 4.660 |

## Soybeans

Given continued strong export markets, soybeans will be in rather short supply relative to demand in 2010/11. The supply and demand balance sheet for soybeans is summarized in Table 5-6. Nearly identical harvested acres and yields from 2009/10 put U.S. production estimates at 3.375 billion bushels for 2010/11. With slightly larger carry-in stocks, total supply this year is up only modestly, but well above levels of around 3.2 billion bushels in 2007/08 and 2008/09.

The demands for both domestic and export uses continue to support historically high U.S. soybean prices. Higher prices on world markets will reduce domestic use in lieu of stronger export sales. Total use is similar to last year and, with a modest increase in ending stocks, the stocks-to-use ratio increases some to 5.5%. As shown in Table 5-7, the world's stock-to-use ratio forecast is down slightly from last year, but is in the 'normal' range of historical experience. However, U.S. stocks are well below levels exhibited earlier in the decade, setting the stage for continued strong volatility next year if any appreciable tightening of world soybean supply and demand factors materialize, particularly in the U.S. or South America.

TABLE 5-6. SUPPLY AND DEMAND BALANCE SHEET FOR SOYBEANS[a]

| | 2008-09 | 2009-10E | 2010-11F |
|---|---|---|---|
| Supply: | | | |
| Harvested Acres (millions) | 74.7 | 76.4 | 76.8 |
| Yield (bushels per acre) | 39.7 | 44.0 | 43.9 |
| | | (Million Bushels) | |
| Beginning Stocks | 205 | 138 | 151 |
| Production | 2,967 | 3,359 | 3,375 |
| Imports | 13 | 15 | 10 |
| Total Supply | 3,185 | 3,512 | 3,536 |
| Use: | | | |
| Crushings | 1,662 | 1,752 | 1,665 |
| Exports | 1,279 | 1,501 | 1,570 |
| Seed | 90 | 90 | 88 |
| Residual | 16 | 18 | 29 |
| Total Use | 3,047 | 3,361 | 3,351 |
| Ending Stocks | 138 | 151 | 185 |
| Stocks/Use Ratio | 4.5% | 4.5% | 5.5% |
| Avg. farm price, U.S., $ per bushel | 9.97 | 9.59 | 11.45 |
| Avg. farm price, NYS, $ per bushel | 10.30 | 8.95 | - |

Note : Totals may not add due to rounding; marketing year beginning September 1.

[a]Data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2010) WASDE-488, p.15.

Average farm prices are projected to be $1.86 per bushel above the 2009/10 level. Like corn, soybeans are in a tenuously high price position, even relative to a new higher regime in prices over the past four years. Current expectations about supply and demand this marketing year show strong year-over-year increases in both commodity prices (Table 5-8). Last year at this time, January contracts were trading about $2.50 per bushel lower for beans and over $40 per ton lower for meal. Since contracts for delivery in subsequent crop years are trading at lower prices than for current delivery, the implication is that markets are expecting some improvement in supply relative to expected demand.

TABLE 5-7. WORLD SUPPLY-DEMAND BALANCE FOR SOYBEANS, 2004-05 to 2010-11[a]

| Marketing Year | Domestic Use | Ending Stocks | Stocks/ Use Ratio |
|---|---|---|---|
| | (Million Metric Tons) | | (%) |
| 2004 – 05 | 205.39 | 48.18 | 23.5 |
| 2005 – 06 | 215.21 | 52.94 | 24.6 |
| 2006 - 07 | 225.28 | 62.68 | 27.8 |
| 2007 – 08 | 229.75 | 52.91 | 23.0 |
| 2008 – 09 | 221.13 | 44.02 | 19.9 |
| 2009 – 10E | 239.49 | 60.40 | 25.2 |
| 2010 – 11F | 254.67 | 61.41 | 24.1 |

[a]Data from USDA, "World Agricultural Supply and Demand Estimates." Various issues.
E = preliminary, F = forecast

TABLE 5-8. FUTURES PRICES FOR SOYBEANS AND SOYBEAN MEAL, CHICAGO MERCANTILE EXCHANGE, 17 NOVEMBER 2010

| Contract Month | Beans $ per bushel | Meal $ per ton |
|---|---|---|
| January 2011 | 12.050 | 329.8 |
| March 2011 | 12.150 | 331.9 |
| May 2011 | 12.106 | 330.7 |
| July 2011 | 12.110 | 330.0 |
| September 2011 | 11.594 | 213.2 |
| November 2011 | 11.280 | 293.9 (Dec 2011) |
| November 2012 | 10.682 | 281.5 (Dec 2012) |

Strong demand from China continues to underpin the market. China is the dominant buyer in world soybean and soybean oil markets. Traders are wary about possible interest rate hikes in China after news about credit tightening there to calm inflation fears, but good news entered the markets recently after Ireland has accepted economic assistance from the European Union, giving the euro a boost and pressuring the U.S. dollar. Recent dry conditions in key Brazilian soybean production regions may delay their 2011 harvest, bringing additional supply-side uncertainty to the markets.

With uncertainty abound in expected demands abroad (seemingly changing on a daily basis), look for continued wide price swings over the next several months. Continued strong export demand and a weakening dollar could sustain soybean prices at high levels going into the next marketing year, but with the risk of volatile world economic conditions, forecasting anything with confidence remains elusive.

## Feeds

Reduced production estimates for corn and strong export markets have increased prices of feed-based commodities, with damaging repercussions to U.S. livestock industries that are just recently showing signs of recovery in output product prices. USDA forecasted prices for 2011 steers and broilers are currently 4.9% and

3.1% above 2010 estimates, respectively. Hog prices, which showed strong increases in 2010, are expected to increase modestly (about 1.3%) in 2011, while average all-milk prices for 2011 are similar to the 2010 average estimate. The egg industry, suffering from recent food safety issues and product recalls, will work to regain lost returns with prices projected to remain below 2010 levels.

The reprieve in high feed costs in 2010 improved livestock returns in 2009, but given current commodity prices, increased feed costs are expected in 2011. For farmers purchasing most of their feed inputs, tight and possibly negative margins may occur as we get into 2011. If output prices fail to respond proportionally, livestock and milk production may be curtailed as we get into next spring/summer and eventually lead to higher product prices in the second half of the year. The USDA projected index of grain-consuming animal units (GCAU) in 2010/11 is 92.3 million units, up from 91.6 million in the previous year, with modest increases in feed fed per GCAU. As of 9 November 2010, USDA is expecting modest reductions in red meat production in 2011, and modest increases in poultry and milk production.

Corn and soybean meal futures prices as of 17 November 2010 (Tables 5-5 and 5-8) are used, along with other information, in a model to project selected mixed feed costs. One set of estimates for dairy, hog, and layer feeds over the next two years is shown in Table 5-9. They suggest, for example, that 18% protein dairy feed could be about $30 per ton higher this coming spring than a year earlier. Hog feed costs have an even larger projected feed cost increase relative to 2010 actual feed costs, while layer feed costs are predicted to soften.

As noted in the table's footnote, these particular results assume, among other things, that corn prices will be $5.39 per bushel and soybean meal will be $332 per ton for 2011. These prices are consistent with recent quotes for corn and soybean meal futures contracts for March delivery (and exclude basis adjustments). All predictions are conditional on the assumed information. Obviously, actual ingredient prices next March may be higher or lower than the quotes used in our analysis, and it is the volatility in the underlying ingredient prices that makes feed costs difficult to forecast.

TABLE 5-9. APRIL COMPLETE FEED PRICES FOR DAIRY AND LAYERS, NORTHEAST U.S., 2006-2010.[a]

| Year | Dairy (18%) | Hog (14-18%) | Layer |
|---|---|---|---|
| 2006 | 217 | 290 | 237 |
| 2007 | 259 | 330 | 288 |
| 2008 | 312 | 376 | 332 |
| 2009 | 285 | 352 | 330 |
| 2010 | 272 | 284 | 368 |
| *2011F* | *302* | *372* | *333* |

[a] Historical prices from USDA *Agricultural Prices*. Authors' 2011 forecasts are based on CME March 2011 contract settlement prices (17 November 2010) for corn and soybean meal, and assumed price correlations for corn and distillers dried grains with solubles of 0.70 and corn and meat and bone meal of 0.80. Specifically, assumed prices are respectively: corn $5.386 per bushel, soybean meal $331.9 per ton, distillers dried grains with solubles $174.0 per ton, and meat & bone meal $315.0 per ton.

*Hedging Examples*

A number of different risk management strategies are available to producers looking to assure a positive expected return in volatile markets, e.g., by using forward contracts or futures and options contracts. The right marketing/pricing strategy for the individual producer, however, depends on the individual's attitudes towards risk, the firm's equity, and business management goals. Setting a price floor on output prices,

setting a ceiling on input prices, or a combination of both to lock in a margin are a few example objectives. Certain strategies can lower downside price risk and/or lock in a positive margin, but also sometimes mean that larger returns are foregone.

Discussing risk management strategies in detail is beyond the scope of this chapter; however, two stylized examples examine if current futures prices as of 17 November 2010 have the potential to lock in a positive return. (The authors appreciate the assistance from Bryce Knorr at *Farm Futures Magazine* in developing these stylized examples.) This should not be interpreted as recommended strategies for producers by the authors.

Consider first a cattle feeding operation. Cattle feeding is a volatile business, but university studies show it's usually possible to hedge cattle at a profit during the time the animals are on feed, reducing this risk. Moreover, using exchange-traded contracts it is also possible to increase the odds of locking in a profit before the calves are even bought. Table 5-10 summarizes a scenario a cattle feeder faced at harvest this fall (excluding basis adjustments).

TABLE 5-10. CATTLE FEEDING HEDGING EXAMPLE, 17 NOVEMBER 2010.[a]

| Item | Price | Total |
|---|---|---|
| Costs per head | | |
| 550 pound feeder | $1.148 per pound | $631.13 |
| 49.3 bushels corn | $5.256 per bushel | $259.12 |
| 2,050 pounds distillers grains (50% DM) | $0.028 per pound | $57.81 |
| Other costs | | $195.93 |
| Total costs per head | | $1,143.99 |
| Revenue per head | | |
| 1,150 pound steer | $1.026 per pound | $1,179.90 |
| Net return per head ($ per head) | | $35.91 |

[a] Prices are based on CME futures settlement prices as of 17 November 2010. The feeder price is based on January 2011 feeder cattle futures ($1.1475 per cwt), with contracts for 50,000 pounds or around 91 animals. Corn is the December 2010 futures price ($5.256 per bushel), with contracts of 5,000 pounds (around 4,500 bushels would be needed for 91 feeders). The distillers grain price is for the January DDGs contract ($112.8 per ton, 11.5% moisture), covering 200,000 pounds. This would be twice as much needed to feed 91 feeders, so the price is halved in the example. Finally the steer price is for August 2011 Live Cattle Futures ($102.60 per cwt); the 50,000 pounds specified in the futures contracts would cover 35 steers finished to 1,150 pounds.

As with any hedging scenario, many unknowns could influence the actual outcome from the hedges, even if weight gains and death loss come in as expected. Given contract sizes, one cannot exactly match the expected output and animal weights that deviate from those assumed at purchase and sale will affect net returns. Futures prices could be more or less than that actual cash price paid and hedges would be lifted with transactions done in cash market. A farmer trying to hedge his cattle would have to come up with a hedge ratio to cover both inputs and the selling price. This translates into buying two feeder cattle futures, two corn futures, and one DDGS futures, while selling five live cattle futures. In other words, the hedge looks profitable on paper, depending on basis. By the time the animals are sold in August, that may or may not be the case.

The second example considers a dairy farm operation with 1,000 cows and comparable replacement heifer complement. The average milk production per cow per month is 2,000 pounds. The farm manager is contemplating hedging an individual month's production (here November 2011) and locking in an associated milk-feed (concentrate) margin. Table 5-11 summarizes the scenario. It assumes pricing feed inputs at contemporary futures prices for nearby contracts while pricing milk for a distant delivery month (see footnote for details). Clearly, other prices can be used, depending on the individual farm situation.

TABLE 5-11. MILK PRODUCTION HEDGING EXAMPLE, 17 NOVEMBER 2010.[a]

| Item | Price | Total |
|---|---|---|
| Monthly costs per cow | | |
| 5.0 bushels corn grain | $5.256 per bushel | $26.28 |
| 0.2 ton soybean meal | $328.3 per ton | $65.66 |
| Other feed costs: | | |
| Roughages (grass, alfalfa, corn silage) | | $97.67 |
| Other costs (minerals, vitamins, etc.) | | $33.85 |
| Total feed cost | $11.17 per cwt milk | $223.46 |
| Monthly revenue per cow | | |
| 2000 pounds milk sales | $15.47 per cwt milk | $309.40 |
| Producer price differential (Syracuse, NY) | $2.50 per cwt milk | $50.00 |
| Total revenue | | $359.40 |
| Net return per cow | $6.80 per cwt milk | $135.94 |

[a] Feed costs per cow include dry cow and replacement heifer costs. The corn price is based on December 2010 corn futures ($5.256 per bushel), with 5,000 bushel contracts. Soybean meal is the December 2010 futures price ($328.3 per ton), with 100 ton contracts. Finally, the milk price is for November 2011 Class III Milk Futures (latest date with current trading), with 200,000 pounds per contract, plus an average producer price differential for Syracuse, NY in the Northeast Marketing Order.

Roughages are typically produced on the farm in New York, but are priced here at opportunity cost. The milk producer trying to hedge his milk-feed margin for November 2011 would buy two soybean meal contracts and one corn futures, while selling ten Class III milk futures. Again, the hedge looks profitable on paper based on settlement prices 17 November 2010, depending on basis, leaving $6.80/cwt to cover other variable production costs, including labor and management. Whether that is sufficient will depend on the individual farm's operating costs, including those represented above as 'other feed costs.

The important thing for producers is to have these types of models built to their own specific circumstances, so they can look at hedge profitability. Tracking these returns can help the producer learn when it's a "good" time to hedge, regardless of attempts to time the market. Our general point is current prices for nearby and more distant contracts can be used to evaluate whether a hedge will assure a sufficient margin to consider placing a hedge. There certainly will be times when relative prices will not assure a positive return, but other periods when relative prices will make hedging profitable.

# Chapter 6. Dairy — Markets and Policy

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## 2011 Dairy Outlook

Positive Factors:

- Excellent quality and quantity of feeds in the Northeast
- Increased domestic demand and export opportunities

Negative Factors:

- High purchased feed costs
- Weaker balance sheets

Uncertainties:

- Length of recession
- Access to credit
- Weather impacts of La Niña

New York Dairy Situation and Outlook
2009 Projected 2010, and Estimated 2011

| Item | 2009 | 2010 | 2011 | Percent Change 09-10 | Percent Change 10-11 |
|---|---|---|---|---|---|
| Number of milk cows (thousand head) | 619 | 611 | 611 | -1.3 | 0.0 |
| Milk per cow (lbs.) | 20,071 | 20,700 | 20,750 | 3.1 | 0.2 |
| Total milk production (million lbs.) | 12,424 | 12,648 | 12,675 | 1.8 | 0.2 |
| Blended milk price ($/cwt.)[a] | 13.07 | 17.01 | 16.87 | 30.1 | -0.8 |

[a] Northeast federal order statistical uniform price for farms shipping milk to Suffolk County, MA (Boston).

Table 6-1. U.S. Milk Supply and Utilization, 2000–2011

| | 2000 | 2002 | 2003 | 2004* | 2005 | 2006 | 2007 | 2008* | 2009[a] | 2010[b] | 2011[c] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Supply | | | | | | | | | | | |
| Cows Numbers (thous.) | 9,206 | 9,139 | 9,082 | 9,011 | 9,043 | 9,137 | 9,189 | 9,315 | 9,201 | 9,110 | 9,082 |
| Production/cow (lbs) | 18,201 | 18,608 | 18,759 | 18,968 | 19,566 | 19,894 | 20,204 | 20,396 | 20,576 | 21,201 | 21,405 |
| Production | 167.6 | 169.8 | 170.3 | 170.9 | 176.9 | 181.8 | 185.7 | 190.0 | 189.3 | 193.1 | 194.4 |
| Farm Use | 1.3 | 1.0 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Marketings | 166.3 | 168.8 | 169.2 | 169.9 | 175.9 | 180.8 | 184.6 | 189.0 | 188.4 | 192.2 | 193.4 |
| Beginning Commercial Stocks | 6.1 | 6.1 | 9.9 | 8.3 | 7.2 | 8.0 | 9.5 | 10.4 | 10.1 | 11.3 | 10.0 |
| Imports | 4.4 | 5.1 | 5.0 | 5.3 | 5.1 | 5.0 | 4.6 | 3.3 | 5.6 | 4.1 | 4.0 |
| **Total Supply** | **176.8** | **180.0** | **184.2** | **183.6** | **188.2** | **193.8** | **198.8** | **202.7** | **204.1** | **207.6** | **207.4** |
| Utilization | | | | | | | | | | | |
| Commercial Disappearance | 169.2 | 169.8 | 174.7 | 176.5 | 180.2 | 184.2 | 188.4 | 192.6 | 192.1 | 197.4 | 197.2 |
| Ending Commercial Stocks | 6.8 | 9.9 | 8.3 | 7.2 | 8.0 | 9.5 | 10.4 | 10.1 | 11.3 | 10.0 | 10.2 |
| DEIP | 0.4 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Net Removals (excluding DEIP) | 0.5 | 0.3 | 1.1 | -0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.2 | 0.0 |
| **Total Use** | **176.8** | **180.0** | **184.2** | **183.6** | **188.2** | **193.8** | **198.8** | **202.7** | **204.1** | **207.6** | **207.4** |

Source: Dairy Situation and Outlook, Milk Production, and Dairy Market News, U.S. Department of Agriculture. Note that total may not add exactly due to rounding.

* Leap year.

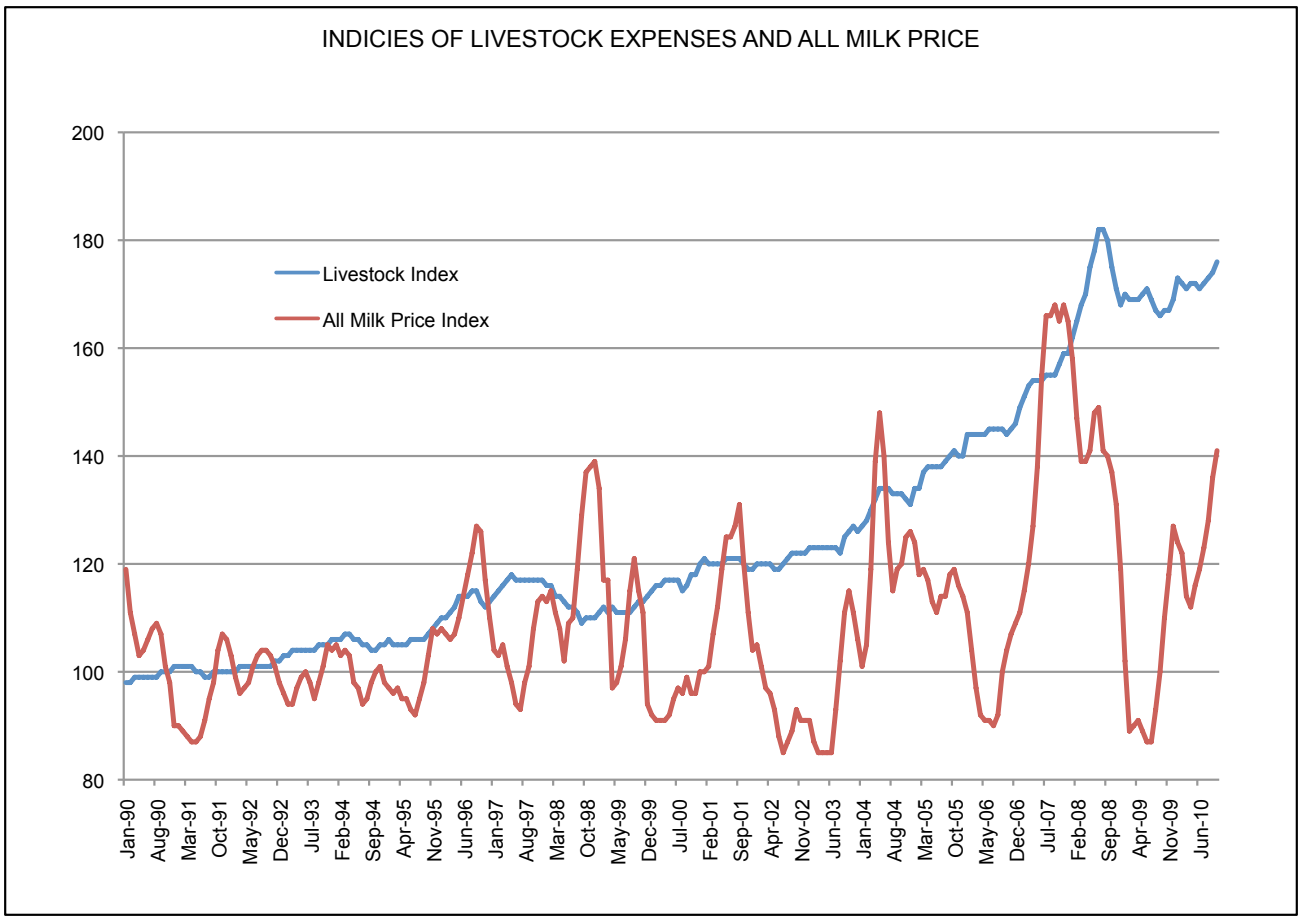
[a] Revised.

[b] Based on preliminary USDA data and Cornell estimates.

[c] Projected by Mark Stephenson.

## The Dairy Situation

2010 provided some price relief from the devastating milk prices of 2009. At it's low in 2009, the All Milk price hit $11.30 per hundredweight and averaged $12.83 for the year. This value contrasted with the $18.33 that the All Milk price averaged in 2008. For 2010, the all milk price is forecast to average about $16.26 with a high price of $18.30 in October. The chart below shows the U.S. All Milk price calculated as an index with the average value over the years 1990-92 equal to 100. This is the same time period that the Livestock Expense Index uses as a base. Over the years, the Livestock Expense Index has trended higher than the All Milk Index. The chart would suggest that over time, dairy producers are finding ways to produce milk using less inputs. The chart also shows just how large the gap between input and milk prices was in 2009. Even though the gap was reduced, most dairy producers will not have gained any ground on equity that was lost in 2009.



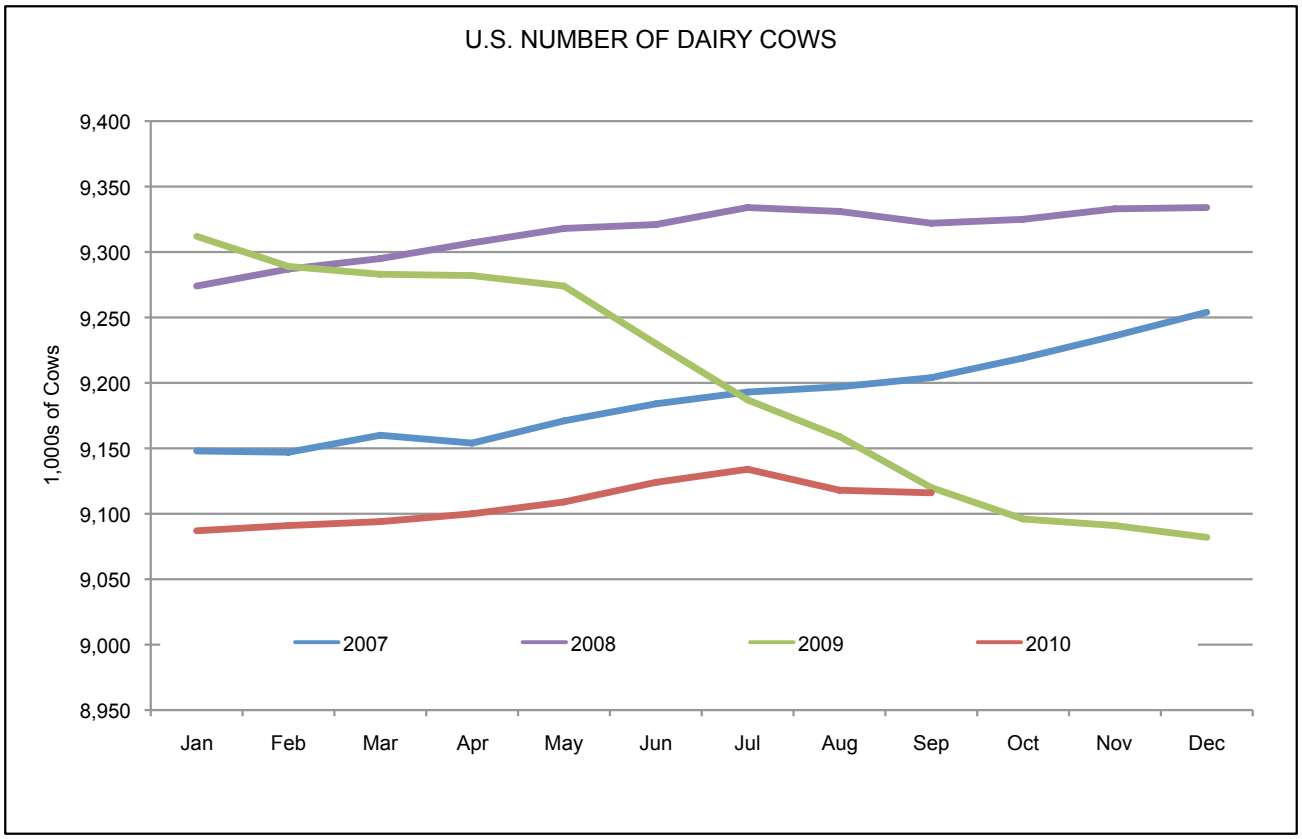

## *The Milk Supply*

Dairy producers had responded to the extraordinary high milk prices of 2007-08 by adding cows. Increased milk production is exactly the market response that high prices are calling for but, the milk production response hit the market about the same time as the world slid into economic recession.

The milk price collapse in 2009 was the result of high domestic milk production coupled with a decline in domestic and export demand for dairy products. It was the first year since 1991 that we have seen a decline in commercial disappearance of dairy products.

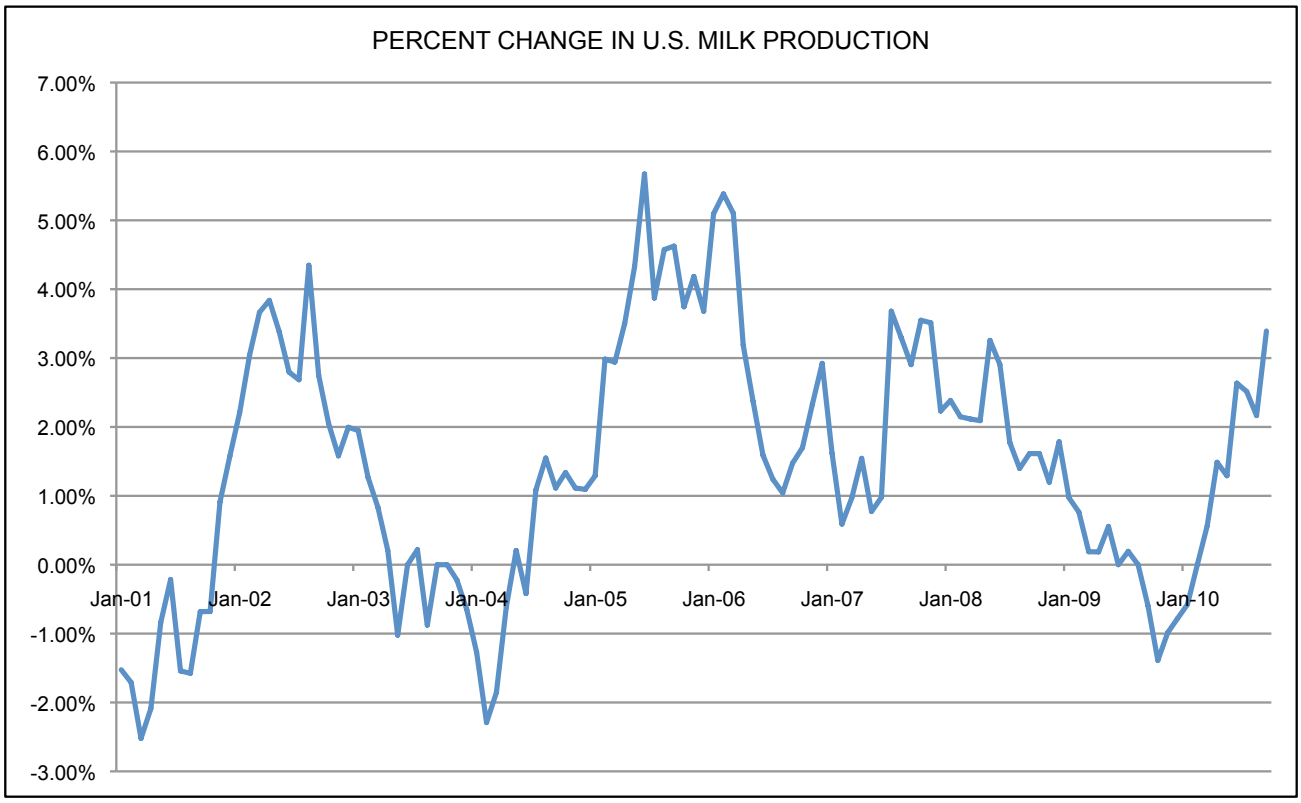
The milk price was so low that many dairy producers faced variable costs of production that were not covered by their milk price. In fact, many producers who purchase all of their feed found that in several months, not even the feed costs were covered by their milk price. Under these circumstances, an economist would suggest that the only rational solution is to stop production until prices recover—a feat that isn't easy to do with milk cows.

Many milk producers did go out of business as a result of 2009's low milk prices. But, many more producers in the situation of not covering their variable costs of production looked at each animal in their herd to see if they were covering their individual costs. As a result, a large number of cows were culled from the national herd as seen in the chart below. The majority of the culled cows came out of western states where purchased feeds were much more prevalent. The moderating milk prices in 2010 stopped the cow loss and actually increased numbers somewhat.




The other factor in milk production is the production per cow. In 2007, feed prices began to increase following corn prices up, in part because of new demand for ethanol production. Feed prices hit a peak in 2008 and, although they moderated, they seemed to find a new and higher plateau. Milk per cow had only modest gains from 2007 through 2009. However, genetic gains continued to accrue over that time period and when milk prices increased somewhat in 2010, milk per cow exploded to nearly 3% over 2009 levels.

Taken together, increased cow numbers coupled with increased milk per cow has reversed the loss in milk production that was seen in 2009. Western states, like California, Arizona and Idaho, increased milk production dramatically from 7% to more than 13% in September from year earlier levels.

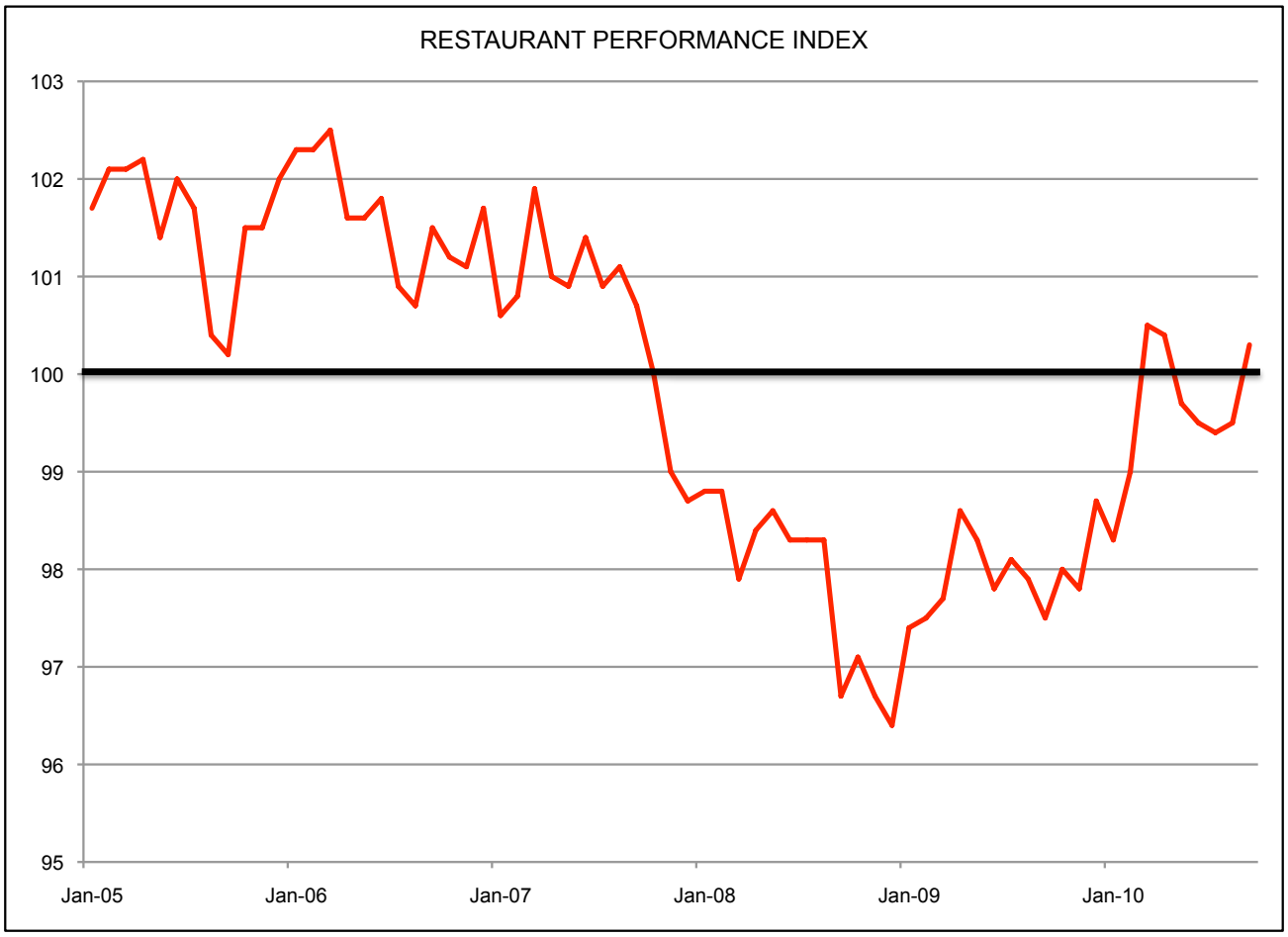



*Dairy Product Demand*

The recession, which began in 2009, was global in nature and had a great impact on the U.S. dairy industry. In the United States, unemployment rose to more than 10% in the last quarter of 2009 and has persisted at well more than 9% in 2010. Out-of-home eating had diminished significantly and many manufactured dairy products experienced lost or stagnant sales. There were however a few bright spots, such as fluid milk sales in 2009. Many folks attributed the increase in fluid milk consumption to families who were rediscovering their dining room table. When they were eating at home, they picked up an extra gallon of milk and additional fluid milk was consumed. However, it may be the case that the low milk price was also appreciated by consumers and that spurred greater consumption. In 2010, the higher milk price seems to brought fluid consumption back to lower pre-2009 levels.

The Restaurant Performance Index (RPI) certainly tells us something about dairy product consumption but it may also be a leading indicator of the general economy. The index is compiled by the National Restaurant Association from their members. Thousands of restaurants, from fine dining to fast food, respond to questions about the volume of customers in each month, the value of the meals purchased, number of employees, capital investments, etc. and the index is formulated such that a value of more than 100 indicates expansion of the restaurant industry and less than 100 is

suggestive of contraction. The RPI began to slide in 2007, long before the general population was aware that we were moving into recession. People simply were not eating out much as their incomes were becoming stretched. Currently, the RPI has been increasing and has experienced a few months above the 100 level indicating some expansion. This is good for dairy as is suggests that consumers are beginning to spend more and perhaps that we are climbing out of the recession.




Domestic markets are very important for product sales but increasingly, the U.S. dairy industry has embraced exports. Domestic growth in sales are likely to be limited to modest increases in per capita consumption and very stable but slow population growth. Exports are our portal for significant growth in sales. For many years, export sales accounted for 3-4 percent of our total milk supply—only slightly more than our imports of dairy products. In 2007-08 there were several reasons for increased export opportunities but, the bottom line is that our exports surged to 10-12 percent of our milk production and the value of exports for the first time ever was greater than imports. Exports collapsed in 2009 as the soft economies in other countries would not allow them the luxury of importing as much dairy product. These same economies have rebounded from the world wide recession more rapidly than our own and in 2010, exports have once again nearly reached the high levels of 2008.

*Dairy Stocks*

Commercial stocks of butter reached some of the lowest levels that we have seen since 2001 while natural cheese stocks were among the highest levels since the mid-1980s. Several factors account for this discrepancy.

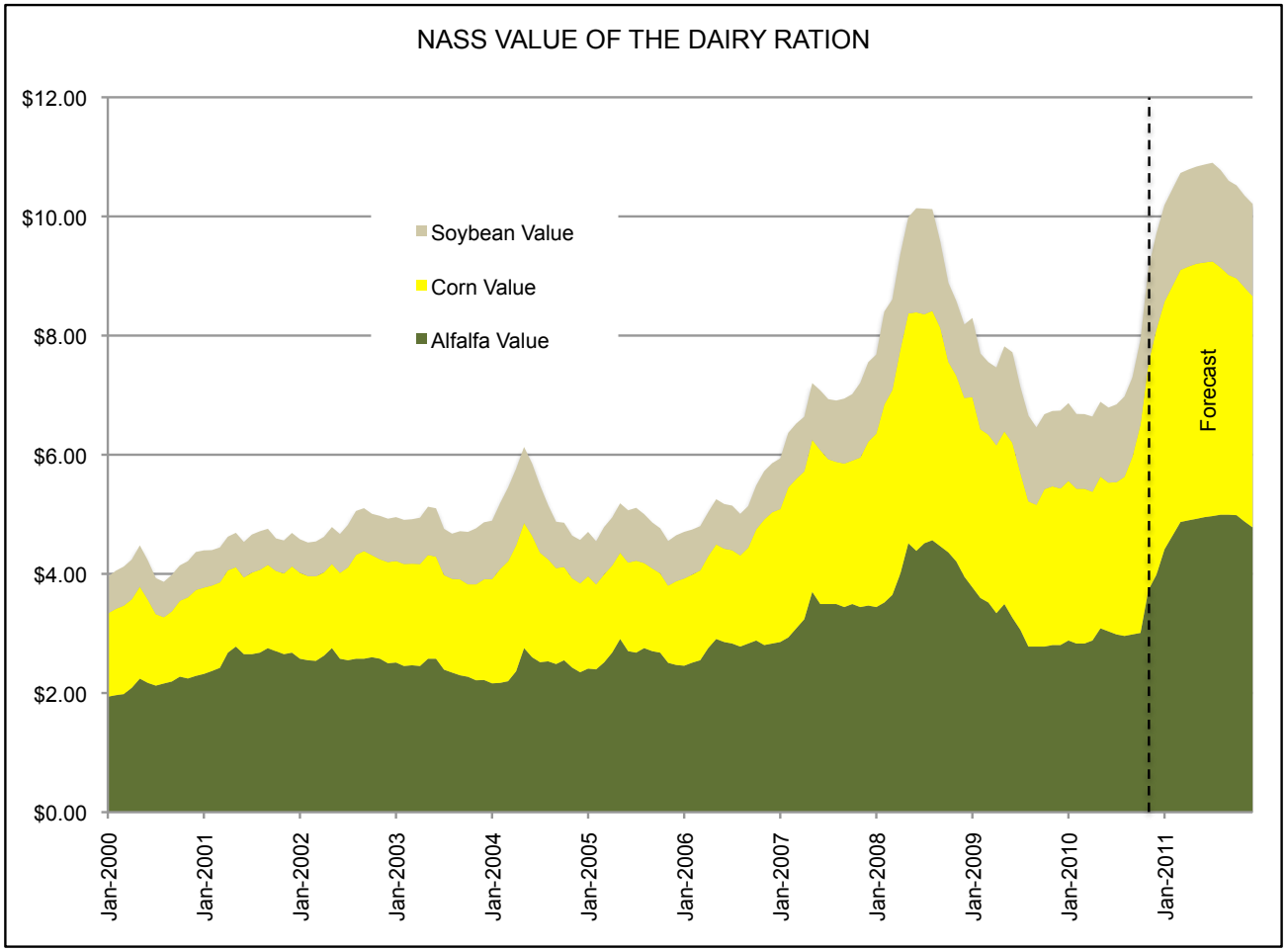
Butterfat production was depressed in this country and across the globe. Feed quality probably had something to do with butterfat depression but so did unusually high global temperatures. The September year-to-date globally averaged temperature was virtually tied with 1988 as the warmest such period (January through September) on record. September also marked the first time in modern history that the Northwest Passage and the Northern Sea Route were ice free. Here in the U.S., temperature anomalies showed that several summer months were the hottest on record for states east of the Continental Divide. Still, Eastern Europe and Russia suffered more. Excessive heat in those areas caused widespread drought and crop failure and, milk production in those regions suffered as well. Russia imported a significant amount of butter—much of it from the U.S.—to make up for a shortfall in their production. The combination of less butterfat being produced and greater demand for butter exports increased the price of butter dramatically.

As we headed into 2010, milk production levels were strong but domestic and export demand was weak. Much of the extra milk production found it's way into a cheese vat and we observed the largest growth in cheese production since 2006. A significant amount of cheese was exported but not enough to keep stocks at a comfortable level. In spite of high stocks, cheese prices remained strong for much of 2010 but have fallen off in the last quarter.

## The Dairy Outlook

We can't begin to forecast milk prices without acknowledging the severe impact that feed prices will have on the dairy industry in 2011. At an estimated 12.7 billion bushels, the 2010 U.S. corn crop was the third largest in history. However, the corn stocks-to-use ratio is estimated to be the smallest in 14 years. In part, the drought in Russia is to blame as they have not be selling wheat and other grains into world markets and worldwide demand for corn has been very strong. Ethanol production is also expected to use more corn this year as standards for inclusion into gasoline have increased from 10% to 15%. The futures markets have reacted to this information with corn prices over $6.00 a bushel in some months of the year ahead. Soybean markets have also been impacted and hay prices are expected to follow.

The chart below shows the National Agricultural Statistics Service (NASS) value of the dairy ration from 2000 and forecast through 2011. The increase in dairy feed prices are forecast to be as high as they were during their previous peak in 2008 but are expected to stay there for a longer time period. The futures markets are also forecasting a somewhat lower milk price in 2011 than we have seen in 2010. This will have a devastating impact on dairy farms who purchase the majority of their feed.

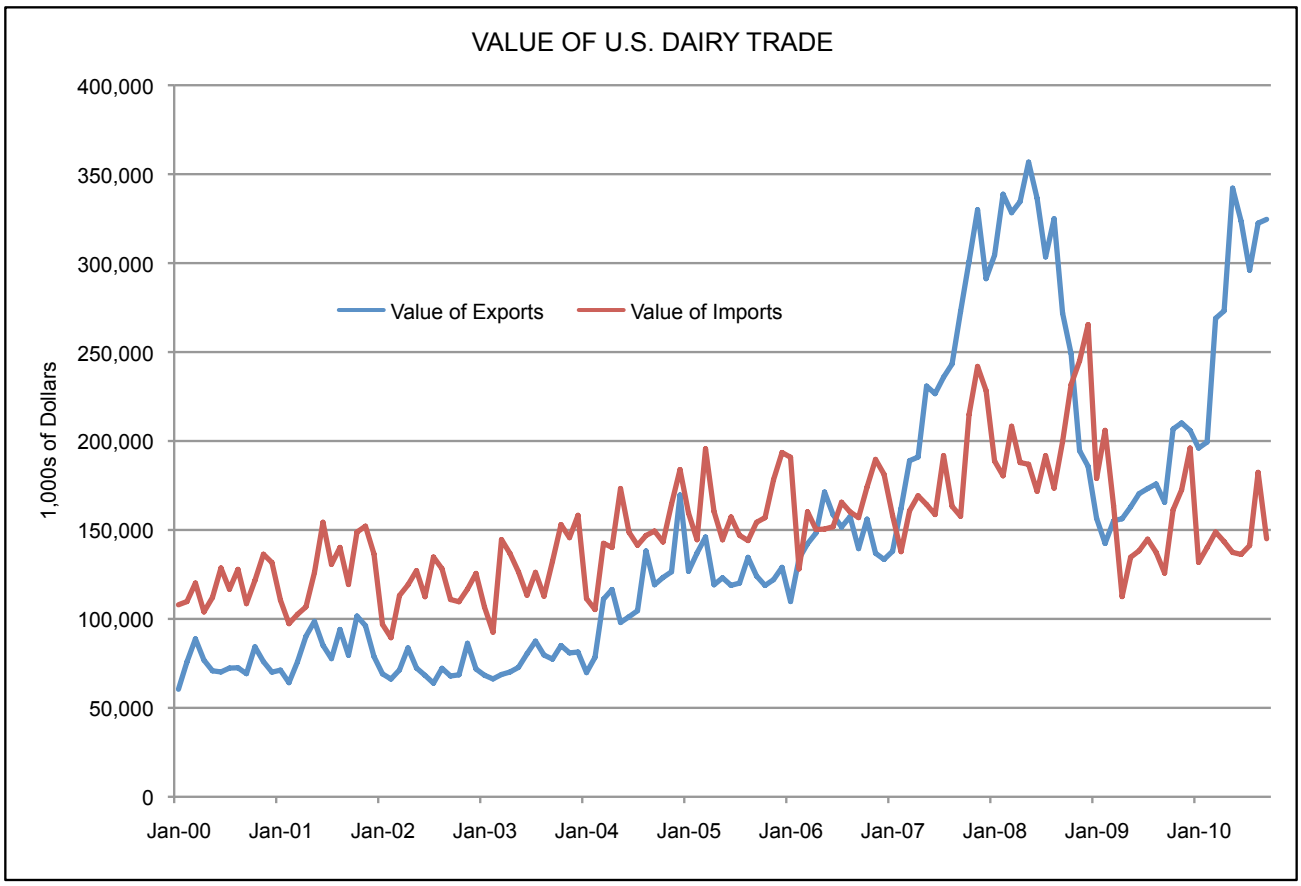



Farms who drew on credit reserves and whose equity position was greatly diminished in 2009 will face a most difficult year. Banks and input suppliers will look very carefully at the borrowing capacity of all requests and many farms will find that their credit capacity is not large enough for the need this year. If an unusual number of these farms are forced to terminate their businesses, the additional cows and facilities on the market will lower those asset values across the country putting additional stress on balance sheets.

Looking forward to 2011, I expect global demand for dairy products to remain strong. Asian economies have recovered more quickly than our own and exports to countries such as China have been strong. This would also be the case for our major export destination, Mexico, but trade south of the border may be hampered by a NAFTA dispute. The U.S. was supposed to lower the hurdle for long-haul trucks originating in that country with goods bound for the United States. We have not done that and Mexico has retaliated by holding up trucks with perishable dairy products bound for sale in Mexico or by including a penalty tariff on those goods. This is a small dispute and it will probably be cleared up in 2011 but it is putting pressure on dairy trade with Mexico.

The U.S. dollar has weakened against most major currencies. In particular, developing countries have seen their economies rebound while the European Union and the United States have been lackluster. Although this sounds like a problem, for U.S. exporters it is a boon making our goods look relatively less expensive. It also makes the United States look like a less attractive destination

for countries hoping to export dairy products. In 2010 imports of dairy products were significantly lower than in previous years. The following graph shows the value of dairy exports and imports.




If the U.S. fully implements the course of quantitative easing that it has started on, the value of the dollar would be expected to decline even further against other currencies. This would only enhance the likelihood of U.S. exports and further reduce the value of imports.

The opportunities for skim milk powder exports will be challenged by the intervention stocks that the European Union is holding. In response to low milk prices in Europe, the EU began to purchase dairy products in 2009 and accumulated large stocks of milk powder. The EU has started to ease this product into world markets but they have 200,000 million tonnes of product to move. Much of that will be sold to markets that the U.S. would hope to sell to.

Another factor in exports is the outlook for Oceania's production. Currently, a La Niña is forming in the Equatorial Pacific ocean. This is a cooler-than-average body of water that impacts weather from the U.S. to Oceania. In Oceania, it brings significantly more rains while in the States, it tends to bring warmer and drier weather to the Southwest. This would be a double whammy with high feed prices to the Southwest dairy industry. If the rains in Oceania are not excessive, then it could mean that Australia's decade-long drought is broken and bring more milk production. If the rains are excessive, then pastures could be damaged and milk production somewhat less than expected. The gap left between world demand, EU's intervention stocks and Oceania's production is left for the U.S. to fill.

Currently, I am forecasting a New York All Milk price that would average about 40¢ less than 2010. In particular, the first have of the year will experience lower prices with a significant rebound in the latter half. I also think that there is more upside potential in milk prices in the last two quarters than there is downside potential. It is my belief that milk futures markets are currently undervaluing milk prices in the latter half of the year. I would use caution in locking in second half prices and wait for opportunities to put a floor under them with options if desired.

The forecast for 2011 would not generate a Class I milk price in Boston lower than $16.94 which is the unadjusted trigger price for Milk Income Loss Contract (MILC) payments to producers. However, the projected high feed prices would adjust the $16.94 trigger to levels that would yield MILC payments in every month of 2011. The average MILC payment is projected to be about 60¢ per hundredweight reaching peak payments in July, 2011. MILC payments are currently capped at 2.985 million pounds of milk production.

## Dairy Policy

We are looking forward to the 2012 Farm Bill. 2011 would normally be when serious discussions begin on the bill. Several dairy producer groups have been working on policy ideas to mitigate some of the milk price volatility that we have seen in the last few years. Price volatility appears to have two primary causes. One cause is internal to the dairy industry and seems to derive from lags along the supply chain. This volatility has several cycles but the predominant one is about 36 months in frequency (peak to peak) and is getting larger in magnitude over the last decade. The other source of volatility are economic shocks to the industry. We had a feed shock in 2008 and we are probably headed into another one in 2011. We also had a demand shock in 2009 with the economic recession.

Two bills have been introduced, H.R.5288 and S.3531 in the House and Senate respectively. The bills are very similar and have been referred to as the Costa-Sanders bills or the Dairy Price/Market Stabilization Program. These bills would seek to modify producer incentives to expand milk production at times when either milk prices are low and/or feed prices are high. They would implement market access fees for milk production that exceeds year earlier production levels by an allowable level of growth. The collected fees would be returned to dairy producers who did not exceed allowed growth levels effectively forming a price wedge between producers with rapid growth and those willing to grow more slowly.

National Milk Producers Federation has also been busy drafting their Foundation for the Future (FFTF)—a suite of policy changes that they would like to see implemented. FFTF would discard the venerable Dairy Product Price Support Program and the Milk Income Loss Contracts and replace them with a new safety net. The Dairy Producer Margin Protection Program would act as an insurance program. The margin is calculated as the difference between the All Milk Price and a Ration Value. The premium for a base level of protection at $4.00 would be completely paid for by taxpayer funds. A dairy producer would be able to buy higher levels of protection at decreasingly subsidized premiums. Under FFTF, several Federal Milk Marketing Order reforms would also take place, the most notable of which is the replacement of dairy product price formulas by a competitive pay price determined from all class III plants buying more than 500,000 pounds of milk a day. Arguably, the most potent part of the FFTF is the Dairy Market Stabilization Program which seeks to

incentivize dairy producers to manage their milk production. Using the same margin calculation as the Margin Protection Program, dairy producers would only be paid for 98% of their milk base calculated as the most recent rolling average 3 months of production if the margin was less than $6 for a consecutive two months. The penalty would increase to production above 97% or 96% of base if the margin was $5 or $4 respectively. The money from penalty milk that was marketed would be used for demand enhancing programs (for instance, purchase of dairy products to be given away through non-commercial channels).

In-depth analyses of these proposals and AgriMark's Marginal Milk Pricing plan can be found at http://dairy.wisc.edu/ The analyses indicate that all three programs would significantly reduce milk price volatility and also indicate that government expenditures under all of the programs would be greatly reduced. If milk prices don't go to the deep low's of 2009 or don't stay there for as long, the safety net programs are seldom invoked.

The mid-term elections of 2010 showed just how dissatisfied voters were with the state of the economy. Republicans gained 6 seats in the Senate but the majority was retained by the Democrats. Republicans gained 60 seats in the House and more than enough to take control. All of this has implications for dairy policy. In recent years, the House has taken the lead on drafting Farm Bill policy and, prior to the election, Collin Peterson, the House Agricultural Committee Chairman, had already begun holding listening sessions in preparation for the legislation.

The new incoming Chair of the House Agriculture committee will be Republican Frank Lucas of the 3rd Congressional District in Oklahoma. The Chairperson of the Senate Agriculture Committee, Blanche Lincoln, lost her bid for re-election. It is likely that Debbie Stabenow, from Michigan, will take over that position. Changes in leadership in both committees presents a continuity challenge but there are greater challenges than leadership.

Many of the Republicans elected into Congress were supported by Tea Party—a very conservative group. These freshman Congress men and women feel as though they have a mandate for significant change and many are not prepared to be guided by senior members of their own party. In effect, we could have a three party system for a period of time until, or if, Republicans can pull together and this could take at least a year. By that time, we will be into the next election cycle including the Presidential race. It isn't hard to imagine that the Farm Bill gets put off until 2013.

It will be hard to know what the primary drivers and motivation will be for the next Farm Bill, but it is safe to say that there will be much less money to be spent on programs. That favors policy like the three proposals discussed earlier. They are very low-cost to operate and dramatically reduce taxpayer support by keeping milk prices above safety net levels most of the time.

Table 6-2. National Farm Prices for Milk; CCC Purchase, Wholesale, and Retail Prices for Cheddar Cheese, Butter, and Nonfat Dry Milk; and Selected Retail Price Indices, 2000–2010

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Farm Milk ($/cwt.) | | | | | | | | | | | |
| All Milk (ave. fat) | 12.40 | 15.04 | 12.18 | 12.55 | 16.13 | 15.19 | 12.96 | 19.21 | 18.45 | 12.93 | 16.35 |
| Class III (3.5%) | 9.74 | 13.10 | 10.42 | 11.42 | 15.39 | 14.05 | 11.89 | 18.04 | 17.44 | 11.36 | 14.44 |
| Support (3.5%) | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 |
| Milk Price: Feed Price Value | 3.06 | 3.39 | 2.60 | 2.61 | 3.10 | 3.24 | 2.57 | 2.81 | 2.01 | 1.78 | 2.28 |
| MILC payments | 0.00 | 0.06 | 1.21 | 1.09 | 0.22 | 0.04 | 0.61 | 0.07 | 0.00 | 1.26 | 0.00 |
| Cheddar Cheese, Blocks ($/lb.) | | | | | | | | | | | |
| CCC Purchase | 1.122 | 1.131 | 1.131 | 1.131 | 1.131 | 1.131 | 1.131 | 1.131 | 1.131 | 1.130 | 1.130 |
| Wholesale, Chicago Mercantile Exchange | 1.149 | 1.439 | 1.182 | 1.317 | 1.649 | 1.492 | 1.239 | 1.758 | 1.857 | 1.298 | 1.497 |
| Butter ($/lb.) | | | | | | | | | | | |
| CCC Purchase, Grade A or higher, Chicago | 0.668 | 0.855 | 0.855 | 1.050 | 1.050 | 1.050 | 1.050 | 1.050 | 1.050 | 1.050 | 1.050 |
| Wholesale, Gr. AA, Chicago Merc. Exchange | 1.177 | 1.663 | 1.106 | 1.145 | 1.817 | 1.549 | 1.236 | 1.368 | 1.465 | 1.243 | 1.739 |
| Nonfat Dry Milk | | | | | | | | | | | |
| CCC Purchase, Unfortified ($/lb.) | 1.010 | 0.900 | 0.900 | 0.800 | 0.800 | 0.800 | 0.800 | 0.800 | 0.800 | 0.800 | 0.800 |
| Wholesale, Central States | 1.015 | 1.004 | 0.928 | 0.838 | 0.858 | 0.985 | 1.001 | 1.804 | 1.300 | 0.993 | 1.251 |
| Retail Price Indices (1982–84=100.0) | | | | | | | | | | | |
| Whole Milk | 156.9 | 165.9 | 162.1 | 162.5 | 183.4 | 184.9 | 181.6 | 205.4 | 217.2 | 183.2 | 190.1 |
| Cheese | 162.8 | 167.6 | 170.0 | 169.4 | 180.8 | 183.3 | 180.8 | 191.5 | 214.6 | 203.5 | 203.8 |
| All Dairy Products | 160.7 | 167.1 | 168.1 | 167.9 | 180.2 | 182.4 | 181.4 | 194.8 | 210.4 | 197.0 | 198.5 |
| All Food | 167.9 | 173.4 | 175.6 | 179.4 | 186.3 | 189.8 | 193.1 | 201.2 | 214.1 | 215.1 | 215.5 |
| All Consumer Prices | 172.2 | 177.1 | 179.9 | 184.0 | 188.9 | 195.3 | 201.6 | 207.3 | 215.3 | 214.6 | 217.6 |

Source: Dairy Situation and Outlook, Dairy Market News, and Federal Milk Order Market Statistics, U.S. Department of Agriculture.

[a] Revised.

[b] Estimated by Mark Stephenson.

[c] Milk Income Loss Contract payments began in October of 2001.

MILK PRICE PROJECTIONS*
Northeast Federal Order Blend Price
3.5 Percent, Suffolk County, Massachusetts
Last Quarter 2009-2010, Four Quarters 2010-2011

| Month | 2009 | 2010 | Difference |
|---|---|---|---|
| | (dollars per hundredweight) | | |
| October | 14.06 | 18.61 | 4.55 |
| November | 15.81 | 18.90a | 3.09 |
| December | 16.11 | 17.30a | 1.19 |
| *Fourth Quarter Average* | 15.33 | 18.27a | 2.94 |
| ***Annual Average*** | ***19.85*** | ***18.76*** | ***-1.09*** |

| Month | 2010 | 2011a | Difference |
|---|---|---|---|
| | (dollars per hundredweight) | | |
| January | 16.26 | 16.51 | 0.25 |
| February | 16.30 | 16.26 | -0.04 |
| March | 15.54 | 16.51 | 0.97 |
| *First Quarter Average* | 16.03 | 16.43 | 0.39 |
| April | 15.11 | 16.51 | 1.40 |
| May | 15.91 | 16.49 | 0.58 |
| June | 16.73 | 16.57 | -0.16 |
| *Second Quarter Average* | 15.92 | 16.52 | 0.61 |
| July | 17.43 | 16.70 | -0.73 |
| August | 17.74 | 17.02 | -0.72 |
| September | 18.33 | 17.29 | -1.04 |
| *Third Quarter Average* | 17.83 | 17.00 | -0.83 |
| October | 18.61 | 17.48 | -1.13 |
| November | 18.90a | 17.58 | -1.32 |
| December | 17.30a | 17.50 | 0.20 |
| *Fourth Quarter Average* | 18.27a | 17.52 | -0.75 |
| ***Annual Average*** | ***17.01a*** | ***16.87a*** | ***-0.15*** |

* Averages may not add due to rounding.

[a] Projected.

# Chapter 7. Dairy -- Farm Management

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## Herd Size Comparisons

The 204 New York dairy farms that participated in the Dairy Farm Business Summary (DFBS) Project in 2009 have been sorted into seven herd size categories and averages for the farms in each category are presented in Tables 7-1 and 7-2. Note that after the less than 60 cow category, the herd size categories increase by 40 cows up to 100 cows, by 100 cows up to 200 cows, by 200 cows up to 600 cows and by 300 cows up to 900 cows.

In most years, as herd size increases, the net farm income increases; however, that was not the case for 2009 (Table 7-1). All herd size categories averaged a negative net farm income without appreciation. Net farm income without appreciation averaged $-1,939 per farm for the less than 60 cow farms and $-490,500 per farm for those with more than 900 cows. Return to all capital without appreciation; however, generally increased as herd size increased, although it too was negative for all herd sizes.

It is more than size of herd that determines profitability on dairy farms. Farms with 900 and more cows averaged $-358 net farm income per cow while 60 cow dairy farms averaged $-40 net farm income per cow. The under 60 herd size category had the highest net farm income per cow while the 60 to 99 herd size category had the second highest net farm income per cow at $-137. Other factors that affect profitability and their relationship to the size classifications are shown in Table 7-2.

**TABLE 7-1. COWS PER FARM AND FARM FAMILY INCOME MEASURES**
**204 New York Dairy Farms, 2009**

| Number of Cows | Number of Farms | Average Number of Cows | Net Farm Income without Appreciation | Net Farm Income per Cow | Labor & Management Income per Operator | Return to all Capital without Appreciation |
|---|---|---|---|---|---|---|
| Under 60 | 25 | 48 | $ -1,939 | $ -40 | $ -30,015 | -7.2% |
| 60 to 99 | 28 | 78 | -10,721 | -137 | -36,440 | -7.6% |
| 100 to 199 | 40 | 138 | -26,722 | -193 | -50,868 | -5.1% |
| 200 to 399 | 27 | 291 | -48,149 | -165 | -69,206 | -3.8% |
| 400 to 599 | 22 | 489 | -79,515 | -162 | -96,897 | -3.1% |
| 600 to 899 | 26 | 726 | -144,090 | -199 | -178,944 | -2.6% |
| 900 & over | 36 | 1,368 | -490,500 | -358 | -382,118 | -4.1% |

Note: All data in this section are from the New York Dairy Farm Business Summary and Analysis Project unless a specific source is specified. Publications reporting Dairy Farm Business Summary data for New York, three regions of the state, for large herds, small herds, grazing farms, and farms that rent are available from the Charles H. Dyson School of Applied Economics and Management website: http://www.dyson.cornell.edu/outreach/index.php .

This year, net farm income per cow did not exhibit the usual increase as herd size increased. All herd size categories saw a decrease in operating cost of producing milk from a year earlier (Table 7-2). Net farm income per cow will increase as farms become larger if the costs of increased purchased inputs are offset by greater and more efficient output.

The farms with more than 900 cows averaged more milk sold per cow than any other size category (Table 7-2). With 25,229 pounds of milk sold per cow, farms in the largest herd size group averaged 9.1 percent more milk output per cow than the average of all herds in the summary with less than 900 cows.

The ability to reach high levels of milk output per cow with a large herd is a major key to profitability. Three times a day milking (3X) and supplementing with bST are herd management practices commonly used to increase milk output per cow in large herds. Many dairy farmers who have been willing and able to employ and manage the labor required to milk 3 times per day have been successful. Only 2 percent of the 53 DFBS farms with less than 100 cows used a milking frequency greater than 2 times per day. As herd size increased, the percent of herds using a higher milking frequency increased. Farms with 100 to 200 cows reported 8 percent of the herds milking more often than 2 times per day, the 200-399 cow herds reported 74 percent, 400-599 cow herds reported 77 percent, 600-899 cow herds reported 81 percent, and the 900 cow and larger herds reported 89 percent exceeding the 2 times per day milking frequency.

**TABLE 7-2. COWS PER FARM AND RELATED FARM FACTORS**
**204 New York Dairy Farms, 2009**

| Number of Cows | Average Number of Cows | Milk Sold Per Cow (lbs.) | Milk Sold Per Worker (cwt.) | Till-able Acres Per Cow | Forage DM Per Cow (tons) | Farm Capital Per Cow | Cost of Producing Milk/Cwt. | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Operating | Total |
| Under 60 | 48 | 17,805 | 4,533 | 3.4 | 8.2 | $11,742 | $12.08 | $21.42 |
| 60 to 99 | 78 | 18,114 | 5,350 | 3.2 | 8.2 | 10,420 | 12.83 | 20.66 |
| 100 to 199 | 138 | 19,978 | 6,683 | 2.9 | 8.2 | 10,292 | 13.21 | 18.79 |
| 200 to 399 | 291 | 23,702 | 9,865 | 2.3 | 8.0 | 8,420 | 13.25 | 16.62 |
| 400 to 599 | 489 | 23,118 | 9,492 | 2.5 | 8.0 | 9,492 | 13.47 | 17.25 |
| 600 to 899 | 726 | 24,729 | 10,800 | 1.9 | 8.1 | 8,833 | 13.56 | 16.59 |
| 900 & over | 1,368 | 25,229 | 12,174 | 1.9 | 8.3 | 8,890 | 13.98 | 16.90 |

Milk output per worker has always shown a strong correlation with herd size. The farms with 100 cows or more averaged over 1,089,695 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 503,050 pounds per worker.

In achieving the highest productivity per cow and per worker, the largest farms had the fewest crop acres per cow and above average forage dry matter harvested per cow. However, the larger farms generally purchased more roughage per cow. The 200 to 399 herd size group had the more efficient use of farm capital with an average investment of $8,420 per cow.

The 26 farms with 600 to 899 cows had the lowest total cost of producing milk at $16.59 per hundredweight. This is $2.02 below the $18.61 average for the remaining 178 dairy farms. The lower average costs of production plus a similar milk price gave the managers of these large dairy farms profit margins (milk price less total cost of producing milk) that averaged $2.30 per hundredweight above the average of the other 178 DFBS farms. All herd size categories averaged a negative profit margin in 2009.

## Dairy Operations and Milk Cow Inventory

**TABLE 7-3. NUMBER OF DAIRY FARMS AND MILK COWS BY SIZE OF HERD**
**New York State, 2009** [a, b]

| Size of Herd | Farms | | Milk Cows | |
|---|---|---|---|---|
| Number of Cows | Number | % of Total | Number | % of Total |
| 1 – 29 | 1,050 | 19.8% | 10,500 | 1.7% |
| 30 – 49 | 1,000 | 18.9% | 35,000 | 5.7% |
| 50 – 99 | 1,800 | 34.0% | 131,000 | 21.2% |
| 100 – 199 | 858 | 16.1% | 111,500 | 18.0% |
| 200 – 499 | 385 | 7.3% | 121,000 | 19.5% |
| 500 – 749 | 105 | 1.98% | 65,000 | 10.5% |
| 750 – 999 | 35 | 0.66% | 31,000 | 5.0% |
| 1,000 – 1,499 | 37 | 0.70% | 44,000 | 7.1% |
| 1,500 – 1,999 | 15 | 0.28% | 26,500 | 4.3% |
| 2,000 or more | 15 | 0.28% | 43,500 | 7.0% |
| Total | 5,300 | 100.0% | 619,000 | 100.0% |

[a] This information on number of farms and number of cows by size of herd is derived from several sources:
- Dairy Statistics as published by the New York Agricultural Statistics Services for 2009.
- CAFO (Concentrated Animal Feeding Operations) permit reports for 2009. Some small CAFO farms (farms with 200 to 700 milk cows) have not applied for or updated the permit. Estimates for these farms were made so as to reflect the total number of dairy farms in New York State; revision from Census in certain size categories.

[b] The author wishes to thank everyone who provided some data as well as providing valuable advice and perspectives. However, any errors, omissions or misstatements are solely the responsibility of the author, Professor George Conneman, **e-mail GJC4@cornell.edu**.

In 2009, there were 5,300 dairy farms in New York State, and 619,000 milk cows. The table above was prepared based on the NYASS data plus the CAFO permit filing for additional herd size categories, and estimates from the 2007 Census.

Eighty-nine percent of the farms (less than 200 cows per farm) had 47 percent of the milk cows. The remaining eleven percent of the farms had 53 percent of the cows.

About 4 percent of the farms (those with 500 or more cows) had 34 percent of the cows.

Farms with less than 50 cows represent 39 percent of all farms but kept only 7 percent of the cows.

Farms with 1,000 or more cows represent about 1.25 percent of the farms but kept over 18 percent of the cows.

## Ten-Year Comparisons

The total cost of producing milk on DFBS farms has increased $2.55 per hundredweight over the past 10 years (Table 7-4). In the intervening years, total cost of production increased in 2001, fell in 2002, again increased in 2003 and 2004, decreased in 2005 and 2006, increased in 2007 and 2008, and decreased in 2009. It is interesting to note that costs of production decrease in low milk price years and increase in high milk price years. Over the 10 years, milk sold per cow increased 13 percent and cows per worker increased 10 percent on DFBS farms (Table 7-5). Farm net worth has increased significantly, while percent equity has been fairly stable.

## TABLE 7-4. TEN YEAR COMPARISON: AVERAGE COST OF PRODUCING MILK PER HUNDREDWEIGHT
## New York Dairy Farms, 2000 to 2009

| Item | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| Operating Expenses | | | | | | | | | | |
| Hired labor | $2.25 | $2.41 | $2.44 | $2.51 | $2.67 | $2.66 | $2.58 | $2.70 | $2.79 | $2.70 |
| Purchased feed | 3.91 | 4.25 | 4.10 | 4.29 | 4.88 | 4.37 | 4.30 | 5.21 | 6.17 | 5.45 |
| Machinery repair, vehicle expense & rent | 1.06 | 1.21 | 1.01 | .91 | 1.09 | 1.07 | 1.04 | 1.27 | 1.24 | 1.07 |
| Fuel, oil & grease | .34 | .32 | .28 | .33 | .41 | .53 | .58 | .67 | .91 | .57 |
| Replacement livestock | .23 | .20 | .16 | .15 | .16 | .11 | .07 | .07 | .08 | .06 |
| Breeding fees | .17 | .19 | .21 | .19 | .21 | .22 | .23 | .24 | .26 | .21 |
| Veterinary & medicine | .51 | .54 | .56 | .56 | .59 | .62 | .65 | .65 | .68 | .63 |
| Milk marketing | .69 | .63 | .65 | .69 | .72 | .76 | .80 | .80 | .85 | .88 |
| Other dairy expenses | 1.16 | 1.26 | 1.25 | 1.30 | 1.27 | 1.32 | 1.29 | 1.41 | 1.52 | 1.44 |
| Fertilizer & lime | .29 | .33 | .27 | .26 | .30 | .34 | .31 | .40 | .47 | .41 |
| Seeds & plants | .19 | .20 | .20 | .20 | .24 | .22 | .23 | .28 | .33 | .35 |
| Spray & other crop expense | .22 | .25 | .22 | .19 | .20 | .19 | .19 | .25 | .26 | .20 |
| Land, building & fence repair | .21 | .26 | .19 | .14 | .21 | .25 | .22 | .32 | .34 | .23 |
| Taxes | .20 | .21 | .20 | .21 | .22 | .23 | .21 | .23 | .21 | .22 |
| Insurance | .16 | .14 | .16 | .15 | .16 | .16 | .17 | .19 | .18 | .17 |
| Utilities (farm share) | .32 | .33 | .34 | .34 | .36 | .39 | .41 | .44 | .43 | .38 |
| Interest paid | .95 | .82 | .61 | .56 | .57 | .65 | .78 | .83 | .54 | .51 |
| Misc. (including rent) | .45 | .42 | .44 | .40 | .43 | .37 | .45 | .49 | .49 | .44 |
| Total Operating Expenses | $13.31 | $13.98 | $13.27 | $13.39 | $14.67 | $14.54 | $14.51 | $16.46 | $17.77 | $15.90 |
| Less: Nonmilk cash receipts | 1.83 | 1.49 | 1.91 | 1.57 | 1.70 | 1.96 | 1.94 | 1.75 | 1.57 | 1.89 |
| Increase in grown feed & supplies | .11 | .10 | .12 | .27 | .17 | .12 | .22 | .39 | .66 | -.04 |
| Increase in livestock | .06 | .52 | .23 | .09 | .22 | .21 | .27 | .30 | .33 | .34 |
| OPERATING COST OF MILK PRODUCTION | $11.31 | $11.87 | $11.01 | $11.46 | $12.58 | $12.25 | $12.08 | $14.02 | $15.21 | $13.71 |
| Overhead Expenses | | | | | | | | | | |
| Depreciation: machinery & buildings | $1.20 | $1.30 | $1.39 | $1.23 | $1.32 | $1.32 | $1.26 | $1.32 | $1.38 | $1.28 |
| Unpaid labor | .10 | .10 | .08 | .10 | .07 | .06 | .07 | .07 | .04 | .05 |
| Operator(s) labor [a] | .79 | .74 | .74 | .70 | .67 | .61 | .63 | .65 | .58 | .54 |
| Operator(s) management (5% of cash receipts) | .76 | .87 | .75 | .73 | .90 | .90 | .79 | 1.07 | 1.10 | .80 |
| Interest on farm equity capital (5%) | .88 | .91 | .89 | .85 | .92 | 1.02 | 1.06 | 1.20 | 1.29 | 1.21 |
| Total Overhead Expenses | $3.73 | $3.92 | $3.85 | $3.61 | $3.88 | $3.91 | $3.81 | $4.31 | $4.39 | $3.88 |
| TOTAL COST OF MILK PRODUCTION | $15.04 | $15.79 | $14.86 | $15.07 | $16.46 | $16.16 | $15.89 | $18.33 | $19.60 | $17.59 |
| AVERAGE FARM PRICE OF MILK | $13.38 | $15.98 | $12.98 | $13.24 | $16.64 | $15.98 | $13.85 | $20.34 | $19.24 | $13.88 |
| Return per cwt. to operator labor, capital & mgmt. | $0.77 | $2.71 | $0.50 | $0.45 | $2.67 | $2.35 | $0.44 | $4.93 | $2.61 | $-1.16 |
| Rate of return on farm equity capital | -4.4% | 6.0% | -5.6% | -5.7% | 6.0% | 4.1% | -4.6% | 13.4% | 3.6% | -10.3% |

[a] 2000 = $1,900/month, 2001 = $2,000/month, 2002 = $2,100/month, 2003 through 2005 = $2,200/month, 2006 = $2,300/month, 2007 = $2,400/month, and 2008 and 2009 = $2,500/month of operator labor.

## TABLE 7-5. TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS
### New York Dairy Farms, 2000 to 2009

| Item | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of farms | 294 | 228 | 219 | 201 | 200 | 225 | 240 | 250 | 224 | 204 |
| Cropping Program | | | | | | | | | | |
| Total tillable acres | 566 | 618 | 660 | 659 | 701 | 729 | 730 | 758 | 883 | 965 |
| Tillable acres rented | 262 | 290 | 337 | 323 | 345 | 365 | 360 | 385 | 446 | 482 |
| Hay crop acres | 274 | 302 | 323 | 321 | 339 | 361 | 366 | 364 | 421 | 464 |
| Corn silage acres | 192 | 210 | 232 | 233 | 245 | 246 | 249 | 258 | 297 | 348 |
| Hay crop, tons DM/acre | 3.3 | 2.8 | 3.1 | 3.2 | 3.5 | 3.2 | 3.2 | 3.0 | 3.5 | 3.4 |
| Corn silage, tons/acre | 15.1 | 16.5 | 15.4 | 17.2 | 17.7 | 18.8 | 18.4 | 18.9 | 19.9 | 18.7 |
| Fertilizer & lime exp./tillable acre | $27 | $32 | $27 | $28 | $31 | $33 | $30 | $40 | $49 | $42 |
| Machinery cost/cow | $513 | $554 | $520 | $497 | $565 | $624 | $618 | $708 | $800 | $660 |
| Dairy Analysis | | | | | | | | | | |
| Number of cows | 246 | 277 | 297 | 314 | 334 | 340 | 350 | 358 | 414 | 469 |
| Number of heifers | 186 | 207 | 226 | 240 | 260 | 270 | 283 | 289 | 348 | 391 |
| Milk sold, cwt. | 52,871 | 60,290 | 66,177 | 70,105 | 73,767 | 78,250 | 80,862 | 82,315 | 99,884 | 113,555 |
| Milk sold/cow, lbs. | 21,516 | 21,762 | 22,312 | 22,302 | 22,070 | 22,998 | 23,083 | 22,983 | 24,115 | 24,208 |
| Purchased dairy feed/cwt. milk | $3.91 | $4.25 | $4.10 | $4.27 | $4.86 | $4.37 | $4.29 | $5.20 | $6.16 | $5.45 |
| Purchased grain & concentrate as % of milk receipts | 27% | 25% | 30% | 30% | 27% | 26% | 29% | 24% | 31% | 38% |
| Purchased feed & crop exp/cwt.milk | $4.61 | $5.03 | $4.79 | $4.92 | $5.60 | $5.12 | $5.02 | $6.13 | $7.23 | $6.41 |
| Capital Efficiency | | | | | | | | | | |
| Farm capital/cow | $6,535 | $6,755 | $6,794 | $6,748 | $7,010 | $7,508 | $7,762 | $8,426 | $9,145 | $9,060 |
| Real estate/cow | $2,615 | $2,713 | $2,612 | $2,722 | $2,809 | $2,950 | $3,030 | $3,356 | $3,606 | $3,713 |
| Machinery investment/cow | $1,225 | $1,222 | $1,261 | $1,208 | $1,226 | $1,314 | $1,384 | $1,448 | $1,535 | $1,553 |
| Asset turnover ratio | 0.54 | 0.63 | 0.53 | 0.54 | 0.64 | 0.60 | 0.52 | 0.67 | 0.59 | 0.44 |
| Labor Efficiency | | | | | | | | | | |
| Worker equivalent | 6.11 | 6.72 | 7.21 | 7.50 | 7.97 | 8.18 | 8.19 | 8.40 | 9.75 | 10.74 |
| Operator/manager equivalent | 1.83 | 1.94 | 1.82 | 1.86 | 1.64 | 1.60 | 1.63 | 1.62 | 1.72 | 1.83 |
| Milk sold/worker, lbs. | 865,325 | 897,167 | 917,854 | 934,733 | 925,553 | 956,698 | 987,530 | 980,234 | 1,024,799 | 1,057,063 |
| Cows/worker | 40 | 41 | 41 | 42 | 42 | 42 | 43 | 43 | 42 | 44 |
| Labor cost/cow | $674 | $706 | $725 | $738 | $752 | $765 | $757 | $784 | $823 | $794 |
| Hired labor exp./hired worker equiv. | $29,309 | $31,448 | $31,755 | $32,659 | $33,311 | $33,539 | $34,071 | $34,924 | $36,312 | $35,908 |
| Profitability & Financial Analysis | | | | | | | | | | |
| Labor & mgmt. income/operator | $-2,908 | $45,479 | $-14,243 | $-15,360 | $78,061 | $64,745 | $-31,269 | $189,019 | $75,945 | $-147,313 |
| Farm net worth, end year | $942,881 | $1,181,055 | $1,173,836 | $1,207,964 | $1,466,674 | $1,690,427 | $1,736,505 | $2,200,655 | $2,640,168 | $2,639,640 |
| Percent equity | 57% | 60% | 57% | 56% | 60% | 63% | 62% | 68% | 68% | 62% |

**TABLE 7-6. COMPARISON OF FARM BUSINESS SUMMARY DATA**
**Same 79 New York Dairy Farms, 2000 - 2009**

| Selected Factors | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|
| Milk receipts per cwt. milk | $13.58 | $16.05 | $13.01 | $13.31 |
| Size of Business | | | | |
| Average number of cows | 348 | 377 | 403 | 422 |
| Average number of heifers | 262 | 280 | 310 | 324 |
| Milk sold, cwt. | 78,771 | 85,907 | 93,622 | 97,400 |
| Worker equivalent | 8.17 | 8.79 | 9.33 | 9.87 |
| Total tillable acres | 711 | 740 | 783 | 828 |
| Rates of Production | | | | |
| Milk sold per cow, lbs. | 22,610 | 22,792 | 23,255 | 23,075 |
| Hay DM per acre, tons | 3.7 | 3.2 | 3.4 | 3.4 |
| Corn silage per acre, tons | 16 | 17 | 15 | 18 |
| Labor Efficiency | | | | |
| Cows per worker | 43 | 43 | 43 | 43 |
| Milk sold per worker, lbs. | 964,151 | 977,327 | 1,003,454 | 986,830 |
| Cost Control | | | | |
| Grain & concentrate purchased as % of milk sales | 27% | 25% | 30% | 31% |
| Dairy feed & crop expense per cwt. milk | $4.61 | $5.01 | $4.82 | $5.03 |
| Operating cost of producing cwt. milk | $11.05 | $11.92 | $11.00 | $11.43 |
| Total cost of producing cwt. milk | $13.96 | $14.94 | $14.03 | $14.32 |
| Hired labor cost per cwt. | $2.40 | $2.55 | $2.56 | $2.62 |
| Interest paid per cwt. | $0.88 | $0.76 | $0.55 | $0.52 |
| Labor & machinery costs per cow | $1,190 | $1,263 | $1,244 | $1,238 |
| Replacement livestock expense | $17,400 | $14,326 | $14,105 | $15,192 |
| Expansion livestock expense | $26,100 | $27,898 | $26,598 | $23,210 |
| Capital Efficiency | | | | |
| Farm capital per cow | $6,295 | $6,490 | $6,615 | $6,626 |
| Machinery & equipment per cow | $1,175 | $1,161 | $1,178 | $1,135 |
| Real estate per cow | $2,372 | $2,471 | $2,489 | $2,561 |
| Livestock investment per cow | $1,574 | $1,680 | $1,787 | $1,816 |
| Asset turnover ratio | 0.59 | 0.69 | 0.57 | 0.57 |
| Profitability | | | | |
| Net farm income without appreciation | $90,365 | $243,210 | $54,902 | $57,058 |
| Net farm income with appreciation | $134,822 | $365,375 | $131,048 | $132,636 |
| Labor & management income per operator/manager | $14,519 | $94,752 | $-14,915 | $-17,291 |
| Rate return on: | | | | |
| Equity capital with appreciation | 5.2% | 20.3% | 3.6% | 3.6% |
| All capital with appreciation | 6.1% | 14.5% | 4.1% | 3.9% |
| All capital without appreciation | 4.2% | 9.5% | 1.2% | 1.2% |
| Financial Summary, End Year | | | | |
| Farm net worth | $1,253,444 | $1,552,665 | $1,566,194 | $1,622,416 |
| Change in net worth with appreciation | $32,179 | $247,636 | $9,211 | $49,590 |
| Debt to asset ratio | 0.44 | 0.40 | 0.42 | 0.44 |
| Farm debt per cow | $2,723 | $2,691 | $2,773 | $2,937 |

Farms participating in the DFBS each of the last 10 years have increased size of business, labor efficiency and milk sold per cow (Table 7-6). All measures of profitability exhibit wide variability from year-to-year and are highly correlated with milk price received.

**TABLE 7-6. COMPARISON OF FARM BUSINESS SUMMARY DATA (Continued)**
**Same 79 New York Dairy Farms, 2000 - 2009**

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| $16.78 | $16.05 | $13.88 | $20.44 | $19.39 | $13.99 |
| 449 | 470 | 493 | 515 | 528 | 552 |
| 339 | 368 | 389 | 408 | 436 | 461 |
| 102,574 | 111,155 | 116,656 | 122,421 | 128,450 | 135,063 |
| 10.38 | 10.81 | 11.14 | 11.60 | 11.95 | 12.46 |
| 880 | 904 | 929 | 997 | 1,041 | 1,081 |
| 22,834 | 23,667 | 23,661 | 23,779 | 24,326 | 24,472 |
| 3.4 | 3.4 | 3.4 | 3.1 | 3.6 | 3.4 |
| 18 | 19 | 19 | 19 | 20 | 19 |
| 43 | 43 | 44 | 44 | 44 | 44 |
| 988,193 | 1,028,257 | 1,047,184 | 1,055,356 | 1,074,893 | 1,083,971 |
| 28% | 26% | 29% | 24% | 31% | 38% |
| $5.67 | $5.18 | $5.09 | $6.20 | $7.39 | $6.57 |
| $12.37 | $12.11 | $12.13 | $13.89 | $15.41 | $13.88 |
| $15.37 | $15.21 | $15.15 | $17.02 | $18.73 | $17.08 |
| $2.73 | $2.64 | $2.65 | $2.77 | $2.90 | $2.74 |
| $0.51 | $0.60 | $0.73 | $0.74 | $0.55 | $0.53 |
| $1,306 | $1,349 | $1,341 | $1,460 | $1,617 | $1,441 |
| $22,001 | $19,270 | $10,846 | $14,420 | $17,952 | $9,384 |
| $33,675 | $18,800 | $17,748 | $10,815 | $31,152 | $18,216 |
| $6,796 | $7,292 | $7,545 | $7,981 | $8,776 | $8,784 |
| $1,136 | $1,232 | $1,275 | $1,333 | $1,507 | $1,564 |
| $2,602 | $2,707 | $2,840 | $2,960 | $3,231 | $3,361 |
| $1,863 | $2,020 | $2,114 | $2,230 | $2,341 | $2,264 |
| 0.69 | 0.65 | 0.55 | 0.73 | 0.64 | 0.47 |
| $311,435 | $279,709 | $52,141 | $639,269 | $330,278 | $-161,514 |
| $438,027 | $463,657 | $165,620 | $829,385 | $422,776 | $-113,525 |
| $131,988 | $98,381 | $-39,432 | $286,515 | $96,208 | $-165,991 |
| 20.2% | 18.0% | 3.5% | 27.9% | 10.8% | -7.3% |
| 13.5% | 13.1% | 4.5% | 20.3% | 8.7% | -3.0% |
| 9.4% | 7.8% | 1.4% | 15.6% | 6.7% | -4.0% |
| $1,953,528 | $2,291,038 | $2,338,528 | $2,989,050 | $3,154,827 | $2,885,824 |
| $326,589 | $329,775 | $31,632 | $661,004 | $161,172 | $-257,243 |
| 0.39 | 0.37 | 0.39 | 0.33 | 0.35 | 0.41 |
| $2,762 | $2,747 | $2,908 | $2,793 | $3,084 | $3,499 |

Debt to asset ratio has remained stable and debt per cow increased 28 percent while farm net worth more than doubled. During this time, crop yields have fluctuated, largely due to weather. Purchased grain and concentrate as a percent of milk sales varied from 24 to 38 percent, with the high in 2009, and the low in 2007.

**TABLE 7-7. COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION**
**204 New York Dairy Farms, 2009**

| Item | Western & Central Plateau Region | Western & Central Plain Region | Northern New York | Central Valleys | Northern Hudson & South-eastern New York |
|---|---|---|---|---|---|
| Number of farms | 31 | 48 | 33 | 33 | 56 |
| ACCRUAL EXPENSES | | | | | |
| Hired labor | $168,483 | $541,874 | $295,479 | $314,860 | $188,973 |
| Feed | 392,777 | 1,026,022 | 656,981 | 602,207 | 394,057 |
| Machinery | 117,280 | 273,348 | 200,671 | 216,666 | 124,825 |
| Livestock | 213,453 | 605,324 | 368,170 | 393,241 | 234,214 |
| Crops | 57,283 | 159,032 | 100,941 | 160,919 | 70,885 |
| Real estate | 52,483 | 138,409 | 69,801 | 84,708 | 43,257 |
| Other | 71,305 | 239,751 | 162,000 | 145,511 | 85,813 |
| Total Operating Expenses | $1,073,063 | $2,983,759 | $1,854,044 | $1,918,113 | $1,142,022 |
| Expansion livestock | 6,856 | 10,201 | 30,214 | 18,679 | 9,303 |
| Extraordinary expense | 358 | 567 | 2,261 | 379 | 931 |
| Machinery depreciation | 61,134 | 133,622 | 102,479 | 96,355 | 49,474 |
| Building depreciation | 35,292 | 107,594 | 69,692 | 62,478 | 23,141 |
| Total Accrual Expenses | $1,176,704 | $3,235,743 | $2,058,690 | $2,096,003 | $1,224,871 |
| ACCRUAL RECEIPTS | | | | | |
| Milk sales | $986,846 | $2,576,621 | $1,611,064 | $1,742,943 | $964,514 |
| Livestock | 76,041 | 228,445 | 150,532 | 143,264 | 99,752 |
| Crops | 11,145 | 10,731 | 37,337 | 24,448 | 6,357 |
| Government receipts | 50,082 | 90,024 | 64,450 | 74,685 | 53,236 |
| All other | 15,558 | 73,266 | 43,005 | 36,737 | 21,031 |
| Total Accrual Receipts | $1,139,673 | $2,979,087 | $1,906,387 | $2,022,077 | $1,144,889 |
| PROFITABILITY ANALYSIS | | | | | |
| Net farm income (w/o appreciation) | $ -37,031 | $-256,657 | $-152,303 | $-73,926 | $ -79,981 |
| Net farm income (w/ appreciation) | $ -57,207 | $-191,161 | $ -99,825 | $-76,423 | $-102,646 |
| Labor & management income | $-155,565 | $-458,479 | $-294,961 | $-238,993 | $-176,492 |
| Number of operators | 1.75 | 2.05 | 1.72 | 1.92 | 1.72 |
| Labor & mgmt. income/oper. | $ -88,894 | $-223,648 | $-171,489 | $-124,475 | $-102,612 |
| BUSINESS FACTORS | | | | | |
| Worker equivalent | 7.21 | 15.82 | 11.20 | 11.61 | 7.81 |
| Number of cows | 301 | 754 | 490 | 513 | 287 |
| Number of heifers | 277 | 617 | 424 | 385 | 251 |
| Acres of hay crops[a] | 385 | 659 | 587 | 457 | 355 |
| Acres of corn silage[a] | 256 | 623 | 432 | 452 | 246 |
| Total tillable acres | 651 | 1,320 | 1,148 | 1,109 | 655 |
| Pounds of milk sold | 7,258,877 | 18,482,759 | 11,944,240 | 12,442,489 | 6,798,620 |
| Pounds of milk sold/cow | 24,105 | 24,507 | 24,360 | 24,246 | 23,674 |
| Tons hay crop dry matter/acre | 2.9 | 4.0 | 3.2 | 3.4 | 2.9 |
| Tons corn silage/acre | 20.5 | 19.6 | 19.6 | 17.9 | 16.8 |
| Cows/worker | 42 | 48 | 44 | 44 | 37 |
| Pounds of milk sold/worker | 1,006,663 | 1,168,070 | 1,066,291 | 1,071,704 | 870,223 |
| % grain & conc. of milk receipts | 38% | 37% | 40% | 33% | 40% |
| Feed & crop expense/cwt. milk | $6.20 | $6.41 | $6.34 | $6.13 | $6.84 |
| Fertilizer & lime/crop acre | $33.80 | $52.38 | $26.25 | $58.65 | $34.24 |
| Machinery cost/tillable acre | $310 | $344 | $298 | $317 | $303 |

[a]Excludes farms that do not harvest forages.

**FIGURE 7-1. PERCENT CHANGE IN MILK PRODUCTION**
**Five Regions in New York, 1989-2009**

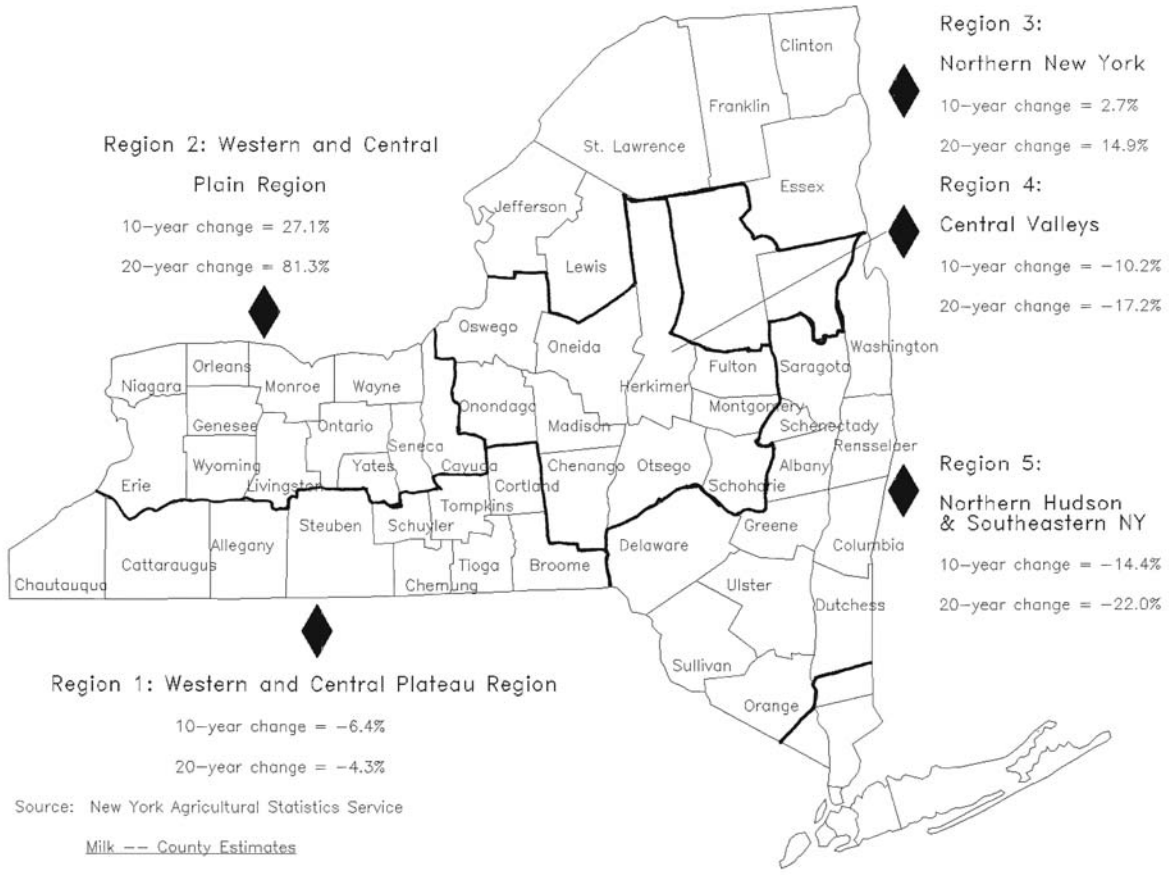


**TABLE 7-8. MILK PRODUCTION & AVERAGE COST OF PRODUCING MILK**
**Five Regions of New York**

| Item | Region[a] 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Milk Production[b] | | | (million pounds) | | |
| 1989 | 2,080.9 | 2,433.0 | 2,117.8 | 2,839.7 | 1,587.1 |
| 1999 | 2,127.6 | 3,468.6 | 2,368.7 | 2,619.8 | 1,447.4 |
| 2009 | 1,990.5 | 4,410.0 | 2,432.5 | 2,352.5 | 1,238.5 |
| Percent change, 1999 to 2009 | -6.4% | +27.1% | +2.7% | -10.2% | -14.4% |
| Percent change, 1989 to 2009 | -4.3% | +81.3% | +14.9% | -17.2% | -22.0% |
| 2009 Cost of Producing Milk[c] | | | ($ per hundredweight milk) | | |
| Operating cost | $12.77 | $14.02 | $13.30 | $13.32 | $14.28 |
| Total cost | 16.93 | 17.07 | 16.73 | 16.68 | 17.73 |
| Average price received | 13.60 | 13.94 | 13.49 | 14.01 | 14.19 |
| Return per cwt. to operator labor, management & capital | $-0.61 | $-1.41 | $-1.33 | $-0.62 | $-1.26 |

[a]See Figure 7-1 for region descriptions.
[b]Source: New York Agricultural Statistics Service, Milk-County Estimates.
[c] From Dairy Farm Business Summary data.

## Farm Business Charts

The Farm Business Chart is a tool which can be used in analyzing a business by drawing a line through the figure in each column which represents the current level of management performance. The figure at the top of each column is the average of the top 10 percent of the 204 farms for that factor. The other figures in each column are the average for the second 10 percent, third 10 percent, etc. Each column of the chart is independent of the others. The farms which are in the top 10 percent for one factor would not necessarily be the same farms which make up the top 10 percent for any other factor.

The cost control factors are ranked from low to high, but the lowest cost is not necessarily the most profitable. In some cases, the "best" management position is somewhere near the middle or average. Many things affect the level of costs, and must be taken into account when analyzing the factors.

**TABLE 7-9. FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS**
**204 New York Dairy Farms, 2009**

| Size of Business | | | Rates of Production | | | Labor Efficiency | |
|---|---|---|---|---|---|---|---|
| Worker Equiv-alent | No. of Cows | Pounds Milk Sold | Pounds Milk Sold Per Cow | Tons Hay Crop DM/Acre | Tons Corn Silage Per Acre | Cows Per Worker | Pounds Milk Sold Per Worker |
| 34.5 | 1,662 | 43,168,090 | 27,708 | 5.5 | 26 | 63 | 1,442,513 |
| 21.6 | 969 | 24,026,822 | 26,204 | 4.4 | 22 | 51 | 1,195,505 |
| 16.1 | 715 | 17,158,049 | 25,098 | 3.9 | 21 | 47 | 1,103,896 |
| 12.2 | 512 | 11,954,459 | 24,083 | 3.5 | 19 | 43 | 1,022,874 |
| 8.2 | 359 | 8,336,747 | 23,176 | 3.2 | 18 | 40 | 927,078 |
| 5.4 | 203 | 4,407,937 | 21,930 | 2.8 | 17 | 37 | 823,127 |
| 4.0 | 136 | 2,631,526 | 20,554 | 2.5 | 16 | 34 | 701,150 |
| 3.1 | 96 | 1,831,947 | 19,097 | 2.3 | 15 | 31 | 618,720 |
| 2.4 | 68 | 1,198,114 | 17,092 | 1.9 | 13 | 28 | 520,658 |
| 1.6 | 47 | 789,780 | 13,066 | 1.5 | 8 | 21 | 346,599 |

| Cost Control | | | | | |
|---|---|---|---|---|---|
| Grain Bought Per Cow | % Grain is of Milk Receipts | Machinery Costs Per Cow | Labor & Machinery Costs Per Cow | Feed & Crop Expenses Per Cow | Feed & Crop Expenses Per Cwt. Milk |
| $556 | 24% | $392 | $1,050 | $761 | $4.61 |
| 827 | 31 | 507 | 1,241 | 1,073 | 5.39 |
| 938 | 33 | 568 | 1,348 | 1,233 | 5.83 |
| 1,039 | 36 | 611 | 1,425 | 1,311 | 6.15 |
| 1,124 | 37 | 653 | 1,478 | 1,407 | 6.41 |
| 1,189 | 39 | 688 | 1,537 | 1,494 | 6.67 |
| 1,259 | 41 | 726 | 1,614 | 1,557 | 6.94 |
| 1,340 | 43 | 779 | 1,709 | 1,638 | 7.25 |
| 1,441 | 46 | 834 | 1,852 | 1,752 | 7.64 |
| 1,656 | 52 | 1,044 | 2,273 | 2,045 | 9.01 |

The next section of the Farm Business Chart provides for comparative analysis of the value and costs of dairy production.

The profitability section shows the variation in farm income by decile and enables a dairy farmer to determine where he or she ranks by using several measures of farm profitability. Remember that each column is independently established and the farms making up the top decile in the first column will not necessarily be on the top of any other column. The dairy farmer who ranks at or near the top of most of these columns is in a very enviable position.

**TABLE 7-9. (CONTINUED) FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS**
**204 New York Dairy Farms, 2009**

| Milk Receipts Per Cow | Milk Receipts Per Cwt. | Operating Cost Milk Production Per Cow | Operating Cost Milk Production Per Cwt. | Total Cost Milk Production Per Cow | Total Cost Milk Prod. Per Cwt. |
|---|---|---|---|---|---|
| $3,904 | $15.04 | $1,539 | $9.36 | $2,786 | $14.64 |
| 3,615 | 14.46 | 2,107 | 11.18 | 3,286 | 15.73 |
| 3,472 | 14.20 | 2,412 | 12.03 | 3,529 | 16.34 |
| 3,343 | 13.99 | 2,604 | 12.45 | 3,724 | 17.04 |
| 3,212 | 13.82 | 2,863 | 13.07 | 3,892 | 17.59 |
| 3,001 | 13.68 | 3,031 | 13.54 | 4,070 | 18.31 |
| 2,815 | 13.50 | 3,193 | 14.15 | 4,235 | 18.90 |
| 2,586 | 13.33 | 3,437 | 14.69 | 4,399 | 19.92 |
| 2,310 | 13.11 | 3,726 | 15.62 | 4,595 | 21.92 |
| 1,786 | 12.65 | 4,115 | 17.20 | 5,037 | 25.94 |

Profitability

| Net Farm Income Without Appreciation | | | Net Farm Income With Appreciation | | Labor & Management Income | |
|---|---|---|---|---|---|---|
| Total | Per Cow | Operations Ratio | Total | Per Cow | Per Farm | Per Operator |
| $189,108 | $621 | 0.17 | $316,867 | $689 | $44,796 | $29,113 |
| 50,933 | 261 | 0.08 | 73,223 | 359 | -22,905 | -15,857 |
| 21,392 | 129 | 0.03 | 32,127 | 166 | -41,298 | -27,377 |
| 4,190 | 25 | 0.01 | 6,546 | 49 | -61,781 | -39,543 |
| -18,397 | -107 | -0.03 | -19,455 | -115 | -89,481 | -57,798 |
| -41,720 | -215 | -0.06 | -38,756 | -234 | -131,913 | -80,521 |
| -70,753 | -353 | -0.11 | -65,741 | -320 | -219,725 | -116,887 |
| -156,846 | -502 | -0.14 | -138,222 | -476 | -322,905 | -187,439 |
| -338,128 | -636 | -0.19 | -294,082 | -645 | -553,193 | -302,719 |
| -861,956 | -1,025 | -0.35 | -945,904 | -1,058 | -1,234,813 | -758,790 |

## Financial Analysis Chart

The farm financial analysis chart is designed just like the farm business chart on the previous pages and may be used to measure the financial health of the farm business.

**TABLE 7-10. FINANCIAL ANALYSIS CHART**
**204 New York Dairy Farms, 2009**

| Liquidity (repayment) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Planned Debt Payments Per Cow | Available for Debt Service Per Cow | Cash Flow Coverage Ratio | Debt Coverage Ratio | Debt Payments as Percent of Milk Sales | Debt Per Cow | Working Capital as % of Total Expenses | Current Ratio |
| $129 | $869 | 4.73 | 2.73 | 4% | $207 | 48% | 24.00 |
| 265 | 536 | 1.30 | 1.07 | 7 | 1,172 | 29 | 3.80 |
| 320 | 425 | 0.90 | 0.68 | 10 | 1,925 | 22 | 2.67 |
| 388 | 334 | 0.64 | 0.39 | 12 | 2,513 | 19 | 2.09 |
| 448 | 225 | 0.37 | 0.13 | 14 | 2,914 | 15 | 1.75 |
| 512 | 81 | 0.14 | -0.03 | 17 | 3,517 | 11 | 1.48 |
| 592 | -6 | -0.06 | -0.29 | 19 | 4,048 | 6 | 1.17 |
| 684 | -132 | -0.42 | -0.57 | 22 | 4,632 | 0 | 0.94 |
| 841 | -278 | -0.73 | -1.04 | 25 | 5,166 | -6 | 0.72 |
| 1,321 | -587 | -1.87 | -2.34 | 38 | 6,688 | -25 | 0.30 |

| Solvency | | | | Operational Ratios | | |
|---|---|---|---|---|---|---|
| | | Debt/Asset Ratio | | | | |
| Leverage Ratio[a] | Percent Equity | Current & Intermediate | Long Term | Operating Expense Ratio | Interest Expense Ratio | Depreciation Expense Ratio |
| 0.08 | 98% | 0.02 | 0.00 | 0.73 | 0.00 | 0.02 |
| 0.19 | 88 | 0.11 | 0.00 | 0.83 | 0.01 | 0.04 |
| 0.28 | 81 | 0.22 | 0.03 | 0.86 | 0.02 | 0.05 |
| 0.39 | 75 | 0.27 | 0.11 | 0.89 | 0.02 | 0.06 |
| 0.53 | 69 | 0.35 | 0.22 | 0.91 | 0.03 | 0.07 |
| 0.73 | 60 | 0.42 | 0.33 | 0.95 | 0.04 | 0.08 |
| 0.87 | 55 | 0.47 | 0.44 | 0.98 | 0.04 | 0.09 |
| 1.06 | 49 | 0.56 | 0.53 | 1.03 | 0.05 | 0.11 |
| 1.39 | 43 | 0.67 | 0.64 | 1.07 | 0.06 | 0.13 |
| 3.03 | 26 | 0.89 | 0.98 | 1.19 | 0.11 | 0.18 |

| Efficiency (Capital) | | | | | Profitability | |
|---|---|---|---|---|---|---|
| | | | | | Percent Rate of Return with Appreciation on: | |
| Asset Turnover (ratio) | Real Estate Investment Per Cow | Machinery Investment Per Cow | Total Farm Assets Per Cow | Change in Net Worth With Appreciation | Equity | Investment[b] |
| 0.63 | $1,882 | $607 | $6,103 | $130,552 | 4% | 4% |
| 0.52 | 2,558 | 968 | 7,394 | 20,677 | -1 | 1 |
| 0.48 | 2,940 | 1,229 | 7,972 | -8,052 | -3 | -1 |
| 0.44 | 3,319 | 1,456 | 8,730 | -30,384 | -5 | -2 |
| 0.40 | 3,639 | 1,618 | 9,230 | -54,874 | -7 | -4 |
| 0.37 | 4,097 | 1,803 | 9,754 | -91,665 | -10 | -5 |
| 0.34 | 4,625 | 2,036 | 10,312 | -168,225 | -12 | -7 |
| 0.30 | 5,339 | 2,255 | 11,366 | -272,257 | -15 | -8 |
| 0.26 | 6,375 | 2,560 | 12,448 | -460,184 | -21 | -10 |
| 0.19 | 8,932 | 3,659 | 15,218 | -1,243,274 | -46 | -16 |

[a]Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.
[b]Return on all farm capital (no deduction for interest paid) divided by total farm assets.

# Chapter 8. Addressing Labor Challenges in New York Agriculture

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## Introduction

An adequate supply of productive and motivated workers is essential to maintain a viable and productive agricultural industry in New York State. The number of workers available for farm employment appeared to be more than adequate in 2010, largely due to lingering high unemployment in the overall economy. However, immigration enforcement, regulatory changes and stalled immigration reform legislation continue to create challenges for farm employers. Immigration enforcement continues at a high level in New York State. In addition, policy changes in H-2A program have caused delays in the arrival of farmworkers for seasonal jobs. Immigration reform proposals were left unresolved this past year and the new political climate in Washington could mean slow progress in the year ahead. In 2010, New York farm employers were again successful at defeating proposed state legislation that would have required agricultural employers to pay overtime and grant workers collective bargaining rights. This chapter addresses these current policy and regulatory issues and their implications for agricultural labor supplies in New York agriculture.

## Immigration Enforcement

The immigration enforcement activities directed at New York's unauthorized immigrants in recent years have continued in 2010. Border patrol, Immigration and Customs Enforcement (ICE), and state and local law enforcement agencies have been active in many agricultural counties of New York State. Anecdotal reports indicate that there is a growing law enforcement presence where immigrants shop, go to church and seek other necessary services in their communities. In addition law enforcement agencies are continually monitoring bus stations, train stations and airports, regularly checking immigrants for proper documentation. The stepped up enforcement activities by Border Patrol officials focused on train stations in Western New York were highlighted in a New York Times story in August 2010.

This past year there was a change in how immigration laws are enforced by federal officials. In late 2009, the Obama Administration shifted the emphasis from business raids to audits. The raid typically involves enforcement officials coming unannounced to the workplace with search warrants, looking for unauthorized workers. With an audit, ICE issues a notice of inspection to the employer requesting I-9 forms on each employee and a list of employees by name. The employer has at least three days to provide the requested information. ICE then examines the documents and determines if the employees are authorized to work. If specific employees are determined to be unauthorized to work, the employer is instructed to terminate their employment. Even though the audits are announced, they often have the same impact as a raid. They cause significant stress and anxiety for employers who may lose part of their workforce as well as employees who face a loss of their job and potential deportation. Anecdotal reports and news articles indicate that a number of I-9 audits have taken place in New York and Vermont over the past year, and they are likely to continue.

## The Political Economy of Agriculture and Immigration Reform

As the leaders of the lame-duck session of the 111$^{th}$ Congress convened in mid-November to choose their last chance priorities and develop an agenda to address them during the few remaining weeks of 2010, the only immigration matter with even a slight chance to be on that to-do list was the Dream (Development,

Relief, and Education for Alien Minors; S.729 and H.R.1751) Act. This latest version of a long-standing proposal would repeal provisions of a 1996 law prohibiting certain educational benefits to unauthorized foreign students; and define a path to legal permanent residency for those individuals. Political surveys conducted before and after the November elections indicate that, while large majorities of Americans support the provisions of previously introduced immigration reform measures, the issue was a mere afterthought for voters. "The economy" overwhelmed all other issues as the factor that motivated voting choices on Election Day. Nevertheless, as elections have come and gone and political winds have shifted back and forth for almost 25 years, the need to find better policies to govern the movement of working people and their diverse skills across U.S. borders remains a critical *economic* issue for nearly 500,000 diverse businesses that employ people to do the work of American agriculture.

**Agriculture and Immigration Policy Reform: State of the State**

In 2010 the United States wrestled with many of the serious consequences of a broken immigration system, but the status quo remains largely unchanged. The enactment of Arizona law SB1070, which empowers local police to participate in the enforcement of federal laws, energized activists on all sides of the immigration debate. It also prompted the U.S. Department of Justice to sue the State of Arizona and elicited congressional pronouncements about the need to move forward with reform legislation. But the major debate over health care reform didn't conclude until late March and subsequent legislative battles over financial market reform carried on into the summer, even as the mid-term elections loomed. Time on the legislative calendar ran out and the political will to take on comprehensive immigration reform evaporated. Advocates for seemingly less controversial, "down payment" legislation such as the Dream Act and, of critical interest to farmers, AgJOBS, were left hoping to squeeze legislative action on these measures into perceived small windows of opportunity that never materialized. Late in September, Senators Kirsten Gillibrand and Charles Schumer of New York and Patrick Leahy of Vermont introduced the H-2A Improvement Act, designed to allow previously excluded dairy farmers to hire workers under the provisions of the existing H-2A program.

At the National Milk Producers Federation (NMPF) Annual Meeting in November, NMPF Board Chairman Randy Mooney reflected significantly diminished hopes for action on immigration reform in his comments, "Another issue where we need Congress to do the right thing is on immigration reform. This has been one of NMPF's key priorities during the past five years. Unfortunately, the momentum is on the side of those who don't want to consider any type of reform addressing the real-world issues of our labor force. And while NMPF still supports the AgJOBS bill that would provide a broader reform of immigration laws, we're always looking for any possible improvements. That's why we were encouraged to see legislation introduced just last month in the Senate to expand the H-2A visa program to the dairy sector. Right now, only seasonal farm operators can use H-2A visas to bring in immigrant workers. If the Senate bill can be adopted, dairy farmers will be able to use it as well. It's not a perfect solution, but it represents progress." No Senate action has been taken on H-2A Improvement as of this writing.

**H-2A: Politics, Bureaucracy and Economic Consequences**

In the United States, Congress enacts laws and the executive branch of the federal government, through its many agencies, interprets and develops rules and regulations to implement those laws. Frequently, the implementation of federal law requires resources, input and cooperation from state and local agencies as well. In 2010, requests for offshore workers made by farmers through the federal H-2A program were held up, with serious consequences, by the complicated machinery of this process.

H-2A legislation was first passed by Congress in 1986 as part of the last significant reform of the nation's immigration system, the Immigration Reform and Control Act, under President Ronald Reagan. H-2A defines the process through which farm businesses are allowed to hire temporary offshore workers to

do seasonal work. Three separate federal agencies administer the H-2A program, in cooperation with foreign governments and state departments of labor, which oversee farm compliance with program requirements governing written job descriptions and the advertisement of job openings.

While coping with perennial urgencies created by weather and perishable crops, New York fruit and vegetable growers have long found the regulatory requirements to be costly and cumbersome. The annual request process is also risky in terms of getting relatively large numbers of the best qualified workers into place in time for growing season tasks and the critical harvest. Many farmworker advocacy organizations are opposed to the existence of the H-2A "guest worker" program because they perceive it to be a means to make "second class" citizens, restricted in their employment options and highly vulnerable to exploitation, of the workers seeking employment on fruit and vegetable farms across the nation. Fewer than 70,000 of the 800,000 to 1.2 million workers in the hired agricultural labor force come to their jobs through the H-2A program.

In August, a confluence of conflicting political opinion, changing agency interpretations of H-2A requirements, poor communication and favorable weather conditions leading up to the harvest created uncertainty and negative economic consequences for New York State apple growers. Plenty of sunshine and relatively dry weather during the summer months brought harvest on 2-3 weeks early in orchards from the Lake Champlain Valley to western New York. Because of a dispute between the U.S. State Department and the Jamaican government over payroll deductions long required by Jamaican government agencies, experienced Jamaican orchard workers were not certified to enter the United States under the H-2A program. On many farms the benefits of an early harvest were lost when workers did not show up in time to start the season. In some cases, growers who had made the significant, time-consuming investment in H-2A compliance waited for workers to arrive while neighbors employing workers outside the program shipped their early-harvested produce to market. Both of New York's U.S. Senators and other members of the congressional delegation stepped in quickly to press the executive branch to resolve the intergovernmental stalemate, but economic losses had already been incurred and faith in the system's already suspect capacity to support the profitability of one of New York State's major agricultural sectors was further eroded.

**After the Mid-Terms**

A review of post-election analyses by food and agricultural organizations identifying immigration reform as a high priority points to a strong consensus sharing the following observations by the Society of American Florists:

*"Conventional wisdom suggests that the next two years could be a dry spell for supporters of AgJOBS and comprehensive immigration reform. There is also some legitimate fear that the strong left-right coalition of labor and business that has held steadfastly together for 10 years to support AgJOBS could crumble in the face of overwhelming numbers of conservatives in the House of Representatives or that some groups might try to negotiate a deal more to their own liking.*"

The Los Angeles Times reports that incoming House Immigration Subcommittee chair, Steve King (R-IA), in a recent, well publicized hearing on agriculture and immigration, expressed his view, that if illegal immigrants are so important to fruit and vegetable production, then Americans could simply wean themselves from fruits and vegetables. Salad, broccoli, spinach, tomatoes, etc., cannot be all that important to human health, "I'm wondering how the Eskimos got along all those centuries without fruits and vegetables!" This is an example of the passionate support for enforcement-only immigration policies that many freshman members of the new Congress will bring with them to Washington in January.

Given President Obama's stance on these issues and the fact that the Senate remains in Democratic hands, stalemate on the familiar reform proposals of the last few years, such as AgJOBs and others mentioned

above, is almost certain to continue. Farmers will be more concerned about the way in which enforcement of current laws will unfold. The 112th Congress is not likely to pass legislation authorizing workers now employed by U.S. farms to be in this country. At the same time, there will be pressure from newly-elected representatives to expand the number of I-9 audits on farms and make E-Verify, the federal electronic system developed to determine immigration status, mandatory. If reforms materialize as more stringent enforcement only, farmers will have to make some very hard decisions about if, how and where they will continue to grow their labor-intensive crops and milk their cows. The evolution of the enforcement approach taken by the Administration in the near future will significantly influence such economic decisions.

**Agricultural Economics**

The political debate over immigration reform will continue to play out on television screens, in print and on the internet as the Administration and the 112th Congress set policy and legislative priorities, do partisan battle and seek compromise in carrying out what they see to be the people's business. New York agricultural producers and their counterparts throughout the nation will continue to face the economic realities that stem from the uncertainties surrounding their work force. Uncertainty about the impact of national policy and immigration enforcement practices on the availability of workers manifests itself in the cost, real or perceived, of labor needed to grow and harvest our state's fruit and vegetable crops as well as to produce dairy products on our farms. Migrants seek out jobs on New York State farms because of the relative level of wages, the state of the economy and the relative absence of opportunities in their home countries. They are recruited by farm employers because of the severe scarcity of local individuals capable and willing to milk cows, prune grapevines, harvest apples and cherries, cut cabbage or cucumbers, plant onions, feed calves or perform other necessary farm tasks. Myriad social and political issues, perceptions and concerns surround these basic economic forces, but the financial health of farm family businesses, rural prosperity and the cost and reliability of our food supply are all functions of the costs, benefits, incentives and disincentives related to the economics of agricultural labor and its impact on production.

A 2007 National Milk Producers Federation analysis of these economic factors estimated and summarized the consequences of doing without migrant workers on dairy farms. This drastic economic shift would:

- Reduce the U.S. dairy herd by 1.34 million head, milk production by 29.5 billion pounds and the number of farms by 4,532
- Increase retail milk prices by an estimated 61%
- Cause 133,000 workers, both immigrant and native-born, in dairy production, input and service sectors to lose their jobs

Authors of studies of the fruit and vegetable sectors that assume a similar premise reach comparable conclusions with respect to the availability of fresh fruits and vegetables to consumers, changes in the mix of labor-intensive and row crops that would be grown and the likelihood of moving operations to Mexico.

**The Way Forward**

By itself, the decades-long impasse over immigration reform has caused many New York growers to take a deeply pessimistic view of what the future holds. The political prospects for positive changes in policy in the near future have not brightened this outlook. Opportunities, however, for positive, albeit limited change on policy and economic fronts do exist. Farm employers and their advocates can help create this change by:

1. raising public awareness of the relationship between current immigration policy and economic consequences in agriculture
2. building alliances with other individuals and organizations with similar stakes in reform
3. exploring alternatives and implementing farm and human resource management decisions to minimize the costs of uncertainty caused by existing immigration policy

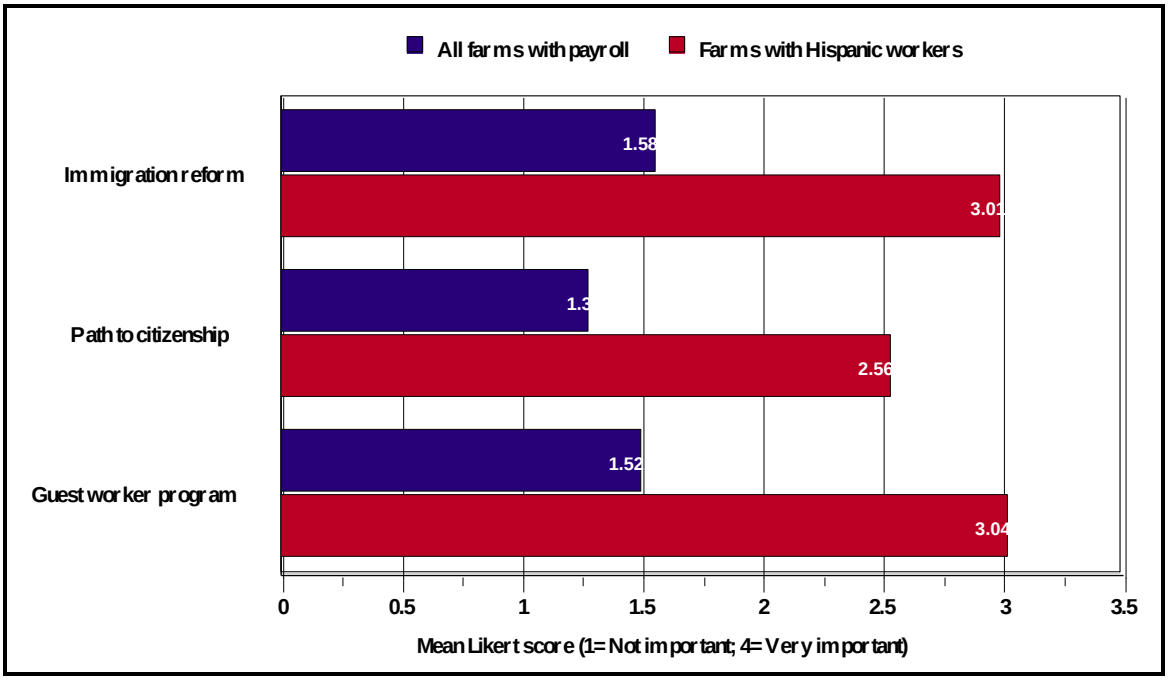
Participants in the 2009 Becker Forum held annually as part of the Empire State Fruit and Vegetable Expo in Syracuse, identified steps that farmers can take locally to raise public awareness of various aspects of the immigration reform issue. These involve sharing information and building coalitions with church and business groups, local government, law enforcement officials and local media to "detoxify" the discussion of immigration issues. For example, a recent showing of the documentary film, *"The Other Side of Immigration"*, which examines economic conditions in rural Mexico and the motivations of Mexicans who cross the border to take farm jobs in the United States, drew 170 intellectually curious people to the New York State Agricultural Experiment Station in October. The 2011 Becker Forum will foster discussion of coalition building across political lines in the interest of constructive progress on immigration reform. And New York State has a number of freshman congressional representatives to educate on the local economics of agricultural labor and two powerful U.S. Senators to press for better policy, enforcement practices and law. Farmers can reduce uncertainty surrounding labor availability by exploring labor supply alternatives and improving human resource management practices. For example, some growers have found success employing refugees, who are legal permanent residents, in their fields and orchards. Other farm managers have increased their creative efforts to attract and keep local employees, an initiative with higher prospects for success in a bad economy. Dairy farmers are learning more about the H-2A process and how the program's complicated provisions, potential revisions and proposed (incremental) legislative reforms might be adapted to their operations. New York producers (and their farm lenders) will continue a recent trend of assessing opportunities and making decisions to mechanize a growing number of farm tasks and enterprises.

The national media too often present the political economy of agriculture and immigration reform as all politics. While the economics of agricultural labor are obscured at this level of the national debate, the forces are real and powerful. Even as the political system seems repeatedly to fail American agriculture, those who examine the issue most closely will find that the agricultural economy still generates opportunities for positive change.

## Farmer Concern over Immigration Reform

Farm employers are understandably concerned about the lack of movement on immigration reform. In 2010, a Cornell survey examined dairy farmer attitudes and practices relating to agricultural labor. Regarding immigration policy, survey participants were asked how important they felt immigration reform, a path to citizenship, and a guest worker program were to their business. Figure 1 shows that farm employers who hired Hispanic workers were concerned about each of the three policy approaches but were slightly less concerned about a path to citizenship. These survey results reflect the importance that dairy farm employers place on immigration policy changes that would allow them to hire legally authorized workers.

**Figure 1: Average Scores on Attitudes toward Changes in Federal Immigration Policies**




Source: Maloney T. and N. Bills. Survey of New York Dairy Farm Employers, Dyson School of Applied Economics and Management, Cornell University, 2010.

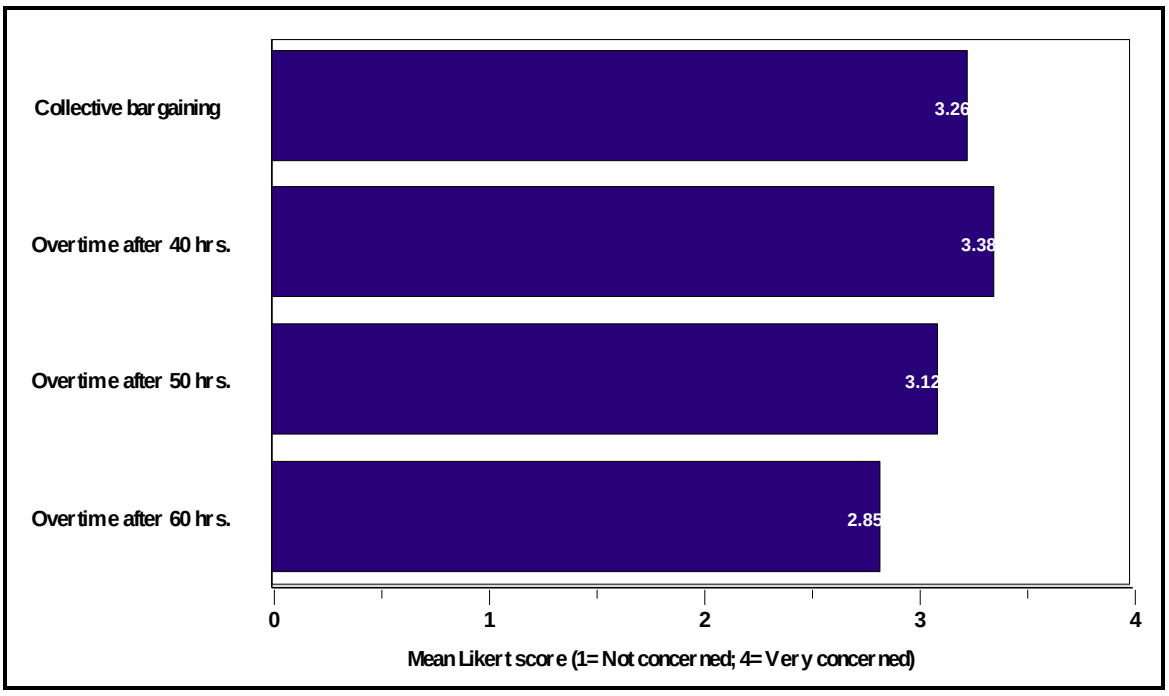
## Proposed Changes in Agricultural Labor Regulations at the State Level

Agricultural workers in most states are exempt from some labor law provisions that apply to employees in most other workplaces. In New York State, agricultural labor advocates and farmers have battled politically over this topic for more than four decades. Two of the most contentious issues are collective bargaining and overtime pay. Current law grants rights to most other employees who engage in union organizing activities. In addition, most employers are required to pay an overtime rate of time- and-one-half for hours worked over 40 per week. In New York, labor advocates would like to see both of these exemptions removed. A number of other states, including California, have laws that protect agricultural workers who wish to engage in collective bargaining and union organizing activities. In addition, several states have overtime pay provisions for agricultural workers.

Introduced in the New York State Legislature in 2009, the Farmworkers Fair Labor Practices Act (FFLPA) would have provided farmworkers with collective bargaining rights and overtime pay. It also included other provisions viewed as having less impact on the agricultural industry. The proposal reignited a contentious debate and political standoff between farm business interests and the state's labor advocates. The bill passed the Assembly on June 8, 2009. Leaders in the Senate then had difficulty getting the bill to the Senate floor for a vote. Finally, as part of the 2010 state budget battle, Senator Pedro Espada, Senate Majority Leader, was successful in bringing about a vote on August 3, 2010. The legislation was defeated by a margin of three votes. Seldom has farmworker rights legislation gotten so close to passing both houses of the New York State Legislature with the prospect the Governor would sign it. The future prospects for overtime pay and collective bargaining rights for New York's agricultural workers are unclear. If Democrats maintain control of both the Senate and Assembly, pressure to eliminate the exemptions for farmworkers is likely to escalate. If Republicans regain control of the Senate, it appears unlikely similar legislation will be enacted in the short term. What is clear is farmers' strong opposition to both of these policy changes.

Figure 2 shows the level of concern New York's dairy farm employers have regarding changes in laws affecting collective bargaining and overtime pay. Survey participants expressed the greatest concern over a provision that would allow overtime pay after 40 hours. Changes in collective bargaining laws were the second greatest concern. Even provisions that would allow overtime after 55 hours or 60 hours per week were opposed by many farm employers. If similar legislation is proposed in the future it is very likely that New York farmers will continue their strong opposition.

**Figure 2: Average Scores on Attitudes Toward Proposed Changes in State Law - 2,100 New York dairy farms, 2009**




Source: Maloney T. and N. Bills. Survey of New York Dairy Farm Employers, Dyson School of Applied Economics and Management, Cornell University, 2010.

## The New York Agricultural Labor Outlook for 2011

Labor supplies for agricultural jobs are likely to continue to be more than adequate in 2011. However, labor supply uncertainty resulting from policy and regulatory issues, especially on the federal level, is likely to continue. We anticipate the following conditions as we look ahead to 2011.

1) Aggressive immigration enforcement activities are expected to continue. Local law enforcement officials in cooperation with Border Patrol and ICE officials are likely to be highly visible in many agricultural counties of New York State. Surveillance at supermarkets and other places of business frequented by immigrants is also likely to continue. It is expected that the Department of Homeland Security will continue to emphasize immigration audits of employer records and that traditional immigration raids will diminish. Anxiety on the part of agricultural employers and immigrant workers' concerned about the prospects of deportation will likely remain at high levels.

2) In an attempt to secure a legally authorized workforce, employers will continue to be interested in acquiring workers through the H-2A program, although they are concerned about the chronic delays in the system and the difficulties with the Jamaican Embassy experienced last season. Farm Bureau

and other organizations representing agricultural employers are expected to put strong pressure on the appropriate government agencies in the months ahead to avoid a recurrence of problems in the next growing season.

3) Farm employers in New York will continue to insist that their elected officials in Washington take up immigration reform in the next Congress. Farm employers will push hard for immigration policy changes that will allow them to hire guest workers, create a path to legal residency for their immigrant employees and reform current immigration laws. Changes in the political climate in Washington, DC as a result of Republican gains in Congress during the midterm elections could slow the immigration reform process and lead to higher levels of enforcement at the border and in the workplace. In the face of strong opposition to comprehensive immigration reform, organizations representing farm employers may attempt to pass smaller pieces of legislation such as AgJOBS or H-2A reform that would include the dairy industry.

4) In 2010 farm employers were successful at having the Farmworkers Fair Labor Practices Act voted down. If the Republicans regain control of the New York State Senate and influence redistricting, it is highly likely that similar legislation would be forestalled indefinitely. On the other hand, if the Democrats gain control of the Senate, employers could expect a strong push in future years to pass legislation similar to the FFLPA.

5) Given the tenuous outlook for national immigration policy reform, farmers in New York's dairy, fruit and vegetable sectors will continue to revisit their farm management options to reduce the costs of labor uncertainty in their business operations. Exploring alternative pools of labor and learning to adapt staffing, work scheduling, and job description on the farm to existing policy and programs could produce positive results. Farmers will also continue to incorporate new machines into their operations to save labor and improve the safety and efficiency of those operations. Well considered decisions to substitute capital for labor, in milking parlors, orchards, or fresh and processed vegetable enterprises will benefit the farm businesses making those decisions. Finally, there will be news stories about business decisions in New York and across the nation to move production of labor intensive crops across the border, as well as trends toward growing crops that require less labor to produce.

# Chapter 9 - Agriculture and the Environment: Highlights of the Recent NY Climate Change Action Plan Recommendations for Agriculture and Forestry

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## 1. Introduction

In August 2009 former Governor David Paterson signed Executive Order number 24 which put forward the goal of reducing greenhouse gas (GHG) emissions in NYS by 80 percent below 1990 levels by the year 2050. As part of this executive order, the New York Action Council was charged to develop an Action Plan that would examine all economic sectors in NY and identify the various options available to reduce GHG emissions and adapt to climate change. Technical working groups focusing on (a) Agriculture, Forestry and Waste, (b) Power Supply and Delivery, (c) Residential, Commercial and Industrial, (d) Transportation and Land Use and (e) Adaptation were to develop a vision of a low carbon economy and put forward a set of public policies to achieve the targeted goal by 2050. These working groups consisted of stakeholders from government agencies, industry, academia and non-profit organizations.

The purpose of this year's chapter on Agriculture and the Environment is to highlight the main findings of the NYS climate change action plan for the Agriculture and Forestry sectors. I was fortunate to be part of this working group. Therefore, this chapter follows closely the recent Climate Change Action Plan report for Agriculture and Forestry, highlighting its key findings. I refer the reader to the actual report for further discussion and information related to options for all other sectors of the economy (Power, Residential, Commercial, Industrial and Transportation). The full report can be found at: http://www.nyclimatechange.us/index.cfm .

This chapter is organized as follows: First, based on EPA and NYS's GHG emissions and sinks inventories, I report on the sources and extent of GHG emissions from agriculture and forestry. Second, I briefly outline the vision statement developed by the Action Council group for the Agriculture sector, discussing issues related to energy independence at the farm, agricultural practices and technology, land use, production of food, fiber and feedstocks, and adaptation. Third, I summarize the vision statement developed by the Action Council group for the Forestry sector focusing on management of forest lands, carbon sequestration, fuel substitution, and adaptation. Sections two and three of this chapter should therefore be interpreted as highly speculative and represent the vision put forward by the Climate Change Action group. The purpose here is not to quantify the economic feasibility to these visions – since we are limited in data available to provide such credible quantifications - but rather just present a descriptive summary of these visions. Forth, I will present the various public policy options identified by the Climate Change Action Plan to promote the target goals of the plan. The group outlined several policies based on a series of brainstorm sessions; the list of policies outlined is by no means complete and the cost-effectiveness of each of the policy options has not been calculated. Again, the only purpose here is to give a flavor of the types of potential policies to be potentially implemented. Finally, I will provide some concluding remarks.

## 2. Sources and Extent of GHG Emissions from Agriculture and Forestry in NYS

*A. Agriculture Sector*

*Agricultural Emissions in Relation to the Overall Economy* – Reporting of emissions and carbon sinks in NYS follows the US EPA methods and international reporting conventions. The agriculture sector is a minor contributor of GHG emissions in NYS. In 2008, this sector accounted for 2 percent of NYS total gross emissions. The climate change action plan estimates that in 2030 the contribution of this sector will be of similar magnitude.

*Sources of Agricultural Emissions in 2008* - Agricultural emissions include methane (CH4) and nitrous oxide (N2O) emissions from enteric fermentation, manure management, and agriculture soils. Emissions from livestock (primarily dairy cows) make significant contributions to the sector totals in both manure management and enteric fermentation. Sector emissions also include N2O emissions resulting from activities that increase nitrogen in the soil, including fertilizer (synthetic and livestock manure) applications and production of nitrogen-fixing crops (legumes).

*Projection of Emissions in 2030* - The CH4 emissions occurring from enteric fermentation are a large contributor to the state's total agricultural GHG emissions by 2030, the contribution from this source is estimated to be about 48 percent of the total agriculture emissions. The next-highest contributor in 2030 is forecasted to be agricultural soil management, at about 39 percent. Methane emissions from manure management are declining slightly due to lower animal populations; however, they are forecasted to contribute around 13 percent in 2030.

*B. Forest Sector*

*Sources of Emissions and Carbon Sinks* - The forestry and land-use sector can include both emissions sources and carbon sinks. Following the US EPA guidelines, these are calculated from estimates of the net CO2 flux from forested lands, urban trees, and landfilled yard trimmings in New York. The inventory is divided into two primary subsectors: the forested landscape and urban trees/land use. Both subsectors capture net carbon sequestered in forest biomass, urban trees, landfills, and harvested wood products. USFS data suggest that New York's forests sequestered about 19.5 MMtCO2e per year in 2005 (this excludes estimates of carbon flux from forest soils based on recommendations from the USFS). Emissions of CH4 and N2O during forest wildfires and prescribed burns were not estimated due to a lack of data; however, it is not expected that these emissions will contribute substantially to Forestry sector totals. This expectation is based on work in other states, as well as wildfire activity in New York. The forecast for the sector to 2030 remains a net sequestration of 19.5 MMtCO2e.

## 3. Summary of the Vision Statement for a Low Carbon Agriculture Sector in NYS by 2050

The Climate Change Action Plan identified the following key characteristics for NYS' Agriculture sector by 2050. These were broad goals, achieved through brainstorm sessions and consensus building:

(a) *Energy Independence and Low Energy Intensity* – The vision for 2050 consists of integrating the agriculture sector with the other energy producing sectors of the economy. Specifically, at least medium and large-scale farms should have the ability to become next exporters of electricity and biogas. While integrated with surrounding communities, farms will provide power to the grid from on-farm anaerobic digestion of organic wastes and waste heat for onsite and offsite use. Less productive lands could also potentially supply feedstocks for transportation fuels or direct power combustion. Research at Cornell and other land grant universities suggests tremendous increases in yields of dedicated bio-energy crops, removing pressure from land and competition away from food production (NY Biofuels Roadmap, 2010). Such research has yet to be linked with data on costs of providing these various feedstocks and market value.

(b) *Farms Should be Recognized as Ecosystem Services Providers* - The 2050 vision consists of re-coupling animal and crop production, and maximization of carbon flows through nutrient management, soil conservation, and water quality protection. Green payments should be put in place to maximize the value of ecosystem services provided by farms.

(c) *Integration of Smart Growth Policies with Farmland Preservation* – It is well documented that smart growth policies have prevented the loss of agricultural lands by promoting in-fill development, revitalization of city cores and increased costs of land conversion (Bento et al. 2006, Bento et al. 2011). The vision of 2050 consists of removing as many pre-existing subsidies to land conversion as possible to facilitate a better management of lands. Farms should be seen as systems where selective decisions of use for intensive cultivation for crop production and for carbon storage can be made. Carbon storage can be achieved either through soil compost or biochar.

(d) *Adaptation* – The vision for 2050 is that the agriculture sector will have adopted management strategies and technologies that support adaptation to unavoidable changes in climate and enable agricultural and economic success in a carbon-constrained environment.

## 4. Summary of the Vision Statement for the Forestry Sector in NYS by 2050

The Climate Change Action Plan report identified the following key characteristics for NYS forests by 2050. Again, similar to the vision for agriculture, the vision presented here represents the results of a series of brainstorm sessions and consensus building:

(a) *Better Management towards carbon sequestration* – The vision for 2050 is to promote the management of forest lands to increase biomass production and carbon sequestration. Public Policies will be developed that aim to motivate retention, expansion, and better management of forest lands, while discouraging deforestation. Integrated land-use policies will maximize various ecosystem services and carbon benefits.

(b) *Carbon Sequestration* – Advances in geographical information systems and statistical methods allows for a better monitoring of carbon sequestration. The vision for 2050 is to achieve optimal carbon storage on all forest lands. An effective monitoring system will track forest carbon pools.

(c) *Promotion of Fuel Substitution* – The vision for 2050 is that NYS's large amounts of idle agricultural land will be brought back into tillage or will be dedicated for the production of woody biomass crops

for energy. At the present time such options are not cost-effective, requiring serious public policy support. As outlined in the 2010 Biofuels Roadmap (NYSERDA, 2010), if indeed these idle lands could be brought into production of energy feedstocks, NYS could consider becoming a large producer of biofuels and bio-power.

(d) *Climate Change Adaptation* – Forest-based policies should be put in place so that the capacity of the state's forest lands to both mitigate and adapt to climate change is maximized. Potential attention to forest pest invasions must be considered.

## 5. Policy Options

As discussed in section 2, the combined emissions from agriculture and forestry represent a rather small portion of overall NYS GHG emissions. However, many of the mitigation and sequestration options available to these sectors can be cost-effective. The climate change action plan working group argues that, if implemented correctly, such policies can also offer significant environmental, economic, and social benefits beyond GHG reductions. Such benefits include improved air and water quality and increased agricultural and forest products.

The climate change action plan report identified the following broad goals for policy options:

(a) *Reduce Energy-related Emissions* – Policies should promote the development of renewable energy technologies, including bio-based technologies, and energy efficiency policies;

(b) *Reduce Methane emissions and Nitrous Oxide* - Reduce methane (global warming potential (GWP) =21-25) and nitrous oxide (GWP=296-310), the predominant agriculturally generated and waste-related GHGs, through the deployment of a combination of systems;

(c) Capitalize on agriculture and forestry's ability to store carbon in natural systems;

(d) Incorporate adaptation strategies wherever possible.

Proponents of biofuels argue that energy from biomass represents an opportunity to reduce GHGs through the displacement of higher-carbon fossil-based energy sources while at the same time increasing in-state circulation of energy dollars and providing significant economic opportunities. There is no agreement amongst researchers of the validity of this statement. For at least corn-based ethanol, recent studies document that, at the margin, the expansion of ethanol can actually contribute to a reduction of blended fuel prices and at the margin increased vehicle miles travelled. Therefore, while it is true that per gallon the fuel becomes cleaner, overall fuel consumption increases. As a consequence, it is not clear whether GHG emissions will reduce. The prospects for second generation biofuels are much higher, although at today's technologies this sector will not be competitive. Direct combustion of biomass is another option, often thought to be more cost-effective.

Properly managed biomass production systems may therefore offer an opportunity to realize net carbon benefits. The proposed set policies – ranging from mandates for bio-energy production to tax credits for liquid biofuels and bio-power - seek to capitalize on the state's ability to achieve GHG reductions through sustainable production and wise use of this renewable resource.

Our existing landscape is a critical component of the carbon cycle. Several of the policy options seek to enhance the state's existing carbon sinks through a combination of improved land management and land-use protection measures.

All of the policy options presented below in Table 1 rely on management system changes at the most basic level on the farm or the forest. Incorporating GHG reduction and sequestration strategies into existing management systems and stewardship principles will require a high degree of behavioral change. Developing the education, outreach, job training and decision-making tools necessary to engender this level of behavioral change is an immediate challenge.

Table 1 presents a summary of the policy options for agriculture and forestry examined by the climate change action plan. The table reports the policy options, the amount of in-state GHG reductions, the net present value of cost savings (2011-2030) and the cost/savings per avoided emissions. These were calculated based on engineering-type cost calculations. We refer the reader to the climate change action report to further discussion on the underlying assumptions used to calculate each of the cost cells in the table. As discussed in the concluding remarks, most of the numbers displayed below should be interpreted with great caution.

## Table 9.1. Policy Options to Agriculture and Forestry (source: Climate Change Action Plan Report, 2010)

| Policy Option | In-State GHG Reductions(MMtCO2e) | | | Net Present Value: Cost/Savings 2011–2030 (Million 2008$) | Net Cost/Savings per Avoided Emissions ($/tCO2e) |
|---|---|---|---|---|---|
| | 2020 | 2030 | Total 2011–2030 | | |
| Production of Sustainable Feedstock for Electricity, Heat, Steam Production, and Liquid/Gaseous Biofuels | Not available | | | | |
| Conversion of Sustainable Feedstock to Electricity, Heat, Steam Production, and Liquid/Gaseous Biofuels | Not available | | | | |
| Maximize Waste Reduction, Recycling, and Composting—In-State Only | 0.5 | 0.7 | 8.0 | $280 | $35 |
| Integrated Farm Management Planning and Application | 0.3 | 0.6 | 6.5 | -$201 | -$31 |
| Conserve Open Space, Agricultural Land and Wetlands | 4.5 | 5.5 | 95 | $1,500 | $16 |
| Increase On-Farm Energy Efficiency and Production of Renewable Energy | 0.2 | 0.4 | 3.8 | $3.0 | $1 |
| Forest Restoration | 2.3 | 4.7 | 49 | $290 | $6 |
| Urban Forestry | 1.0 | 2.0 | 22 | $3,200 | $140 |
| Reforestation | 1.8 | 2.4 | 34 | $1,200 | $36 |

## 6. Concluding Remarks

We conclude this chapter by offering some caveats when interpreting the magnitudes of emissions savings and costs reported in Table 1. Like many state climate change action plans, NYS climate change action plan is mostly motivated by the failure of higher levels of government (i.e. the federal government) to develop comprehensive climate legislation. However, one should not forget that GHG emissions are global in nature. As a consequence, one should question the role of state government to attempt to reduce GHG emission in isolation. Our concern is that many of the emissions reductions reported in table 1 may not fully materialize simply because, while there could be in-state emissions reductions resulting from state level climate plans, such emissions will probably take place elsewhere. In fact, recent academic literature (e.g. Stavins and Goulder, 2010; Bento and Msaid, 2010) points to the simple fact that there are leakages whenever a regulation is incomplete. Global pollutants, such as GHG emissions, require global regulations. State level attempts may be frustrated in part because emissions saving in the state that introduces the regulation will leak into unregulated states, as capital 'flies'. In the context of biofuels policies, for example, it is well documented that expansion of biofuels production at the expanse of crop production will result in increased crop production elsewhere. This leakage creates additional agricultural emissions (potential increased emissions if forest lands get converted) that must be deducted from the direct fuel emissions savings when a biofuel replaces a traditional source of fuel. As a consequence, the costs presented in table 1 should be taken with caution, as they ignore all potential sources of leakages.

At the same time, it is important to note that we are not saying that there is no room for state level intervention to reduce GHG emissions. State level policies that do not lead to leakages can effectively reduce GHG emissions and increase the productivity of the state. For example, reductions in emissions at the farm that are a result of cleaner technology adoption or on-farm production of energy have the potential to become serious options, as they are less likely to create leakages. Future analysis should re-evaluate the costs of emissions savings achieved by state level interventions in a system where not all states have regulations in place.

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# Chapter 10. Specialty Crops

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Specialty crops are an important component of New York State's agricultural economy. In 2009 the total farm value of all agricultural products produced in New York was approximately $4.7 billion, which changed little from the total farm value in 2008. Fruit and vegetable crops accounted for nearly 14% of the total value of agricultural production in New York State and another 4% was generated from production of ornamental crops. Horticultural commodities are an important component of agriculture in New York State and we continue to see a significant quantity of fruits and vegetables produced in the State, and marketed to consumers through various channels. Apples and grapes are the two highest revenue fruit crops in New York while cabbage, sweet corn, and onions have been the three highest revenue vegetable crops in recent years; the value of production for all five commodities has typically exceeded $50 million per year.

Below we divide specialty crop markets into four categories and take a closer look at market conditions in each category. We examine patterns, and provide an outlook, for fruit and berries, vegetables (fresh and processing) grapes and wine, and ornamental products in New York. In each case we review production and price data between 2006 and 2010, give an economic outlook on expected market conditions in 2011, and also provide some thoughts on the long term potential for horticultural crops produced in New York State.

## 10.1 Fruit and Berry Situation and Outlook

Market conditions for major fruit crops in New York State were, overall, less favorable in 2009 compared to 2008. Here we take a closer look at domestic prices and production values, consumption patterns, and international market conditions for major fruit crops in 2009. Similar to last year, we examine grapes as a separate fruit category and discuss market conditions for grapes in section 10.3. Overall, the total value of fruit (including grapes) in New York in 2009 was $305 million, down 11% from the value in 2008. Prices for all of the major fruit crops in New York State were lower in 2009 compared to 2008, and this is, in a large part, a key driver of the lower total values of fruit crops in 2009. Once the data from 2010 are released, we expect to see annual aggregate statistics that show an increase in the total value of fruit produced in New York in 2010 compared to 2009. Much of the decrease in crop values in 2009 is related to lower prices that were driven by excess inventory. Fruit crop prices have rebounded in 2010 due to reduced quantities produced in the eastern states and due to reduced carryover from the 2009 crop.

Table 10-1 shows that New York apple production in 2009 was 680 thousand tons and valued at $208.9 million. The overall value of the 2009 crop was down relative to the 2008 crop; values of both the fresh and processing crops were down in 2009 compared to 2008. Table 10-1 also indicates that the average price of New York apples fell in 2009 compared to 2008; the price of apples fell for apples used in the fresh and processing markets. The average price for New York apples used in processing market was $166 per ton in 2009, and although this is lower than the prices in 2007 and 2008, it remains higher than the five-year average of $147 per ton between 2003 and 2007. Prices in 2009 were also significantly lower in the fresh apple market, yet they are expected to be higher in 2010. Early evidence from the *USDA Fruit and Tree Nuts Outlook* shows that retail apple prices are 8% higher in 2010 compared to 2009.

Relative to other states, New York continued to be a major national producer of apples in 2009. As shown in Table 10-2, the value of U.S. apple production in 2009 was $2,290 million based on production of 9,915 million pounds and an average price of $0.231 per pound. In 2010, total apple production is expected

to fall by about 4% to approximately 9,476 million pounds. Prices would need to increase by at least 8% to maintain the value of the total crop in 2010. Washington State typically produces approximately 55 to 60% of the U.S. apple crop and New York State is the second largest producing state growing about 15% of the national crop. Production in Washington State in 2010 is forecasted to increase relative to 2009, while production in New York State, and many other eastern states, is expected to be less in 2010 than it was in 2009 due to unfavorable weather conditions.

In addition to apples, New York State is also a top producer of several other tree fruit and berry crops. Table 10-1 shows that pear and stone fruit (cherry and peach) production increased in 2009 versus 2008; crop values increased for pears and peaches but fell for cherries. In 2009 New York produced approximately $4.8 million in cherries ($2.5 million was tart cherries and $2.3 was sweet cherries), $5.4 million in peaches, and $4.9 million in pears. Although not shown in Table 10-1, berry production (including strawberries, blueberries, and red raspberries) was slightly lower in 2009 versus 2008, yet the total value of berries produced in New York State increased by approximately 10.9% in 2009 compared to 2008. The *USDA Fruit and Tree Nuts Outlook* reports lower prices for peaches in 2010 yet higher prices for the other key fruit crops grown in New York State.

TABLE 10-1. COMMERCIAL NONCITRUS AND NONGRAPE FRUIT PRODUCTION AND PRICES IN NEW YORK STATE

| | Production | | | Prices | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| | *------ Thousand tons ------* | | | *------ Dollars per ton ------* | | |
| Apples | 635 | 625 | 680 | 426 | 418 | 308 |
| *Fresh* | 340 | 265 | 338 | 682 | 624 | 450 |
| *Processed* | 310 | 345 | 342 | 174 | 260 | 166 |
| Tart Cherries | 6.5 | 4.8 | 5.1 | 672 | 826 | 486 |
| Pears | 11.2 | 10.3 | 9.9 | 497 | 504 | 490 |
| Peaches | 6.3 | 5.5 | 6.5 | 634 | 922 | 845 |
| Sweet Cherries | 1.2 | 1.1 | 1.2 | 2980 | 3520 | 2440 |

Sources: New York Agricultural Statistics, 2010.

Table 10-2 highlights the values of tree fruit crops in New York between 2007 and 2009; we also show the total value of these crops nationally in 2007 and 2008 (USDA Agricultural Statistics data for 2009 had not been released when the *Outlook Handbook* was being prepared). The information in Table 10-2 highlights that New York apples and tart cherries are important nationally, pears and peaches are important for New York State but have less of an impact on those markets nationally, and sweet cherries are a relatively small industry in New York State. The value of both the U.S. and New York's apple crop decreased in 2009 relative to 2008. The value of tart cherries, pears, and peaches increased nationally in 2009, yet the changes in New York State were more subtle. The smaller changes in production in New York State are likely due to the regional marketing of these products that is more typical in the Northeast.

In addition to the differences in production and intra-national trade within the United States, international trade continues to be an important factor in fresh and processed fruit markets. Imports of fresh apples in the United States reached a high of 472 million pounds in 2003/04 but have fallen recently; U.S. imported 361 million pounds of fresh apples in 2009/10 and is expected to import approximately 377 million pounds in 2010/11.

TABLE 10-2. VALUE OF NONCITRUS AND NONGRAPE FRUITS
NEW YORK AND UNITED STATES

| | New York | | | U.S. | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| | | | | ------ *Million dollars* ------ | | |
| Apples | 270.5 | 255.2 | 208.9 | 2410.2 | 2599.5 | 2290.4 |
| *Fresh* | 231.9 | 165.4 | 151.9 | - | - | - |
| *Processed* | 53.9 | 89.7 | 56.9 | - | - | - |
| Tart Cherries | 4.4 | 3.9 | 2.5 | 67.5 | 82.1 | - |
| Pears | 5.5 | 4.7 | 4.9 | 345.8 | 386.8 | - |
| Peaches | 3.9 | 4.8 | 5.4 | 352.6 | 539.5 | - |
| Sweet Cherries | 3.6 | 3.2 | 2.3 | 592.4 | 570.8 | - |
| Total | 287.9 | 271.8 | 224.0 | 3768.6 | 4178.7 | - |

Sources: New York Agricultural Statistics, 2010; USDA Agricultural Statistics, 2009.

United States imports more apple juice that what it produces; approximately 81% of all apple juice imports come from China. Exports of fresh apples from the United States have been relatively steady since the mid-1990s, hovering around 1,500 million pounds per year. U.S. exports exceeded 1,750 million pounds in 2008/09, and are expected to be approximately 1,650 million pounds in 2010/11. However, the recently implemented Mexican tariff on U.S. apples is expected to decrease the overall import demand for U.S. apples (given that Mexico is a major importer of U.S. apples). Imports of processed apple products have grown over the past fifteen years yet the value of each imported unit has fallen over this time, and this will continue to present challenges to U.S. processors of apple products.

U.S. consumption patterns for fresh, frozen, and canned fruit products between 2002 and 2007 were examined in the 2010 *Agricultural Outlook Handbook*. Overall, we saw that per capita consumption rates for most fresh and processed fruits had been relatively stable over this time. Consumption rates had been very stable for frozen fruit products and showed a slight decline for many canned products. Per capita apple consumption rates in the United States were stable between 2002 and 2007, were below per capita consumption rates for bananas, and both of these observations reflect a larger trend over the last two decades. In Table 10-3 below we shed some additional light on fresh fruit consumption patterns in the United States, and elsewhere. Fresh fruit consumption (given in pounds per person) is provided in five different time periods between 1991 and 2009 in up to 12 countries. Apple consumption in the United States has remained in the range of 18 pounds per person per year over this time period, yet the trends in other countries are surprisingly different. In Canada per capita consumption of apples has been closer to 26 pounds per person per year, and in many western European countries it has exceeded 30 or 40 pounds per person per year. Of the countries listed in Table 10-3, only Japan has a lower per capita consumption rate of apples than the United States.

It is surprising how stable per capita apple consumption is in the various countries listed in Table 10-3, and this indicates that apple marketers need to develop very strategic plans to reach new consumers or expand apple sales to existing consumers. Several economic and marketing issues that have been important to producers and packers of fruit crops in New York State will continue to be key concerns over the next two to five years. Important and on-going issues include food safety concerns, labor availability, crop insurance rates, promotion activities, and competition with foreign suppliers. Promotional activities for fruits and vegetables have traditionally been done for individual products in the United States, and less effort has gone into broad-based programs. Recent research completed at Cornell University finds that a broad-based

TABLE 10-3. CONSUMPTION PATTERNS FOR SELECTED FRESH FRUITS IN VARIOUS COUNTRIES

| | Consumption | | | | |
|---|---|---|---|---|---|
| | 1991-93 | 2001-03 | 2004-06 | 2007-09 | 2009 |
| | ------ *pounds per capita* ------- | | | | |
| Apples | | | | | |
| United States | 18.92 | 15.84 | 18.04 | 17.82 | 18.04 |
| United Kingdom | 24.64 | 20.46 | 22 | 22.22 | 22.66 |
| Japan | 12.32 | 12.76 | 11.22 | 12.54 | 12.76 |
| Canada | 26.4 | 25.08 | 29.48 | 28.6 | 28.82 |
| Germany | 52.36 | 40.26 | 41.8 | 42.9 | 42.9 |
| France | 30.8 | 35.64 | 35.64 | 33.22 | 33.88 |
| Spain | 38.94 | 41.14 | 33.88 | 30.36 | 27.94 |
| Italy | 46.64 | 44 | 37.84 | 37.84 | 38.94 |
| New Zealand | 32.34 | 35.64 | 29.92 | 29.04 | 28.82 |
| China | 11.88 | 28.38 | 29.04 | 36.3 | 43.34 |
| Japan | 12.32 | 12.76 | 11.22 | 12.54 | 12.76 |
| Turkey | 71.06 | 72.6 | 64.68 | 69.96 | 69.52 |
| Bananas | | | | | |
| United States | 24.42 | 28.38 | 25.08 | 25.08 | - |
| United Kingdom | 14.3 | 24.42 | 25.74 | 26.4 | - |
| Japan | 15.4 | 14.52 | 16.28 | 17.6 | - |
| Oranges | | | | | |
| United States | 12.32 | 8.36 | 11.88 | 11.88 | - |
| United Kingdom | 6.38 | 7.26 | 6.82 | 6.16 | - |
| Japan | 15.84 | 15.18 | 14.08 | 13.2 | - |

Source: World Apple Review, Belrose Inc., 2010.

program (e.g., Eat 5-A-Day) has the capacity to be very effective in increasing consumers' willing to pay, and their demand, for fresh fruits and vegetables. This project brought approximately 300 people into the Lab for Experimental Economics and Decision Research at Cornell University, and tested consumer response to various advertising efforts. This research found that consumers' willingness to pay for fruits and vegetables increased by as much as 20% after being exposed to broad-based advertising, and also found very little response to advertising efforts that were directed towards a single commodity.

Two other important issues that have received less attention, but may have strategic implications for fruit growers in New York State, include i) the role of sanitary and phytosanitary (SPS) barriers in international markets for apples, and ii) the market potential for "club" apple varieties. SPS measures have become a topic of much concern among apple exporters and public policy officials in the United States and in other apple producing countries. The World Trade Organization (WTO) case that examined the trade dispute concerning apples imported into Japan from the United States generated much debate about the existence of SPS barriers, and the economic impact of such measures. Recent research done at Cornell examines the consequences of SPS measures in global markets for apples, and compares the effects to those from traditional tariffs that are still widely used by many apple importing countries. The results show that SPS barriers are important for certain exporting countries; removing such barriers would generate up to $27

million of additional income globally. However, reducing global tariffs by 36% would generate approximately $135 million in additional income globally. Furthermore, reductions in tariffs of this magnitude were introduced under the Uruguay Round Agreement in Agriculture, under the auspices of the WTO, and it is not unreasonable to think that similar reductions will be imposed in subsequent rounds of the WTO. Reforms to SPS measures have not previously been included on the negotiating table at the WTO, and may be more difficult to implement.

Producing the so-called "club" or managed apple varieties provides an interesting opportunity for growers to market new and exciting apple varieties. The producers' objective here is to stimulate additional demand for new apple products, manage the supply of these varieties such that price premiums can be achieved, and receive higher net returns per acre. However, the management of "club" varieties is not a straightforward marketing exercise and much thought needs to be spent regarding market size, pricing strategies, and promotional efforts. The *2010 World Apple Review* points to the following eight new apples that have the best chance of becoming commercial varieties by 2015: Pinova (or Piñata), Ambrosia, Envy, Kanzi, Belchard, Junami, Rubens, and Tentation. Several growers in New York State have also committed acreage for producing two new varieties developed by Cornell's plant breeding program, currently named NY1 and NY2. Whether any of these apples can be successfully grown and marketed in New York State is an important marketing question. Preliminary research shows that consumers are willing to pay for the new varieties developed by Cornell, and future work will develop a framework to understand the consumer segments that are most likely to purchase these varieties.

## 10.2 Vegetable Situation and Outlook

Total land planted to vegetables in New York State fell from 129,300 acres in 2008 to 119,700 acres in 2009; planted and harvested acres of fresh vegetables were down slightly while planted and harvested acres of processing vegetables were down significantly in 2009. The value of New York vegetable production (including principal vegetables for fresh and processing markets but not including potatoes and dry beans) decreased from $468 million in 2008 to $325 million in 2009; the value of fresh vegetables fell by over $100 million in 2009 compared to 2008. In 2009 fresh market vegetables contributed $278 million to the total (down from $384 million in 2008) while processed market vegetables contributed $46.6 million in 2009 (again, down from 2008 when the total value was $62 million). The decrease in planted acreage of vegetables in 2009 was partly due to prices for other competing field crops such as corn and soybeans, and also due to poor weather conditions in the spring of 2009.

Preliminary market conditions reported in the *USDA Vegetables and Melons Outlook* suggest that prices for most fresh vegetables will be up slightly in 2010 compared to levels observed in 2009. The same *Outlook* report shows that total acreage of fresh and processing vegetables in the United States is down slightly in 2010 compared to the average between 2007 and 2009. However, good harvest weather coupled with increased yields in 2010 may bring average prices in 2010 similar to those experienced in 2009. Demand and prices for processing vegetables in 2010 are expected to be similar to conditions in 2009. Producer Price Indexes indicate that grower prices in mid-2010 were up overall for fresh vegetables, and notably up for cabbage, greens, peppers, and tomatoes. Exports of fresh vegetables have been up in 2010 in the key international markets; they were up 8% to Canada, up 34% in Mexico, up 38% in Japan, up 21% in Taiwan, and up 20% in the United Kingdom. Similar to the case for U.S. apples being subjected to a Mexican tariff, U.S. onions shipped to Mexico are facing a similar retaliatory tariff of between 10% and 20%. However, the overall volume of exports for most vegetables (including onions) is up in 2010 compared to 2009. Tomatoes and greens have faced weather-related issues in 2010, and therefore U.S. exports of both products are down in 2010 relative to 2009. Canada remains as the major export destination for U.S. fresh vegetables; in 2010 they are expected to import over 75% of the volume of total U.S. exports of fresh vegetables. The continued strength of the Canadian dollar in 2010 has not largely dampened vegetable exports to this important market, and this has improved revenues for the volume of vegetable exports to Canada.

New York continues to be a significant producer of onions, cabbage, and sweet corn; for each of these commodities, New York State has consistently produced crops that have a value of $50 million or more. Historically New York State has produced a snap bean crop that had a value exceeding $50 million, but the snap bean crop in 2009 fell short of this mark. In the tables and discussion that follow, we focus on recent economic conditions, and provide some outlook, for nine fresh vegetable products and four processed vegetable products that are important markets in New York. Table 10-4 shows production patterns for key vegetables in New York between 2007 and 2009. Data describing trends in fresh vegetable markets are shown at the top of Table 10-4 and trends for processing vegetables are shown on the bottom portion of Table 10-4. Much of the most recent information for processing vegetables is not available from New York State Agriculture and Markets due to the small number of producers involved and the proprietary nature of the data.

Production of most fresh vegetable products in New York State was down in 2009 relative to 2008; in some cases production was down significantly. Onions were the one crop listed in Table 10-4 that showed an increase in production in 2009 compared to 2008. Prices for sweet corn, onions, snap beans, cucumbers, and tomatoes were up in 2009 compared to 2008. Recent USDA information indicates that national production levels were higher again in 2010 while prices are expected to remain relatively similar to levels observed in 2009. Given the trends in production and prices in Tables 10-4, it should come as no surprise that the values for most of the fresh vegetable products were lower, and in some cases substantially lower, in 2009 relative to 2008 (see Table 10-5). The total value of the cabbage crop dropped significantly in 2009, as did the value of

the pumpkin and tomato crops in New York State. Table 10-5 also highlights the national importance of many (fresh and processed) vegetables. For seven of the nine fresh vegetable crops listed in Table 10-5, New York State contributes at least 5% of the national crop. In the cases of cabbage and pumpkins, New York State contributes over 20% of the crop nationally.

TABLE 10-4. COMMERCIAL VEGETABLE PRODUCTION AND PRICES IN NEW YORK STATE

| | Production | | | Price | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| **Fresh** | *------ Thousand cwt ------* | | | *------ Dollars per cwt ------* | | |
| Sweet corn | 2,700 | 2,863 | 2,150 | 22.00 | 25.80 | 27.10 |
| Cabbage | 5,152 | 5,605 | 3,496 | 17.70 | 19.20 | 17.00 |
| Onions | 3,780 | 4,141 | 4,275 | 11.10 | 16.80 | 18.60 |
| Snap beans | 437 | 482 | 268 | 89.80 | 84.10 | 88.00 |
| Cucumbers | 574 | 468 | 384 | 34.30 | 34.50 | 41.80 |
| Tomatoes | 432 | 513 | 350 | 75.20 | 84.00 | 93.50 |
| Pumpkins | 1,152 | 1,062 | 750 | 19.70 | 36.20 | 29.00 |
| Squash | 595 | 760 | 540 | 38.90 | 42.80 | 42.60 |
| Cauliflower | 38 | 34 | 52 | 34.10 | 52.40 | 45.50 |
| **Processing** | *------ Thousand tons ------* | | | *------ Dollars per cwt ------* | | |
| Sweet corn | - | - | - | - | - | - |
| Snap beans | - | 77.6 | 55.7 | - | 278.00 | 267.00 |
| Green peas | - | - | - | - | - | - |
| Cabbage | 72 | - | - | 61.60 | - | - |

Source: New York Agricultural Statistics, 2010.

Many of the outlook issues identified for fruit crops in section 10.1 also have implications for vegetable products. Food safety concerns, traceability issues, country-of-origin labeling requirements, international trade, and generic promotion efforts will certainly affect vegetable markets, and in some cases the effects in vegetable markets may be different from the effects in fruit markets. There are additional outlook issues that may be particularly important to vegetable markets in New York State during 2011 and 2012 as negotiations concerning the next Farm Bill commence. Although vegetables have not been a large component of previous Farm Bills, the 2008 Farm Bill (the Food, Conservation, and Energy Act of 2008), introduced or extended various provisions that apply to vegetable products and vegetable markets. Next we take a closer look at selected Titles in the 2008 Farm Bill that address vegetable-related issues, and provide some outlook on how extending these Titles in the 2012 Farm Bill will impact vegetable markets. The 2008 Farm Bill included 15 Titles; below we comment on Titles I, IV, VII, X, and XII.

Title I in the 2008 Farm Bill concerned agricultural commodities, and although the provisions in this Title mostly focused on program crops, there were provisions that affected vegetable crops, most notably the planting restriction provision that applies to fruits, vegetables, tree nuts, and wild rice. Current farm legislation restricts base acreage that has been used to produce program crops (e.g., grain, cotton, and oilseed crops) from being used to grow specialty crops, yet the 2008 Farm Bill included the Planting Flexibility Pilot Program that authorized seven Great Lake states (Michigan, Minnesota, Iowa, Illinois, Indiana, Wisconsin, and Ohio) to plant up to 75,000 base acres of selected processing vegetable crops between 2009 and 2012.

TABLE 10-5. VALUE OF COMMERCIAL VEGETABLE PRODUCTION
NEW YORK AND UNITED STATES

| | New York | | | U.S. | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| **Fresh** | | | ------ *Million dollars* ------ | | | |
| Sweet corn | 59.4 | 73.9 | 58.3 | 626.8 | 752.6 | - |
| Cabbage | 84.8 | 79.1 | 54.5 | 423.5 | 366.6 | - |
| Onions | 38.6 | 58.9 | 67.6 | 816.1 | 865.4 | - |
| Snap beans | 39.2 | 40.5 | 23.6 | 391.1 | 331.2 | - |
| Cucumbers | 19.7 | 16.1 | 16.1 | 228.2 | 242.7 | - |
| Tomatoes | 32.5 | 43.1 | 32.7 | 1,277.6 | 1414.1 | - |
| Pumpkins | 22.7 | 38.4 | 21.8 | 117.2 | 140.8 | - |
| Squash | 23.2 | 32.5 | 23.0 | 227.2 | 204.3 | - |
| Cauliflower | 1.3 | 1.8 | 2.4 | 237.7 | 261.1 | - |
| **Processing** | | | | | | |
| Sweet corn | - | - | - | 237.0 | 330.3 | - |
| Snap beans | - | 21.5 | 14.9 | 129.8 | 177.3 | - |
| Green peas | - | - | - | 111.6 | 148.1 | - |
| Cabbage | 4.5 | - | - | - | - | - |

Sources: New York Agricultural Statistics, 2010; USDA Agricultural Statistics, 2009.

The conventional wisdom is that the planting restrictions have had negligible effects on fruit and vegetable markets in the United States and abroad, but recently a complaint about this policy was introduced to the WTO. Members of the WTO claimed that the planting restrictions provide an incentive for U.S. farmers to overproduce program crops and this leads to lower prices of program crops in outside markets. As a result, there has been pressure to introduce reform to this provision from grain producers outside the United States and vegetable processors in the United States. The Pilot Program is a small-scale test of the implications from the planting restrictions for processing vegetable growers in the Great Lakes region. Early analysis of the Pilot Program suggests that lifting the planting restrictions would have important effects for producers that have the capacity to produce and market processing vegetables, but would have limited effects on global production and prices of processing vegetables or program crops. It is widely expected that this policy issue will be carefully reviewed prior to the 2012 Farm Bill.

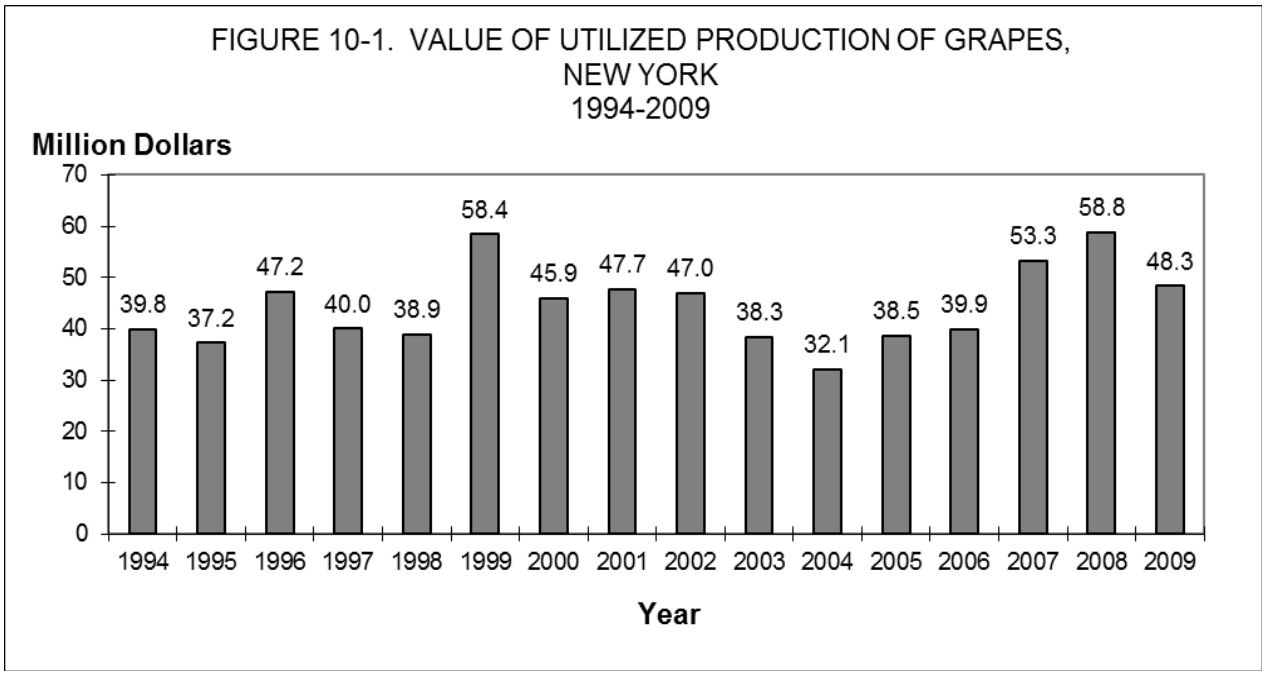
Title IV includes various nutrition programs and it includes over 65% of the total Farm Bill budget. This Title includes many different programs, but the major ones are the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, Women, Infants, and Children (WIC), and the National School Lunch Program. Many of the programs and provisions within Title IV focus on the nutritional benefits of eating a diet rich in fruits and vegetables, and recent changes to these programs have further emphasized this message. Programs within this Title appeal to a wide audience and therefore it is expected that future Farm Bills will place a greater focus on consuming (and producing) fruits and vegetables. The discussion leading up to the 2012 Farm Bill will include ideas that propose various ways to increase consumption of healthy foods made from specialty crops, and additional research is needed here to assess how such policies will influence produce consumption. Research is also needed here to consider the efficacy of various mechanisms that might be used to stimulate demand.

Title VII in the 2008 Farm Bill focused on research, and one important (and new) program in this Title was the Specialty Crop Research Initiative (SCRI) that introduced a substantial amount of funds for research and extension activities that directly examined production, processing, and marketing topics facing fruit and vegetable industries. The benefit-cost ratio of public research investments has been estimated to exceed 10:1, yet there had been an underinvestment of public research for specialty crops in the United States prior to the SCRI program. The role of traditional public research in agriculture is uncertain in future Farm Bills, yet there appears to be momentum to maintain and even expand the SCRI program given its early success and its links to programs in Title IV. Related to this is the research programs related specifically to horticulture and organic markets within Title X.

Lastly, Title XII focuses on crop insurance and other risk management strategies for agricultural producers. There is building consensus that the future of agricultural policy will be centered around risk management programs rather than traditional safety net programs, and that risk management programs will be extended to a wider range of agricultural commodities. The recent boom and bust in global agricultural markets dramatically illustrated the importance of risk management for U.S. farmers, and put risk management policy at the forefront of the debate surrounding the 2012 Farm Bill. These events have increased of a gradual re-shaping of U.S. farm policy towards insurance, countercyclical payments, and other risk management-type policy mechanisms.

## 10.3 Grapes and Wine

According National Agricultural Statistical Service, the 2010 New York grape crop is forecast to be 170 which or 28% percent more than the 2009 crop of 133 thousand tons. Grape growers in New York State generally experienced favorable weather conditions this year. In the Lake Erie region, growers describe this as one of the best years ever. The Finger Lakes grape region and Long Island vineyards also enjoyed excellent growing conditions, reflected in the high quality of this year's crop. The New York crop value has increased in the past five years from $38.5 million in 2005 to $48.3 million in 2009 (Figure 10-1). Crop values for 2010 are not available yet, but they will be substantially higher than the 2009 crop values due to increased yields and quality.



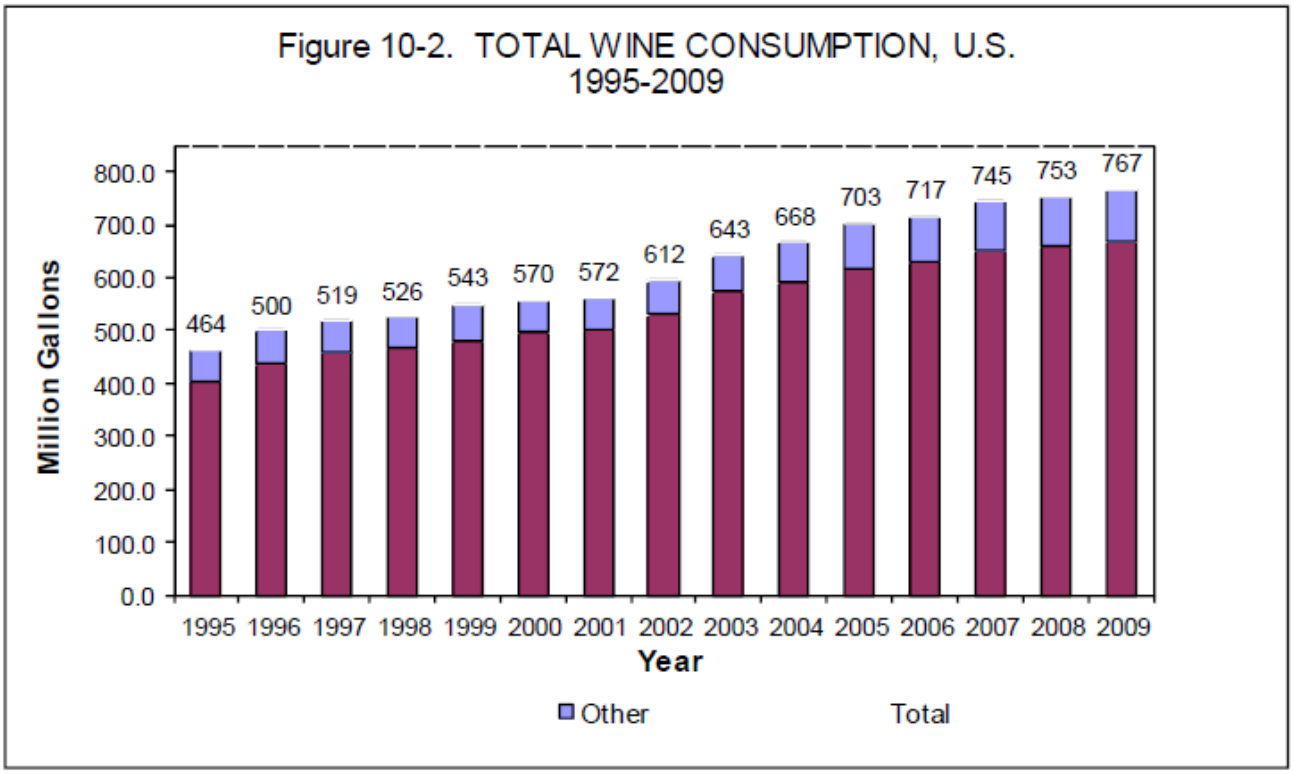

Source: New York Agricultural Statistics, 2010.

The National Agricultural Statistical Service (NASS) forecasts a U.S. grape crop of 7.03 million tons in 2010, or 3% below the 2009 crop. This is the second consecutive year experiencing declines. This is primarily due to forecasted production declines from major producers such as California, Washington, Oregon, and Michigan. Grower prices for table grapes have increased relative to 2009. Overall, low supplies for the season are likely to keep prices higher than in 2009.

## Wine

The U.S. wine industry continues its expansion, although somehow slower than the early 2000s, driven mostly by increased table wine consumption (Figure 10-2). According to the Wine Institute, volume sales between 2008 and 2009 increased but the dollar sales values decreased slightly. Shipments into U.S. trade channels of wine from California, other states and foreign suppliers reached 767 million gallons in 2009, a 1.8% increase compared to the previous year. At the same time, the retail value reached nearly $30 billion after distributor and retailer/restaurateur mark ups was slightly down. Table wine sales led wine sales in 2009 with 670 million gallons, while dessert and sparkling wines accounted for 64 and 32 million gallons, respectively. California wine accounted for about 90% of the wine produced in the country and for over 60% share of total wine sales in the country. Data on international trade of wine is not available yet. In 2008, U.S.

wine exports continue expanding and reached 130 million gallons, an increase of 8% relative to 2007. These exports represented $1 billion an increase of 6% compared to 2007. The fastest growing export market is Canada with an increase of 11% in volume between 2007 and 2008.




Source: Wine Institute; Department of Commerce; Gomberg, Fredrickson and Associates, 2010

**Grapes and Prices in New York State**

Relative to 2008, grape prices changes were up for the most important native varieties, down for most French-American hybrids (except for Cayuga White and Seyval Blanc), and lower for *Vitis Vinifera* (Table 10-9). Average listed prices for major native varieties such as Concord and Catawa increased by 4.3% and 9.5% between 2008 and 2009, respectively. In contrast, the average list price for *Vitis Vinifera* varieties dropped from $1,581 per ton in 2008 to $1,304 per ton in 2009, a reduction of about 17.5%. The average price for *Vitis Vinifera* varieties in 2009 is lower than the 2007-2009 average. Between 2008 and 2009 there were price increases for Cayuga White (3.7%) and Seyval Blanc (4.8%). On the other hand, substantial price declines were recorded for Baco Noir (3.1%), de Chaunac (11.3%) and Rougeon (6.4%).

Although in creal decline, concords are still the predominant variety grown and processed in New York (Table 10-10). There were 84,900 tons of Concords New York-grown grapes processed in 2009, down 33.1% from 2008 and substantially below the 2004-2008 average. Over the past five years, in average Concords comprised 73.8% of total tonnage utilized in the state. The second leading variety is Niagara followed by Catawba. About one fifth of the total tonnage of Concord and Niagara grapes is used for wine production. *Vitis Vinifera*, with an annual average of 5,904 tons utilized over the past five years, accounted for 3.7% of the NY crush over the last five years. However, *Vitis Vinifera* production has increased substantially in the past four years, from 3.5 thousand tons in 2005 to 7.9 thousand tons in 2009.

TABLE 10-9. GRAPES: PRICES PAID FOR NEW YORK GROWN GRAPES PROCESSED 2007-2009

| Variety | 2007 | 2008 | 2009 | 3-Year Avg. |
|---|---|---|---|---|
| American Varieties | | | | |
| Catawba | 266 | 262 | 287 | 272 |
| Concord | 223 | 253 | 264 | 247 |
| Delaware | 377 | 374 | 376 | 376 |
| Niagara | 235 | 280 | 271 | 262 |
| French American Hybrid | | | | |
| Aurore | 405 | 411 | 409 | 408 |
| Baco Noir | 546 | 546 | 529 | 540 |
| Cayuga White | 558 | 484 | 502 | 515 |
| de Chaunac | 515 | 592 | 525 | 544 |
| Rougeon | 484 | 517 | 484 | 495 |
| Seyval Blanc | 661 | 499 | 523 | 561 |
| Vitis Vinifera | | | | |
| All varieties | 1,714 | 1,581 | 1,304 | 1,533 |

Source: Survey of Wineries and Grape Processing Plants New York, 2010.

TABLE 10-10. GRAPES: NEW YORK GROWN
Received By Wineries and Processing Plants, 2005-2009

| Variety | 2005 | 2006 | 2007 | 2008 | 2009 | 5-Year Avg. |
|---|---|---|---|---|---|---|
| | | | tons | | | |
| Catawba | 5,000 | 4,120 | 4,930 | 3,670 | 5,150 | 4,574 |
| Concord | 137,000 | 108,600 | 131,000 | 127,000 | 84,900 | 117,700 |
| Delaware | 375 | 510 | 430 | 470 | 340 | 425 |
| Niagara | 18,000 | 18,500 | 21,000 | 15,000 | 12,400 | 16,980 |
| Aurora | 1,600 | 3,300 | 2,480 | 3,320 | 3,530 | 2,846 |
| Baco Noir | 400 | 350 | 430 | 520 | 820 | 504 |
| Cayuga White | 500 | 1,020 | 1,090 | 1,460 | 1,650 | 1,144 |
| de Chaunac | 130 | 110 | 180 | 180 | 420 | 204 |
| Rougeon | 440 | 320 | 270 | 380 | 370 | 356 |
| Seyval Blanc | 430 | 650 | 430 | 760 | 1,280 | 710 |
| Vitis Vin.(all) | 3,500 | 5,200 | 5,770 | 7,170 | 7,880 | 5,904 |
| Other varieties | 7,625 | 7,320 | 7,890 | 8,070 | 9,260 | 6,284 |
| Total, all varieties | 175,000 | 150,000 | 176,000 | 168,000 | 128,000 | 159,400 |

Source: New York Agricultural Statistics, 2010

Recent trends suggest that demand for grapes in NYS is driven by the increased number of small and medium size wineries across the state. Growers selling to such wineries are likely to be in a stronger position relative to growers focusing on grapes for the juice market. The challenge for NYS grape growers is to identify appropriate product portfolios to seize market opportunities in the appropriate market channels. That is, growers focusing on grape juice may require on strategies to be lowest-cost suppliers while growers selling to winemakers should focus their production efforts on quality.

**Outlook**

New York grapes are employed mostly in either wine of juice production, while a very small percentage is allocated to table grapes. According to USDA's Economic Research Service, the quantity of grapes to be crushed for wine is likely to go down in 2010-2011, mostly driven by the smaller wine grape crop in California. This may drive up prices growers will receive for grapes sold to wineries this season. Production increases in such states as Washington New York, Pennsylvania, Texas and North Carolina will offset some of the decline in grape production experienced in California. At the same time, grower prices for all grapes utilized for wine production along with increased grape production for wine. Grower prices have increased consecutively in the past three years.

Considering the grape fruit market, New York, Michigan and Washington produce over 85% of grapes employed by the juice industry. The Economic Research Service forecasts suggest a drop in quantity of grapes crushed for juice. Smaller juice-grape crop in Washington and lower production in Michigan, less domestic grapes are anticipated to be available to juice processors in 2010-2011. Lower supplies for crushing are likely to increase the farm gate price during the period 2010-2011. Prices in 2009-2010 averaged $264 per ton, only slightly above the average price in the 2008-1009 marketing season although the domestic grape output for juice dropped by 9%. To some extent, this output decline was due to high grape demand from wineries in 2009-2010. Reduced imports in the past two years and declining juice-grape output are expected to drive down U.S. grape-juice inventories. Additional decreases in juice-grape output and rising farm gate prices for juice grapes in 2010-2011, could put additional downward pressure on domestic inventories in the U.S. grape juice industry.

Table grape production is forecasted to drop again during the 2010-2011marketing season. Along with smaller output in states like Ohio and Michigan, about 4% of California's table grapes come from the wine-grape crop which is forecasted smaller this season. ERS projects a reduction of about 1% in fresh-market grape production in 2010-2011, for a total of 1.86 billion pounds. If this is accurate, this amount of production would be above the average fresh-market output during the past five years by 2%, suggesting that there will be enough supplies of U.S. grapes this season to meet export and domestic demand for fresh-market grapes.

Table 10-11 shows forecasts for the period 2011- 2013 from the National Food and Agricultural Policy Project (NFAPP), prepared in 2010. According to NFAPP, total grape output will grow steadily driven primarily by increased acreage. The additional output is likely to be for wine and table grapes, as indicated by moderate increases in per capita consumption of these two items. The juice grape projections present a pretty stable outlook, perhaps due to the fact that the projections do not take into account the cycles that exist in the processing sector, as explained earlier.

TABLE 10-11. ECONOMIC OUTLOOK FOR GRAPES, 2011-2013

| | U.S. (unless noted otherwise) | | |
|---|---|---|---|
| | 2011 | 2012 | 2013 |
| **Total** | | | |
| Acres (1,000) | 979 | 974 | 974 |
| Yield (tons per acre) | 8 | 8 | 8 |
| Total U.S. Production (1,000 tons) | 7,635 | 7,643 | 7,686 |
| Total Production Outside California (1,000 tons) | 828 | 850 | 876 |
| **Table Grapes** | | | |
| Production (million pounds) | 2,004 | 2,023 | 2,045 |
| Farm Price (dollars per ton) | 738 | 758 | 775 |
| Retail Price (dollars per pound) | 2.31 | 2.38 | 2.44 |
| Exports (million pounds) | 855 | 885 | 912 |
| Imports (million pounds) | 1,384 | 1,443 | 1,500 |
| Per capita consumption (pounds) | 8.06 | 8.13 | 8.22 |
| **Wine** | | | |
| Production (million gallons) | 625 | 632 | 641 |
| Farm Price (dollars per ton) | 622 | 650 | 678 |
| Retail Price (dollars per gallon) | 30.46 | 31.41 | 32.35 |
| Exports (million gallons) | 127 | 127 | 128 |
| Imports (million gallons) | 245 | 259 | 272 |
| Per capita consumption (gallons) | 2.36 | 2.41 | 2.45 |
| **Raisins** | | | |
| Production (million pounds) | 667 | 673 | 677 |
| Farm Price (dollars per ton) | 216 | 218 | 221 |
| Retail Price (dollars per pound) | NA | NA | NA |
| Exports (million pounds) | 343 | 343 | 360 |
| Imports (million pounds) | 43 | 46 | 48 |
| Per capita consumption (pounds) | 1.66 | 1.64 | 1.62 |
| **Grape Juice** | | | |
| Production (million gallons) | 93 | 94 | 95 |
| Farm Price (dollars per ton) | 327 | 331 | 336 |
| Retail Price (dollars per gallon) | 4.56 | 4.64 | 4.70 |
| Exports (million gallons) | 25 | 23 | 28 |
| Imports (million gallons) | 77 | 80 | 83 |
| Per capita consumption (gallons) | 0.46 | 0.47 | 0.47 |

Sources: National Food and Agricultural Policy Project, 2010.

## 10.4 Ornamentals

The 2007 Agricultural Census shows a decrease in the number of nursery, greenhouse, floriculture, and sod farms in New York, while the value of sales increased. This indicates an increase in concentration in the ornamental sector. According to the Census, in 2007, there were 2,009 farms that reported growing nursery, greenhouse, floriculture, or sod crops in New York, down 21 percent from the 2002 level of 2,552 farms. In contrast, the value of sales increased by 13 percent between 2002 and 2007.

TABLE 10-12. GROWER CASH RECEIPTS OF FLORICULTURE AND NURSERY CROPS, NEW YORK, 2004-2009

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| | | | *--- Million dollars ---* | | | |
| Floriculture[a, b] | 183.0 | 200.6 | 203.5 | 209.1 | 202.1 | 170.5 |
| Nursery[c] | 172.4 | 181.3 | 205.5 | NA | NA | NA |
| Floriculture and nursery crops | 355.4 | 381.9 | 409.0 | NA | NA | NA |

[a] Includes growers with $10,000 or more in floriculture sales.

[b] Includes ornamental plants without woody stems, grouped into bedding/garden plants, cut cultivated greens, cut flowers, potted flowering plants, indoor foliage plants, and propagative floriculture material.

[c] Includes ornamental plants and trees with woody stems, including broadleaf evergreens, coniferous evergreens, deciduous shade trees, deciduous flowering trees, deciduous shrubs and other ornamentals, fruit and nut plants for home use, cut and to-be-cut Christmas trees, and propagation material or lining-out stock. Also includes other ornamental crops not classified as floriculture.

NA Not available

Source: Floriculture and Nursery Crops Situation and Outlook Yearbook, Economic Research Service, USDA, various years; Floriculture Crops 2009 Summary, National Agricultural Statistical Service

TABLE 10-13. GROWING AREA FOR FLORICULTURE CROPS IN NEW YORK[a], 2005-2009

| Year | Total greenhouse cover | Shade and temporary cover | Total covered area | Open ground | Total covered & open ground |
|---|---|---|---|---|---|
| | *-- 1,000 square feet --* | | | *--- acres ---* | |
| 2005 | 24,743 | 573 | 25,320 | 800 | 1,382 |
| 2006 | 25,121 | 507 | 25,628 | 942 | 1,531 |
| 2007 | 25,619 | 705 | 26,324 | 1,068 | 1,673 |
| 2008 | 23,473 | 531 | 24,404 | 1,382 | 1,943 |
| 2009 | 23,042 | 405 | 23,447 | 2,589 | 2,127 |

[a] Includes operations with $10,000+ in annual floriculture sales. Crops include cut flowers, cut cultivated greens, potted flowering plants, potted foliage plants, bedding and garden plants, and propagative materials. Total may not add due to rounding.

Source: Floriculture Crops, NASS, USDA, various years.

In 2009, the commercial sales value of New York floriculture production totaled $170.5 million, a 15.6% decrease from the year before, ranking New York 7th in the nation (Table 10-12). Unfortunately, data on nurseries is not available after 2006, due to changes in data collection procedures at USDA's National Agricultural Statistical Service, thus this situation analysis considers only floriculture. Table 10-15 indicates that bedding and garden plants are the number one component with total value of sales at $98.6 million in

2009. Potted flowering plants were second with a value of sales of $32.5 million on 2009, a sharp decrease relative to 2008 (22.6%). Propagative materials were third at $16.8 million, a decrease of 15% from the previous year (Table 10-15). In 2009, there were 667 (down from 837 in 2008) growers and the open ground area used to produce floriculture crops grew to 2,589 acres in New York (Figure 10-13). However, according to NYS Department of Agriculture and Markets, these data on open ground area are not comparable to previous years due to the combined data collection efforts of the Census of Horticulture and the Annual Floriculture Survey. The data in 2009 include area used for production of nursery crops as well as floriculture crops.

An important distinction in floricultural production is the size of operation. According to NASS reports, the U.S. value of floriculture production was $3.83 billion in 2009, a substantial decrease compared to 2008 (Table 10-14). The value of production from large and small growers decreased by 8.6% and by 23.1% with respect to 2008, respectively. The value of production from small growers is larger in New York in comparison to the national market. Small growers' share of production in New York is 10.1%, which is high compared to the 3.7% in the U.S. In New York, however, the value of production from both small and large growers exhibit decreases in 2009 relative to 2008.

When reading the published U.S. floriculture and nursery crop statistics, it should be noted that only 15 states were surveyed by the USDA in 2006 and thereafter, compared to 36 states prior to 2006. Consequently, the 2004-2005 data in Tables 10-12 to 10-15 were adjusted to include only the 15 states surveyed in 2007 and 2008 for comparison. The 15 states selected in the USDA survey accounted for about 75 percent of cash receipts received by greenhouse and nursery crop farmers in 2008. The 2009 wholesale value of floriculture crops is down 7% compared to 2008. The crop value at wholesale for growers with $10,000 or more in sales is estimated at $3.83 billion for 2009, compared with $4.11 billion for 2008. Bedding and Garden plants wholesale value of bedding and garden plants, at $1.81 billion, is down about 2% from the previous year. Potted flowering plants for indoor or patio use, were valued at $1.1 billion in 2009, down 4% from 2008. The value of 2009 foliage plant production, at $495 million, is down 10% from the previous year. The value of cut flowers, at $359 million, is down 14%, while cut cultivated greens, at $74 million, are down by 19% in comparison to 2008.

TABLE 10-14. WHOLESALE VALUES OF FLORICULTURE PRODUCTION, BY GROWER SIZE[a], NEW YORK AND UNITED STATES, 2007-2009[b]

| | New York | | | U.S. | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| | | | *------ Million dollars ------* | | | |
| Small growers | 27.2 | 26.3 | 17.3 | 153.5 | 182.0 | 140.0 |
| Large growers | 181.9 | 175.8 | 153.2 | 4,132.4 | 4,038.0 | 3,690.0 |
| All growers | 209.1 | 204.3 | 170.5 | 4,285.9 | 4,220.0 | 3,830.0 |

[a] Small growers have between $10,000 and $100,000 in annual floriculture sales; large growers have at least $100,000.

[b] Wholesale value of sales of growers with at least $10,000 in annual floriculture sales. Growers are located in the 36 surveyed states.

[p] Preliminary.

Source: Floriculture Crop, National Agricultural Statistic Service (NASS), USDA, 2010.

TABLE 10-15. VALUE OF FLORICULTURE PRODUCTION BY PLANT CATEGORY, NEW YORK, 2004-2009

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 5-yr. avg. 2005-2009 | 2009 vs. 5-yr. avg. | 2008 vs. 2009 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *--- Million dollars ---* | | | | **%** | **%** |
| Bedding/garden plants[a] | 101.1 | 110.0 | 107.6 | 111.8 | 108.9 | 98.6 | 107.38 | -8.2 | -9.5 |
| Potted flowering plants[a] | 40.2 | 49.9 | 48.9 | 41.4 | 42.0 | 32.5 | 42.9 | -24.3 | -22.6 |
| Cut flowers[a] | 4.7 | 2.7 | 2.9 | 4.6 | NA | 2.3 | 3.1 | -26.4 | NA |
| Foliage Plants[a] | 3.5 | 3.1 | 5.1 | 3.3 | 4.2 | NA | 3.9 | NA | NA |
| Propagative materials[a] | 8.2 | 12.3 | 17.4 | 20.7 | 19.8 | 16.8 | 17.4 | -3.4 | -15.2 |
| Grower sales $10,000-$99,999 (Unspecified crops) | 25.3 | 22.6 | 21.6 | 27.1 | 26.4 | 17.3 | 23 | -24.8 | -34.5 |
| **Total[b]** | **183.0** | **200.6** | **203.5** | **209.1** | **202.1** | **170.5** | **197.2** | **-13.5** | **-15.6** |

[a] Sales by operations with annual sales of $100,000 or more.

[b] Total reported crops includes categories not listed – cut cultivated greens and propagative materials.

[p] Preliminary.

Source: Floriculture and Nursery Crops, Situation and Outlook Yearbook, Economic Research Service, USDA, various years.

## Outlook

The economic outlook for ornamentals is quite similar to the one prepared for last year. Macroeconomic indicators appear to be more stable now but it is hard to believe that we will experience a period of steady sustained growth. In fact, the predictions are that we will experience a period of sluggish growth with a slow recovery in the next few years. The implications for the floriculture industry and for nurseries and landscape industries are mixed, when looking at leading indicators relevant for these industries.

The rate of investment in new residential structures stopped falling. Adding to this, private investment existing residences is not declining. This is good news as new and current home owners may spend in the beautification of their properties. However, local and state governments are not likely to become a more important customer to the industry, because they are facing serious budgetary constraints. Nevertheless, the industry should continue promoting the importance of trees and landscape as a strategy to reduce energy use and to store carbon. A weak U.S. dollar may help the industry as those products that are imported (e.g. cut flowers) become more expensive and consumers search for alternative options and the main cost item to business (labor) is not likely to increase and be more available.

Other not-so-good news arise from declining private investment in commercial structures, which lags the investments in residential structures by about eighteen months (because these projects tend to be large and therefore require a longer planning period). Consequently, the industry private should expect that the rate of investment in commercial real estate will fall through the first part of 2011. And this may a hard hit to the industry because these are generally bigger projects.

Floriculture, Landscape and Nursery managers should re-think the scope of their business: they are not in the business of selling plant and landscapes, but rather in the business of providing enjoyment to consumers and important environmental services, all at the same time. Such broader scope of the business can allow firms to seek and focus on emerging consumers and to solve two conundrums. How to strengthen retail operations; how to increase business with younger consumers that are likely to increase consumption in the near future; and how to promote their products and services to local, state and federal government agencies.

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