

# **New York Economic Handbook 2013**



**Charles H. Dyson School of Applied Economics and Management  
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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>

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<http://dyson.cornell.edu/outreach/>



# Chapter 1. Websites for Economic Information and Commentary

Steven C. Kyle, Associate Professor

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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 for data for many other Countries.
4. <http://research.stlouisfed.org/fred2/> *St. Louis Federal Reserve*  
The Federal Reserve Bank of St. Louis boasts that they track more than 61,000 economic variables. They also have good chart software incorporated in their site.
5. <http://www.cbpp.org/index.html> *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.calculatedriskblog.com/> *Calculated Risk Blog*  
Calculated Risk has commentary on financial markets and is especially good on national real estate trends.
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.brookings.edu/> *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 Program*  
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://www.kyle.dyson.cornell.edu/> *Professor Kyle's Web Site*  
Visit my web site for information about me, material contained in this chapter, and my work in the area of economic policy.

## Chapter 2. The Marketing System

Kristen S. Park, Extension Associate

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### Special Topic – The Year 2022

A panel was recently convened to describe the state of the food system in the year 2022. The panelists were part of the Produce Marketing Association's large annual convention and trade show held in October 2012 in Anaheim, California. Each panelist represented a different segment of the industry and each brought their business expertise to bear on the task. Each selected an important current trend and extrapolated out to the future ten years from now. But each selected different trends for different reasons, some as a word of caution, some as a word of hope. Panelists included:

Leslie Sarasin, president and CEO of the Food Marketing Institute

Vernon Crowder, senior vice president and agricultural economist at Rabobank's Research Advisory Group

Vic Smith, CEO and owner of JV Farms, Agricola El Toro, and Skyview Cooling Co.

Elliot Grant, founder of HarvestMark

In 2022, **Sarasin** indicated, more consumers label themselves as value seekers and the "attitude of frugality has become the norm." It will be entrenched as a part of our shopping behavior. Consumers will be using digital technology to shop smarter. Some of the results of this technology will be that "rather than modeling websites to reflect (bricks and mortar) stores, stores will be modeled to reflect smartphones." This will increase value to the consumer. There will be more e-commerce than ever, which will increasingly include food, and consumers "will be perfectly happy to have someone else select our tomatoes for us". There will also be an increase in smaller format stores that will each focus on one consumer value, shopping convenience, price, or assortment.

**Crowder's** tone was more cautious. He predicted that in 2022 the world's capacity to produce will be outstripped by the demands of the world's 7.9 to 8.0 billion people, "It certainly appears that our capacity to produce is not keeping pace with overall demand." One-half of the population will live in urban areas, and most urban development will be occurring in developing countries. The urban development will result in higher incomes, demand for more services, demand for more refrigerators, and greater meat consumption. Even though the population will grow by only one billion, Crowder expects food demand to double because people will be demanding higher quality foods resulting in a proportionally greater increase in production to meet this demand.

By 2022, the food supply will be much more volatile. After a long period of declining real food prices and subsequent research and development, productivity increases will be unable to keep up. The leading resource issues in 2022 in order of importance will be labor, water, energy, and land. Increases in yields will be needed, and to do so the industry will need GMOs (genetically modified organisms).

"The tables have turned," **Smith** said. "Our children now make us eat our vegetables. If we don't, they refuse to program our iPhone 10s or show us how to use our new driverless cars." As a reflection of how industry and policy have worked together on the health care crises, Smith predicted he would be better health, have lost 10 pounds, and would run a half marathon in 2.5 hours, a glowing prediction of how policies to increase fresh fruit and vegetable consumption will change life styles, primarily diets. Smith also predicted that the Food and Drug Administration and the industry would be aligned to approve food safety measures.

After solving the health care issues, the new focus in 2022 will be on food productivity and to grow more with fewer resources.

The last panelist, **Grant**, described how technology and the Millennial segment of consumers will drive the biggest changes in retailing. In 2022, the consumer will get a smartphone message about which store has the freshest salad in the area. And when they walk in the door of the store, they will get a message that new pineapples with the taste profile that they prefer are just in from Cuba. LEDs will be used to grow produce indoors in urban areas; algorithms using weather, markets, and price will be used by growers to hit optimum markets; and robots will be used to plant, pack, pick and ship product. And, “Every technology I just talked about in 2022 is actually available today in 2012,” he said. “It’s already being used by folks in this audience on a small scale.” What will happen, he said, will be to move it to best use in 2022.

In response to an audience member’s question, “What do we do to prepare for 2022,” the panelists each provided their conclusion.

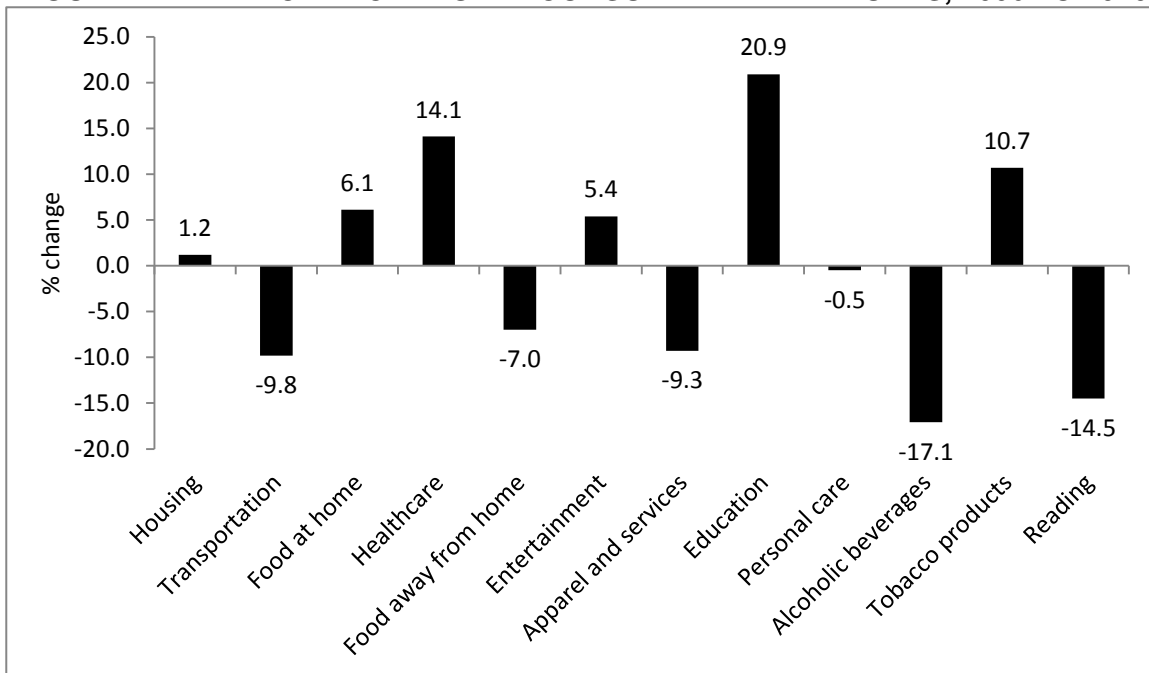
- Be prepared.
- Remember the strength of markets; markets work best when transparent.
- Engage in the community, policy, industry, and regulators.
- Be courageous and suspend disbelief.

### **The Value Shopper**

The value shopper, the thrifty shopper, the frugal shopper. Five years after the start of the recession, the economy and industry members are still adjusting to changes in consumers’ purchasing habits. As well they should. According to the U.S. Census Bureau, the real median household income in 2011 was 8.1% LOWER than in 2007, the year before the 2008 economic crash. In addition, the income inequality as measured by various indexes increased, and the top one-fifth of earners earned 51.1% of the income.

Overall, consumers have tried to juggle declining income against increasing costs of living. Consumers have increased their expenditures for housing, insurance, and healthcare, and adjusted by decreased spending in more discretionary items, such as food away from home, apparel and services, and personal care. Shifts in some expenditure categories are likely meant to decrease overall spending, such as the increase in food at home spending to offset the decrease in food away from home spending (Figure 2 – 1). Education expenditures increased significantly. In part this may be due to large increases in college tuition. In addition, it might also be due to delayed entry into the work force. As students graduate from college and are unable to find jobs, some may choose to delay their entry into the work force and attend graduate school. This tactic has been used by students in other recessionary periods.



**FIGURE 2 – 1. PERCENT CHANGE IN CONSUMER EXPENDITURES, 2006 TO 2010**

Source: Bureau of Labor Statistics, Consumer Expenditure Series and Mintel calculations.

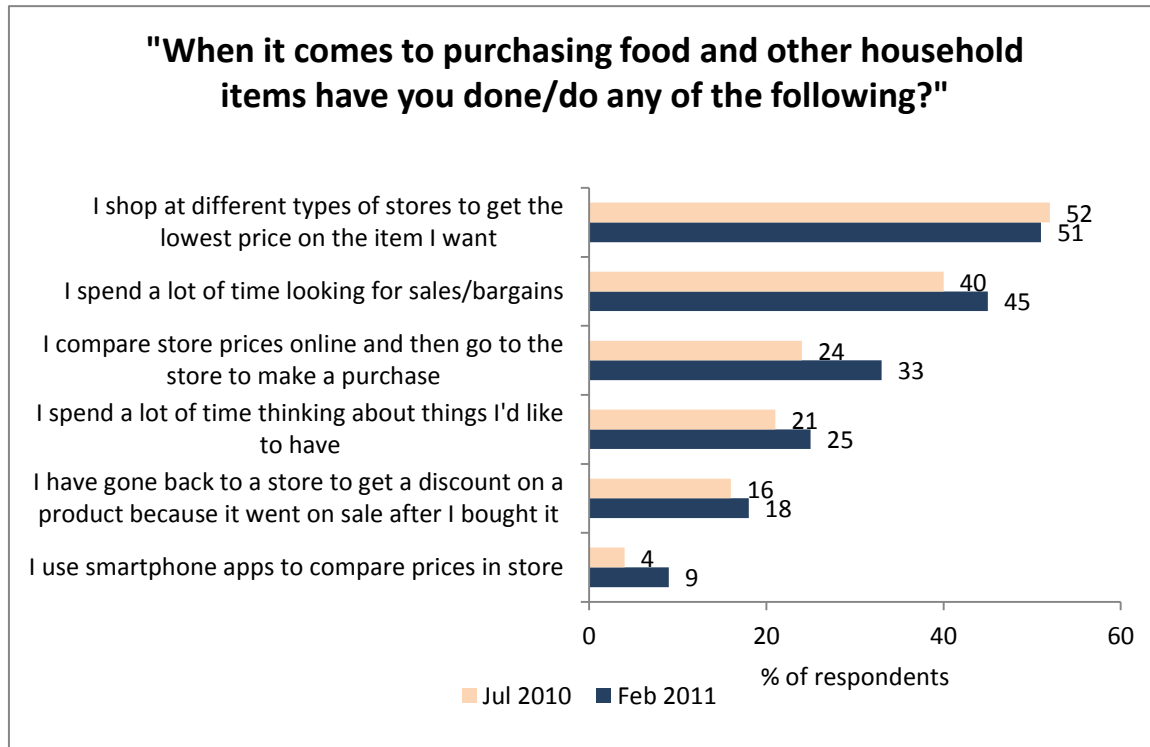
The recession increased consumers' quests for value and bargains. Behaviors such as budget shopping, making lists, using coupons, shopping sales, and even doing without have been used, are still being used, to make do with often lower incomes. According to Symphony IRI, consumers report that in 2011 they "cook more from scratch or with fewer convenience foods to save money" (47% of respondents) and are "eating out less often" (55% of respondents).

Budget shopping is becoming more involved and even becoming an art form to some. It involves more than the sales purchases and embraces multiple strategies to get the best price. In other words, consumers are out to maximize the value of their dollars, whether it's for entry-level products or for higher-priced brands.

Mintel Intelligence reports that between July 2010 and February 2012 consumers "shopped different types of stores to get the lowest price" at roughly the same rate (Figure 2 – 2). The number of consumers who "spend time looking for sales/bargains" increased slightly from 40% to 45%. The action that showed the greatest change was to "compare store prices online and then go to the store to make a purchase" up from 24% of consumers to 33%. It may be a reflection of the greater number of smartphones in the hands of the masses along with the number of stores putting out apps on these devices. In addition, there are online websites that search out lowest store prices.

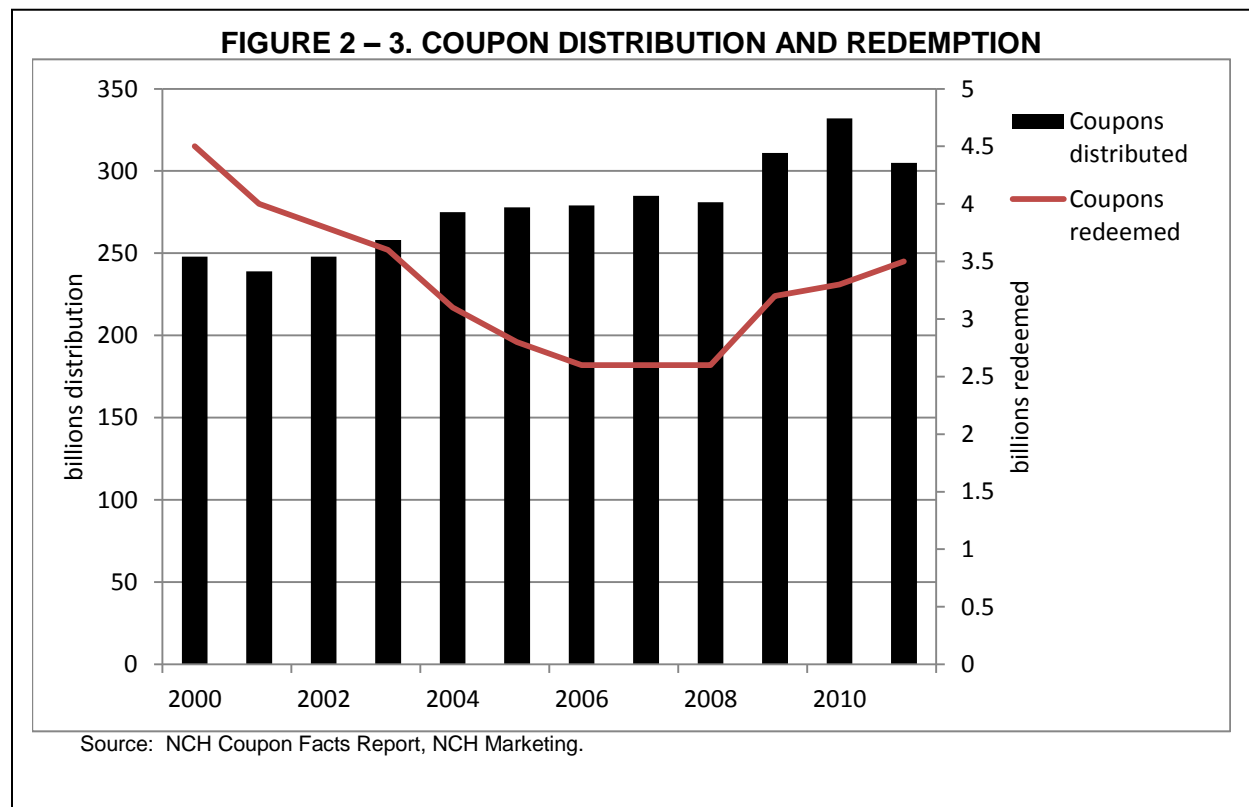
Another budgeting behavior that is worth noting is the increase in consumers who "use smartphone apps to compare prices in store", up from 4% to 9% in February 2012.

**FIGURE 2 – 2. SHOPPING BUDGETING BEHAVIOR,  
FOOD AND HOUSEHOLD ITEMS JULY 2010 vs. FEBRUARY 2012**



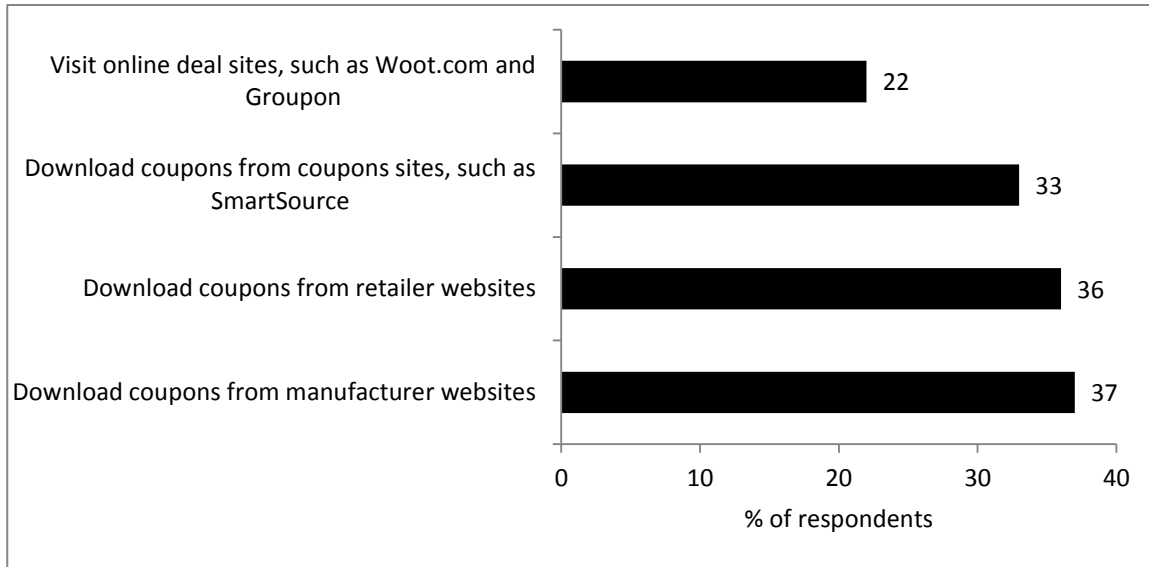
Source: *The Budget Shopper-US-June 2012*, Mintel

*Coupons:* For years, shoppers have saved money on name brands by clipping coupons. The number of coupons redeemed by consumers peaked in the late 1980s and early 1990s, but redemptions steadily declined since then until 2009, the year after the recession hit. For the last 3 years, redemptions increased (Figure 2 – 3). Manufacturers used coupons to boost interest and sales and attract customers to new products, while consumers increasingly used coupons to save money on the brands they wanted to buy. However, in early 2012 some brands offered fewer and less attractive face values and less time available to use the coupons, thereby, decreasing the number of redemptions.



What may boost interest in coupons are the availability now of coupons on the web. E-coupons can be found on manufacturers' sites, retailers' sites, coupon aggregation sites, and e-deals sites (Figure 2 – 4). Manufacturers' and retailers' sites are the most popular, used by more than one-third of shoppers. Interestingly, one-third of shoppers download coupons from couponing sites. Even new, budget-saving business concepts, such as Groupon, are accessed by almost a quarter of shoppers.

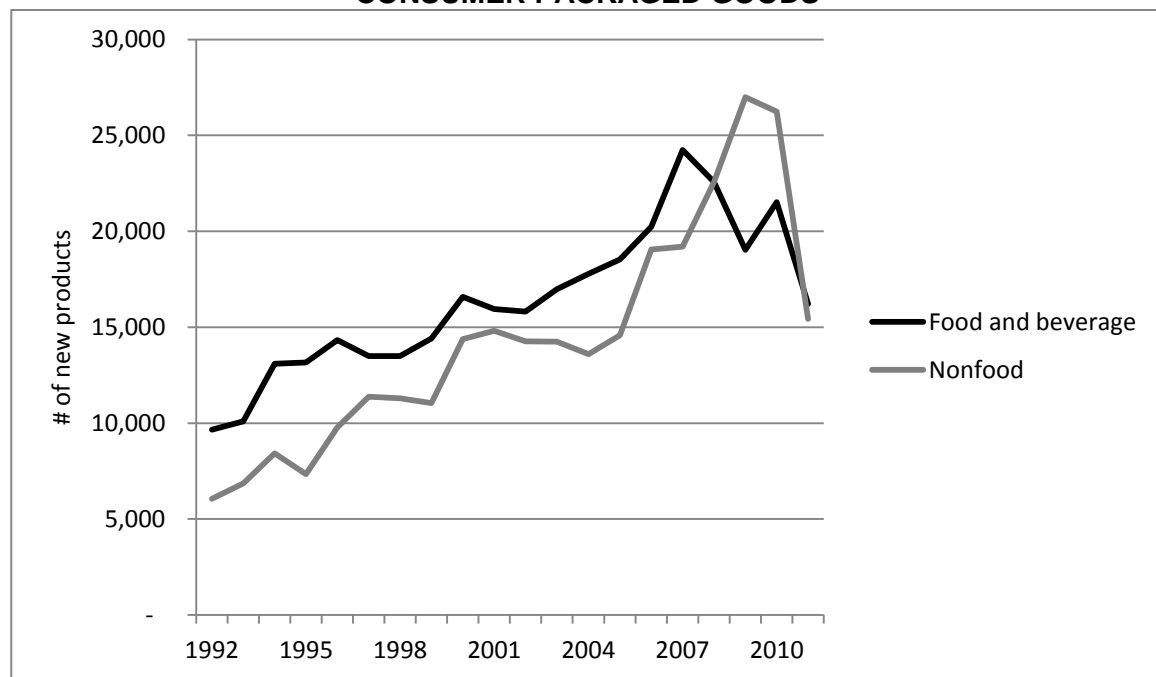
What will be interesting will be to observe the interactions between the use of traditional coupons, digital coupons, and the other cents-off shopping behaviors used by consumers, such as mobile coupons, online price comparisons, and smartphone price comparison apps. Already, Symphony IRI reports that wealthier shoppers use e-planning tools more than lower-income shoppers. In addition, they recommend that businesses need to market to consumers at home where many of the shopping decisions are being made rather than in the store.

**FIGURE 2 – 4. DIGITAL MEDIA USAGE**

Source: CPG 2011 Year in Review, Symphony IRI.

### **Manufacturing and Retail Trends**

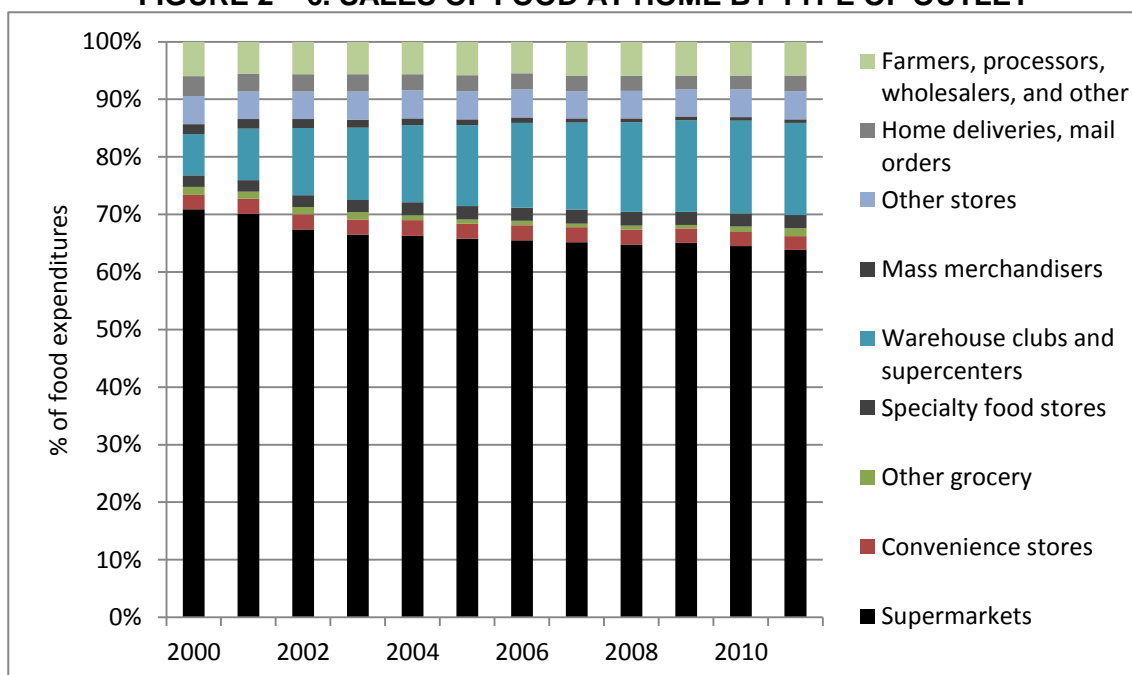
Food and beverage and other consumer packaged goods manufacturers introduced a total of 31,649 new food and nonfood products in 2011. New food items totaled 16,212 and nonfood totaled 15,437. This was the smallest number of introductions in a single year since a high of 47,770 in 2010 (Figure 2 – 5). Prior to 2008 new food introductions were greater than nonfood, however, after the recession nonfood items continued their growth until 2011. The decline in food introductions was the first year-over-year decline since 2002. Tightened credit and inventory reduction management on the part of retailers have influenced manufacturers to reduce their new product introductions. In addition, retailers have managed their store assortments more tightly, often eliminating unprofitable product lines and trying to simplify the shopping experience.

**FIGURE 2 – 5. NUMBER OF NEW PRODUCT INTRODUCTIONS OF CONSUMER PACKAGED GOODS**

Source: Datamonitor

Supermarket formats continue to lose share to supercenters and warehouse clubs (Figure 2 – 6). In 2000, supermarkets earned almost 70% of consumers' food expenditures whereas in 2011 they earned only 63.8%. Supercenters and warehouse clubs in the meanwhile had a 7.2% share in 2000 and 16% in 2011. One of the newest competitors in retail food is AmazonFresh. AmazonFresh is a subsidiary of the retail powerhouse Amazon. It is test marketing online ordering and home delivery of groceries in the Seattle area. Online ordering and home delivery is offered by a few retailers, most notably Peapod as a part of Ahold USA, and FreshDirect in the New York City metropolitan area, although, historically, the model has logistical challenges that have limited entry by other retailers.

Consumers' interest in local foods and direct marketing continues to grow. However, direct farm sales, captured under the category farmers, processors, wholesalers, and other, have not contributed enough sales to capture share from the other retail expenditure categories. Percent sales from farmers, processors, wholesalers, and other were 6.0% in 2000 and have remained relatively steady since.

**FIGURE 2 – 6. SALES OF FOOD AT HOME BY TYPE OF OUTLET**

Source: USDA-ERS, Food Expenditures Dataset, table 14. <http://www.ers.usda.gov/data-products/food-expenditures.aspx>.

### **The U.S. Food Marketing System Update**

GDP lifted manufacturers' moods early in 2012 although the effects of Sandy in the heavily populated East Coast has caused some uncertainties in already softening sales. Unemployment continues to drop but at a slower-than-hoped-for pace. Although these 2 economic measures improved over 2011, the forecasts for 2013 GDP and unemployment do not look as hopeful, as inflation forecasts for 2013 could cause slower economic activity. Consumer price inflation is forecast to increase slightly, to 2.5%, in 2013 and inflation for food at home is expected to increase even more and is forecast for 3.5% inflation (Table 2 – 1).

**TABLE 2 – 1. ECONOMIC SNAPSHOT**

Economic Measure	2008	2009	2010	2011	2012 (forecast)	2013 (forecast)
GDP (annual % chg) <sup>1</sup>	-0.3%	-3.1%	2.4%	1.8%	2.1%	1.6%
Unemployment (% , SA) <sup>1</sup>	5.8%	9.3%	9.6%	9.0%	8.1%	7.8%
Consumer Price Inflation (% chg) <sup>1</sup>	3.8%	-0.3%	1.6%	3.1%	2.2%	2.5%
Consumer Price Inflation, All Food (% chg) <sup>2</sup>	5.4%	1.9%	0.8%	3.7%	3.0%	3.5%

<sup>1</sup> Historical data from Bureau of Economic Analysis; forecasts The Conference Board

<sup>2</sup> Historical data from Bureau of Labor Statistics; forecasts by USDA-Economic Research Service

*Business thus faced with protracted weak demand has even weaker sentiment and has been slow to invest in capital and human capital. Uncertainty over tax rules and the fate of the fiscal cliff, along with continued austerity at the state and local level, further slow the overall pace of demand. Finally, slow growth abroad limits trade prospects. These conditions are likely to keep economic growth below 1.5 percent (annualized) through mid-2013.*

*CEOs' assessment of current conditions remains weak and they have grown increasingly pessimistic about the short-term outlook. Sluggish growth and a persistent cloud of uncertainty have played a role in CEOs curtailing spending plans this year."*

#### Consumer Confidence Index at Highest Level Since February 2008

**TABLE 2 – 2. ECONOMIC INDICATORS**

Economic Indicator		November 2012 (change from previous month)
Consumer Confidence	↑	0.6points
CEO Confidence	↓	-5.0 points
Employment Trends Index	↑	0.53%
Leading Economic Index	↑	0.2%

Source: The Conference Board, <http://www.conference-board.org/> accessed November 27, 2012

Food retailers and manufacturers responded to economic downturn. They delayed price increases during increasing commodity prices, dropped prices on selected core staples in response to consumer bargain shopping, increased their focus on private labels, increased face value on coupons, and used aggressive price promotions (sales) to keep prices down and maintain, or even improve, volume. Retail competition was driven by price in the fear that bargain-hunting shoppers, lacking any store loyalty, would turn to competitors.

#### Consumer Food Expenditures

The USDA-Economic Research Service estimates for 2011 food and beverage sales from retail outlets are in Table 2-3 below. A high consumer price index for food in 2011 contributed greatly to the sales increases. Sales for total food and beverages amounted to almost \$1.5 trillion, a growth of 5.5% above 2010 sales. Although the growth in food away from home sales was not shabby, the growth in food at home sales substantially outpaced it at 4.8% versus 6.0% growth respectively. The reason for much of this difference can be attributed to the very low inflation rate (1.9%) for food away from home, as restaurants and other eating establishments held most prices steady in 2011.

**TABLE 2 – 3. FOOD SALES<sup>1</sup>**

Sector	2011	2010	Growth
	--\$ million--		%
Total food and beverage sales	\$1,480,692	\$1,403,476	5.5%
Total food sales (excluding alcohol)	1,317,828	1,250,733	5.4%
Food at home sales	654,422	617,475	6.0%
Food away from home sales	588,926	561,792	4.8%
Alcoholic beverage sales	162,864	152,743	6.6%

<sup>1</sup> 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](http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/table1.htm).

### The Consumer Price Index

While the drought in the summer of 2012 caused much uncertainty in the food industry, the effects were somewhat spotty, affecting the grain commodities most heavily. It appears that the effects will not affect food prices unduly. They are having a delayed effect on meat prices and the effects on CPI for food will not be seen until 2013 and those will effect meats primarily.

Food inflation has been decreasing the latter part of 2012, such that the changes in the October 2012 CPI for all foods from year ago levels was only 1.7% (Table 2 – 4). The U.S. Department of Agriculture predicts inflation for all foods to be in the range of 3.0 – 4.0% above 2012 prices. Dairy and fresh vegetable prices are predicted to see higher than average inflation in 2013. Fish and seafood, fats and oils, processed fruits and vegetables, and sugar and sweets prices are predicted to see lower than average inflation.

The lack of consumer confidence in the economy along with continued high unemployment levels are making it difficult for eating establishments to increase prices. The CPI for food away from home is forecast to increase 2.5 – 3.5% for 2013. Although this is better than 2010 and 2011 levels, it is less than pre-recession levels.

**TABLE 2 – 4. CHANGES IN FOOD PRICE INDEXES, 2010 THROUGH OCTOBER 2011**

	2010	2011	Oct. 2012 <sup>1</sup>	2013 Forecast
<i>% change from year ago</i>				
<b>All food</b>	0.8	3.7	1.7	3.0-4.0
Food away from home	1.3	1.9	2.7	2.5-3.5
Food at home	0.3	4.8	1.0	3.0-4.0
Meats, poultry, and fish	1.9	7.4	2.4	3.0-4.0
Meats	2.8	8.8	1.7	3.0-4.0
Beef and Veal	2.9	10.2	5.5	3.0-4.0
Pork	4.7	8.5	-2.1	3.0-4.0
Poultry	-0.1	2.9	5.5	3.0-4.0
Fish and seafood	1.1	7.1	1.4	2.5-3.5
Eggs	1.5	9.2	0.1	3.0-4.0
Dairy products	1.1	6.8	-1.1	3.5-4.5
Fats and oils	-0.3	9.3	3.0	2.0-3.0
Fruits and vegetables	0.2	4.1	-0.1	3.0-4.0
Fresh fruits & vegetables	0.7	4.5	-0.4	3.5-4.5
Fresh fruits	-0.6	3.3	2.1	3.0-4.0
Fresh vegetables	2.0	5.6	-3.2	4.0-5.0
Processed fruits & vegetables	-1.3	2.9	1.1	2.0-3.0
Sugar and sweets	2.2	3.3	0.6	2.0-3.0
Cereals and bakery products	-0.8	3.9	0.9	3.0-4.0
Nonalcoholic beverages	-0.9	3.2	-0.4	2.0-3.5

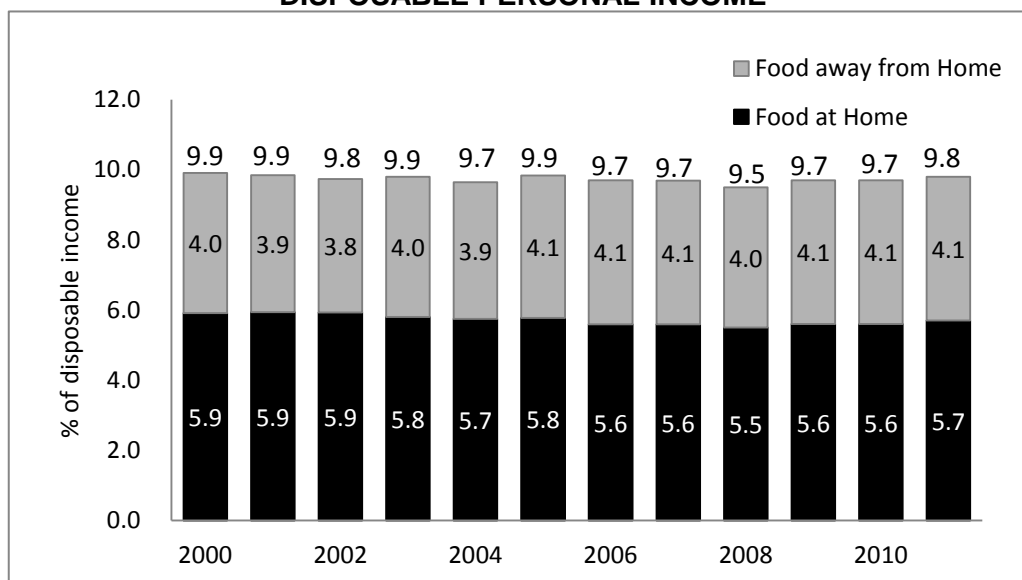
<sup>1</sup> change from year ago October prices. Bureau of Labor Statistics, Inflation and Prices, <http://www.bls.gov/data/#prices>.

Source: USDA-ERS, Food CPI, Prices, and Expenditures, <http://www.ers.usda.gov/data-products/food-price-outlook.aspx>



Despite the economy, food expenditures as a percent of disposable income remain low. In 2000, families and individuals spent 9.9% of their disposable income on food. The share disposable person income has increased slightly the last three years, and inflationary increases in food expenditures concurrent with stagnating incomes continue (Figure 2 – 7).

**FIGURE 2 – 7. 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/table7.htm](http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/table7.htm).

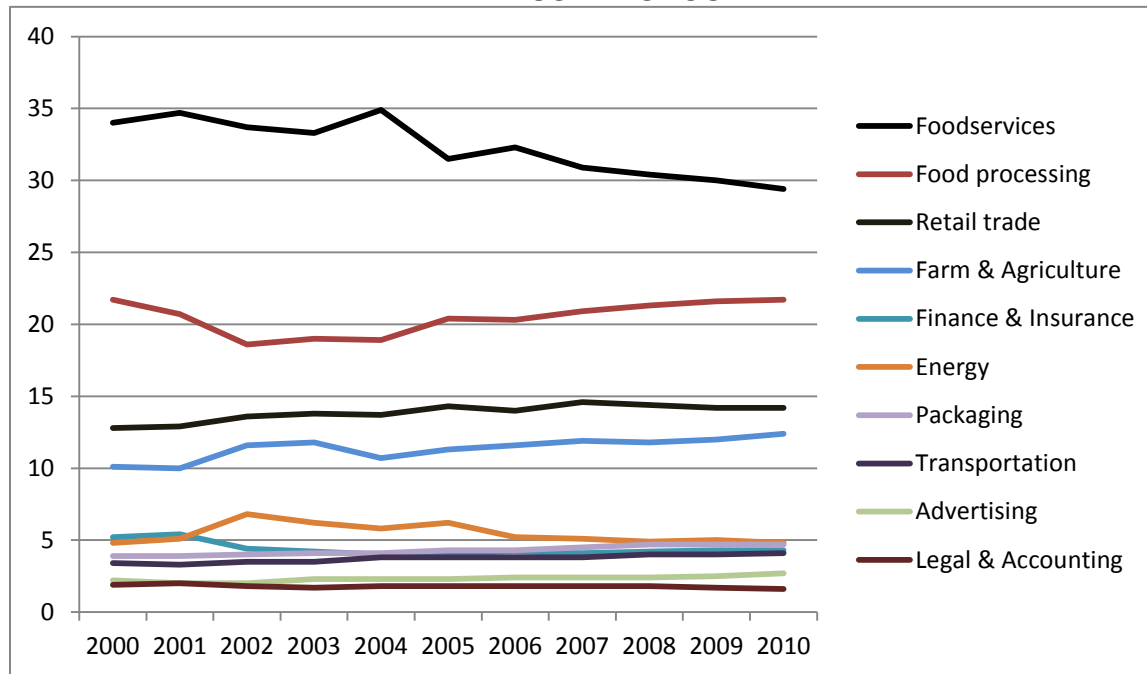
The marketing system in the United States is responsible for all the costs incurred in getting food from the farmers' gate into the hands of the consumer. It divides the system into ten industry groups: farm and agribusiness, food processing, packaging, transportation services, energy, retail trade, foodservices, finance and insurance, advertising, and legal-accounting-bookkeeping services. 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.

A new and expanded food dollar series from USDA-Economic Research Service replaces the old food dollar series. It provides an overview of the food system, with more accurate estimates of the farm share and of the distribution of food-dollar value added shares over time. Highlights from the series include:

- For every dollar spent in 2010 in the U.S. on domestically produced food (food dollar), U.S. farmers sold 14.1 cents of farm products to non-farm establishments (farm share). After spiking in 2007-08, the farm share of food dollar expenditures in 2010 has returned to the 2006 level.

- Foodservice costs contribute by far the greatest share of expenditures. In 2010 foodservice share was 29.4 cents. However the share of foodservice has been declining since 2004, well before the recession in 2008.
- Food processing costs per food dollar have increased 17 percent since 2008 and are now 21.7 cents of the 2010 food dollar.
- The share of food retailers' costs for food-at-home expenditures has declined 7 percent since 2006 to 23.1 cents in 2010.
- Energy costs per food dollar declined nearly 30 percent since 2008 and are now 4.8 cents of the 2010 food dollar.

**FIGURE 2 – 8. SHARES OF CONSUMER FOOD EXPENDITURES,  
BY INDUSTRY GROUP**



Source: USDA-ERS. Food Dollar Series. <http://www.ers.usda.gov/data-products/food-dollar-series.aspx>

## Chapter 3. Cooperatives

Roberta M. Severson, Extension Associate, and Todd M. Schmit, Associate Professor

Farmer cooperative sales throughout the United States and New York State set new records in 2011, which demonstrates the vitality of the nation's farmer-owned cooperatives and the important role they play in the agricultural sector. Total net business volume of cooperative businesses (excludes sales between cooperatives) grew by 24 percent nationally and 22 percent in New York State. Noteworthy research has been conducted over the past several decades to document the importance of cooperative businesses. Similar to investor-owned firms, cooperatives must adapt to a variety of external and financial factors in order to remain profitable and add value to the businesses of their producer members. The following chapter provides an overview of cooperative activity within the United States and New York State and provides insight into the critical issues facing cooperatives in the future.

### U.S. Situation – Farmer Cooperatives

In 2011, 2,285 U.S. farmer cooperatives owned by 2.3 million members had a record-breaking year with over \$213 billion in gross business volume (includes sales between cooperatives) and nearly \$613 million returned to member owners in patronage refunds (Table 3-1). Higher commodity prices in 2011 resulted in farmer cooperatives nationwide (excluding the Farm Credit System) increasing gross business volume by 11 percent from the previous record high of \$191.9 billion set in 2008. This is also a \$41.3 billion increase, or 25 percent over 2010. Table 3-1 compares volume of cooperative business between 2010 and 2011.

TABLE 3-1. U.S. FARMER COOPERATIVES, COMPARISON OF 2010 AND 2011			
Item	2010	2011	Change
	(\$ billion)	(\$ billion)	percent
<b>Gross Business Volume</b>			
Marketing	\$101.1	\$128.1	26.7%
Farm Supplies	63.9	80.9	26.8
Services	5.0	4.5	-10.0
<b>Total</b>	<b>\$170.1</b>	<b>\$213.4</b>	<b>25.4%</b>
<b>Balance sheet</b>			
Assets	\$65.0	\$78.5	20.8%
Liabilities	39.0	50.6	29.7
Equity	26.0	27.9	7.3
<b>Income Statement</b>			
Sales (Gross)	\$171.8	\$213.4	24.3%
Patronage income	0.7	0.6	-11.4
Net income before taxes	4.3	5.4	25.6
<b>Employees</b>	(Thousand)	(Thousand)	
Full-time	129.0	130.9	1.5%
Part-time, seasonal	54.4	52.8	-2.8
<b>Total</b>	<b>183.4</b>	<b>183.7</b>	<b>0.2%</b>
<b>Membership</b>	(Million)	(Million)	
	2.2	2.3	4.5%
<b>Cooperatives</b>	(Number)	(Number)	
	2,314	2,285	-1.3%
Source: Cooperative Statistics 2011, USDA Office of Rural Development <a href="http://www.rurdev.usda.gov/BCP_Coop_DirectoryAndData.html">http://www.rurdev.usda.gov/BCP_Coop_DirectoryAndData.html</a>			

While not shown, net business volume (excludes sales between cooperatives) grew by 24 percent or \$35.8 billion from \$147.8 billion in 2010 to \$183.6 billion in 2011. Most of this (82%) can be attributed to increasing dairy and grain and oilseed prices, with dairy product marketing cooperative volume increasing by \$8 billion and grain and oilseeds marketing cooperative volume increasing by \$13.4 billion. Net business volume for supply cooperatives increased \$10.2 billion, with increasing prices paid for feed, fertilizer, and petroleum accounting for 87% of the increase. Net business volume increased \$1.9 billion, \$2.3 billion, and \$3.6 billion for feed, fertilizer, and petroleum products, respectively.

The aggregate cooperative balance sheet shows total assets increased by \$13.5 billion or 21 percent and liabilities increased by \$11.6 billion or 30 percent between 2010 and 2011. Equity improved by \$1.9 billion or slightly over 7%. Net income before taxes increased \$1.1 billion or 25.6 percent between 2010 and 2011.

Nationally, farmer marketing cooperatives account for 53.5 percent of all farmer cooperatives with 36.6 percent of all memberships. Supply cooperatives account for 40.9 percent of all U.S. farmer cooperatives and 61.7 percent of all memberships. Farmer service cooperatives make up the balance; i.e. 5.6 percent of cooperatives with 1.7 percent of memberships. Membership numbers exceed farm numbers as a farm business can belong to one or more cooperative enterprises. The total number of cooperatives declined modestly between 2010 and 2011 (-1.3 percent), reflective of continued industry consolidation (Table 3-1). While farmer cooperative members have also trended downward over the last decade, total memberships increased modestly between 2010 and 2011 by 4.5 percent. This result was largely influenced by strong growth in the number of grain and oilseed cooperative memberships (+159,000) that more than offset relatively sizable declines in memberships for tobacco marketing cooperatives (-53,000) and supply cooperatives in total (-64,100).

The number of full- and part-time workers remained relatively constant in 2011 at 183.7 thousand workers, with a modest increase (1.5 percent) in full-time workers to 130.9 thousand (Table 3-1). Notably, full-time employment is up over 7 percent from its five-year low in 2009. Marketing cooperatives employ 57 percent of the farmer cooperative labor force, followed by supply cooperatives at 42 percent, and service cooperatives at 1 percent. Grain and oilseed marketing cooperatives employed 24,300 employees, with an increase of 8 percent from 2010 to 2011. Likewise, dairy cooperatives employed 20,800 employees in 2011, with an increase of 10 percent over 2010. Fruit and vegetable marketing cooperatives employed 13,500 employees in 2011, with an increase of 1.5 percent over 2010. These three sectors employ approximately 45 percent of all farmer cooperative workers.

### **New York State Situation**

Data for agricultural cooperatives headquartered in New York State were obtained through a USDA Rural Development Cooperative Service survey. The most current state-level information available is for years 2010 and 2011. Table 3-2 summarizes cooperative businesses headquartered in New York State.

Between 2010 and 2011 the total number of farmer cooperatives (55) and cooperative memberships (6.4 thousand) were stable. The number of dairy cooperatives and the number of fruit and vegetable cooperatives decreased by one in each category, while the number of "other product" marketing cooperatives increased by two. Dairy and fruit and vegetable cooperatives maintained membership as cooperatives are more likely to merge rather than disband. Two "other products" marketing cooperatives reported to the survey increasing membership by 100.

Reflective of improved milk prices in 2011, net business volume for dairy cooperatives increased by nearly \$405 million or 23 percent from 2010 levels. New York State dairy cooperatives market approximately 75 percent of the milk produced within the state. Fruit and vegetable and other products

**TABLE 3-2. NEW YORK STATE AGRICULTURAL COOPERATIVE NUMBERS, MEMBERSHIPS AND NET BUSINESS VOLUME, 2010 and 2011<sup>1</sup>**

Major Business Activity	Number & Membership (000) Headquartered in State				Net Business Volume	
	2010		2011		2010	2011
	No.	Members (000)	No.	Members (000)	(\$ million)	
<b>Marketing:</b>						
Dairy	31	3.5	30	3.5	\$1,738.5	\$2,143.4
Fruit & Vegetable	9	1.0	8	1.0	70.5	74.8
Other Products <sup>2</sup>	3	0.2	5	0.3	170.8	184.8
<b>TOTAL MARKETING</b>	<b>43</b>	<b>4.7</b>	<b>43</b>	<b>4.8</b>	<b>\$1,979.7</b>	<b>\$2,403.0</b>
<b>Supply:</b>						
Crop Protectants					\$13.2	\$22.9
Feed					71.6	74.3
Fertilizer					18.1	31.4
Petroleum					2.5	2.3
Seed					2.7	3.6
Other Supplies					19.5	27.5
<b>TOTAL SUPPLY</b>	<b>6</b>	<b>1.4</b>	<b>6</b>	<b>1.4</b>	<b>\$127.7</b>	<b>\$162.0</b>
<b>TOTAL SERVICE<sup>3</sup></b>	<b>6</b>	<b>0.3</b>	<b>6</b>	<b>0.2</b>	<b>\$15.5</b>	<b>\$31.5</b>
<b>TOTAL</b>	<b>55</b>	<b>6.4</b>	<b>55</b>	<b>6.4</b>	<b>\$2,123.0</b>	<b>\$2,596.6</b>

Source: *Cooperative Statistics* 2011, USDA Rural Development,  
[http://www.rurdev.usda.gov/BCP\\_Coop\\_DirectoryAndData.html](http://www.rurdev.usda.gov/BCP_Coop_DirectoryAndData.html)

<sup>1</sup> Totals may not add due to rounding.

<sup>2</sup> Includes wool, poultry, dry bean, grains, livestock, maple syrup, ethanol, and miscellaneous cooperatives.

<sup>3</sup> Includes those cooperatives that provide services related to cooperative marketing and purchasing.

cooperatives increased volumes by 6 percent and 8 percent, respectively, and resulted in net business volume for all reporting marketing cooperatives to increase by \$423.3 million or 21 percent.

The database indicates that there are six farmer supply cooperatives and six farmer service cooperatives in New York State. Producers experienced higher costs for inputs in 2011 and these higher costs are reflected in higher business volumes for crop and livestock inputs in supply cooperatives. Net business volume from seed sales increased 30 percent and net business volumes from crop protectants and fertilizer increased by over 70 percent each. In total, net business volume for supply cooperatives increased by \$34.4 million, or 26.9 percent. The robust increase in farmer cooperative services resulted in net business volume doubling from \$15.5 million to \$31.5 million. Overall, net business volume for those cooperatives headquartered in New York State increased by \$473.6 million or 22 percent.

The USDA Rural Development Cooperative Survey does not include activity of the Farm Credit System. According to the 2011 Farm Credit East Annual Report, on January 1, 2010 Farm Credit of Western New York, ACA merged into First Pioneer Farm Credit, ACA to create Farm Credit East, ACA. Farm Credit East, ACA service area includes New York State, New Jersey, Massachusetts, Connecticut, Rhode Island, New Hampshire, and customers in several other states. As such there are no figures specific to New York State; however 52 percent of the loan portfolio is based in New York State. The 2011 Farm Credit East ACA annual report notes that loan volume increased slightly less than 2 percent from \$4.3 billion to \$4.4 billion. Net income before taxes rose from \$134.43 million to \$141.40 million. The board of directors determined that \$35.5 million be returned in cash refunds, the cooperative's 16<sup>th</sup> consecutive patronage distribution.

### **Issues for Agricultural Cooperatives**

In 2011, the Council on Food, Agriculture, and Resource Economics (C-FARE) convened a panel of 24 cooperative CEOs, USDA researchers, and academic specialists to learn more about critical issues facing today's cooperatives. Cooperative businesses are different from other types of investor owned firms in that they are owned by member patrons who have democratic control with a portion of the net revenues returned to members through patronage refunds. Panelists were asked to rate a series of issues as extremely important, very important, important, somewhat important, and not important. The issues were grouped as shown in Figure 3-1.:

<b>FIGURE 3-1. CRITICAL ISSUES FACING COOPERATIVES, C-FARE PANEL, 2011</b>		
Issue	Sub-issues	
External	<ul style="list-style-type: none"> <li>• Industrial competition</li> <li>• Market concentration</li> <li>• Public policy</li> <li>• Regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Global competition</li> <li>• Consumer preferences</li> <li>• Market volatility</li> </ul>
Finance	<ul style="list-style-type: none"> <li>• Tax issues</li> <li>• Outside equity</li> <li>• Unallocated equity</li> <li>• Risk management</li> </ul>	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Financial competency</li> <li>• Adequate equity</li> </ul>
Strategy	<ul style="list-style-type: none"> <li>• Decision making</li> <li>• Aligning incentives</li> <li>• Cooperation with cooperatives</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> <li>• Succession</li> <li>• Human resources</li> <li>• Planning</li> </ul>
Governance	<ul style="list-style-type: none"> <li>• Balancing cooperative and member needs</li> <li>• Board dedication</li> <li>• Board competency</li> </ul>	<ul style="list-style-type: none"> <li>• Member involvement</li> <li>• Board operations</li> <li>• Board orientation</li> <li>• Recruiting board members</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Public understanding</li> <li>• Educating youth</li> </ul>	<ul style="list-style-type: none"> <li>• Educating members</li> <li>• Value to members</li> </ul>

Source: Kenkel and Park, 2011.

The following is a brief summary of the panel results.

**EXTERNAL:** Market volatility and public policy were deemed extremely important to very important by 80 percent of participants. Over 60 percent identified industry competition, market concentration and global competition as extremely important or very important. Nearly one-third of the panel viewed consumer preferences as extremely important.

**FINANCE:** Financial issues are one way to examine factors internal to the cooperative business. Profitability was rated extremely to very important by all respondents. In addition, 90 percent of respondents indicated that adequate equity and financial competency was extremely important or very important. The cooperative profit stream is used to build equity for the cooperative businesses while simultaneously returning patronage and retiring equity of member owners. The most critical challenge identified was the need to acquire and maintain equity accounts that would finance growth and provide working capital when necessary. The second financial challenge identified was the need for adequate profitability to finance the assets and strengthen the balance sheet. Most equity capital is derived from earnings. The third most mentioned challenge was balancing the tradeoff of the proportion of equity investment on the part of the member with the need of the cooperative to retain more equity as a risk management tool.

**STRATEGY:** External and financial issues can be addressed and managed through competent people with the ability to create and implement a strategic plan that positions the cooperative for growth and returns to members and patrons. Almost 90 percent of the panel indicated that a sound strategic plan was important to extremely important. Over 90 percent of the panel indicated that human resources were critical to the success of the cooperative enterprise. More specifically, "...[T]he succession of management and key personnel, attracting and maintaining high quality personnel, and aligning the incentives of managers and employees with member interests all received high importance ratings." (Kenkel and Park, 2011).

**GOVERNANCE AND COMMUNICATION:** Competent employees and management is critical to the success of a cooperative business. At the same time there is a need for competent cooperative board. Eighty percent of the panelists suggested that recruiting board members with the necessary critical thinking skills and decision making capabilities is extremely important, with the remaining 20 percent indicating that this is very important. Board members are the linkage representing the interests of the members when making decisions regarding cooperative policies and goals. The directors are charged with rationalizing business decisions to members that ultimately impact equity funds retained in the cooperative business and profits distributed patrons. Over 60 percent of the panel indicated that communicating the value of the cooperative business to its members was extremely important, with another 30 percent indicating that it was very important.

### **Cooperative Outlook for New York**

Through a resolution passed by the United Nations, 2012 was designated the International Year of the Cooperative. The International Cooperative Alliance found that the combined economic activity of the top 300 cooperatives in the world would create the 9<sup>th</sup> largest economy (World Cooperative Monitor). Nine of the top fifty-one dairy cooperatives within the United States have members in New York State and of those nine, five are headquartered in New York State (Hoard Dairyman 2012). Cooperatives play a significant role in the farm and food sector in the state.

The initial high temperatures and subsequent freezing temperatures experienced by fruit growers in early spring decreased fruit yields significantly. Decreased fruit yields will likely impact the financial statements of fruit cooperatives over the next two years. Drought conditions of 2012 have reduced the roughage available to dairy farms. Some farmers were able to harvest additional cuttings and others double cropped small grain acreage as a means to close the gap of forage demands of dairy cattle. Drought experienced throughout the Midwestern part of the United States increased price levels and volatility in grain markets. As a result, one of the biggest challenges facing dairy farmers is the volatility in grain markets and subsequent input costs coupled with a decreasing milk price. Cooperative leaders and farmers have voiced concerns over the lack of passage of the Farm Bill and the impending "fiscal cliff" with the potential negative impact on the economy and consumer purchasing patterns.

Dairy cooperatives have voiced concern over expanding milk supply to meet the increasing need for product for yogurt production. Cooperatives partition the milk produced by member farms to existing and potential customers. Class I milk sales are preferred because of the higher prices received compared to Class II, III, or IV. In spite of transportation costs, shipping milk from the Northeastern United States to the Class I deficit areas of the Southeastern United States can result in higher average milk prices received by dairy farmers, even though there is increased local demand for Class II milk for yogurt production. The reality is that dairy cooperatives do not increase the supply of milk in the market. Growth decisions are made by individual farm businesses. "Each owner makes this decision on the basis of their business, and often the family's goals and the opportunities that they see before them. Growth may be an industry goal, but it is a firm decision." (Novakovic, 2012).

Profitability is key for any business to remain viable into the future. Profitability within a business is influenced by internal controls responding to external conditions. Cooperatives have and will continue to

investigate opportunities to build joint ventures that leverage resources, minimize risk, and build profitability. Unique to the cooperative business model is to return patronage income to their members and, as such, the cooperative becomes an extension of and adds value to the members business. Several boards of directors and management are actively engaging in the strategic planning process to chart a course of action that embraces both the challenges and opportunities for the cooperative business to align with the goals of the membership.

Although 2012 brought a number of trials to cooperatives and their farmer members operating in New York State, these farmer-owned businesses will remain well positioned for solid performance in 2013.

## **References**

Farm Credit East, ACA. *The Power of Collaboration, Farm Credit East Annual Report* 2011.

Johnson, Chelsey, "Top 50 Cooperatives Boost Production Despite Having Fewer Member Farms," *Hoard's Dairyman*, October 11, 2012, 157(17): p.643.

Kenkel, Phil and John Park, "Theme Overview: Critical Issues For Agricultural Cooperatives," *Choices, The Magazine of Food, Farm and Resource Issues*, 3<sup>rd</sup> Quarter 2011, 26(3).

Novakovic, Andrew M., "*The Chobani Paradox*," Program on Dairy Markets and Policy Briefing Paper Series, March 2012, accessed November 24, 2012 at <http://dairy.wisc.edu/pubPod/pubs/BP12-03.pdf>.

The World Cooperative Monitor, Exploring the Cooperative Economy, [http://issuu.com/euricse/docs/wcm2012\\_issue/23#print](http://issuu.com/euricse/docs/wcm2012_issue/23#print)

USDA. Annual Farmer, Rancher, and Fishery Cooperative Statistics, 2011, Office of Rural Development accessed November 1, 2012 at [http://www.rurdev.usda.gov/BCP\\_Coop\\_DirectoryAndData.html](http://www.rurdev.usda.gov/BCP_Coop_DirectoryAndData.html).



# Chapter 4. Finance

Calum G. Turvey, Professor

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## General Outlook

It is difficult to gauge precisely what the financial status is in New York because the USDA no longer includes NY in its agricultural resource management surveys. However some indication of the financial state can be gleaned from the Financial Report of Farm Credit East through September 30 2012. According to the report dairy loans make up 23.1% of the portfolio, cash crops 11.2% and other livestock 9.6%. Farm Credit East reports continued stress in timber, tobacco, green house, nursery and sod but there is no indication of wide-spread credit deterioration of the major dairy, cash crops or livestock sectors.

Nonetheless nonaccrual loans increased from 48,722 million in 2011 to 84,879 million through 2012, an increase of 74%. Including 90-day past due and those being restructured the increase over 2010 has been 65.5%. Total high risk assets increased from \$56,418 to \$93,396, or by 65.5%, and this has caused Farm Credit East to increase allowances for loan loss provisions. While overall delinquencies are low at 0.8%, this has doubled since the same period in 2011.

The supply of credit is ample. According to the Farm Credit System Annual Report (2011), USDA's estimate of debt by lender shows that commercial banks held 44 percent of total farm business debt at the end of 2010. The System's market share rose to 41 percent from a 40 percent share a year earlier. Kansas Federal Reserve Agricultural Finance Databook notes that as the costs of production soared throughout 2012 so did the number of operating loans to keep pace. The Farm credit System's market share of total farm debt has been rising steadily over the past decade relative to the commercial bank share. Farm debt owed to the USDA and to life insurance companies has remained stable while debt owed to individuals, merchants, and other lender types continue to decline. According to the Kansas City Federal Reserve Farm Databook Delinquency of non-real estate farm loans in 2012 fell to 1.5% the lowest it has been since the peak of the financial crisis of about 3.3%. Real estate loans delinquencies held steady at about 3% throughout 2012 down from peak delinquencies of about 3.75% in 2010, which suggest that the worst of the economic adjustments following the financial crisis of 2008 are over.

It does not appear that there is any credit tightening in agriculture for either operating expenses or asset purchase. For example the Kansas Federal Reserve Agricultural Finance Databook notes that as the costs of production soared throughout 2012 so did the number of operating loans to keep pace. Rates are also at long-term lows. With livestock loans as low as 4%, operating loans at 4.5% and machinery and equipment loans at about 5% the financial risk is lower now than in 2007 when rates were at about 9%. These are even lower than the first part of 2012 with rates ranging from 4.8% to 5.8%. It was also noted that commercial lenders had no shortage of loanable funds to meet this demand so many of the credit-tightening conditions that has led to previous busts are not currently at play. The Farm Credit Funding Corporation, which issues bonds on behalf of the Farm Credit System, is highly regarded and bond ratings have kept pace with U.S. treasuries so it does not appear that the supply of long-term capital for agriculture is currently at risk.

There are of course pending events that can have major impacts which have more to do with how farmers vote than how they farm. Congress is misbehaving on two fronts and seems to be willing to drive the economy of the 'fiscal cliff' in terms of negotiating a revenue-balanced deficit reduction plan. Meanwhile, Congress is also holding up passage of the Farm Bill plowing a path towards the 'farm cliff'. These two events, as inconceivable it might be that they are not resolved by the time this goes to print, will have a devastating effect on the agricultural economy. Most important is the immediate flight of capital out of the United States. Even if US treasuries (and hence Farm Credit Bonds) are not downgraded (which they most

surely will be) the notion that congress would purposefully drive the economy towards a double dip recession will cause many global financiers to lose faith in the U.S. dollar and, the 14<sup>th</sup> amendment notwithstanding, the will of Government to back its treasuries. The impact on equity markets globally will be severe with equity losses far in excess of the amounts of revenue (taxes) being asked of congress. Capital losses will result in a tightening of credit which will impact the supply of operating loans to agriculture, while the risk attached to farm credit bonds will increase. Credit will become more costly and in reduced supply. It is unlikely that further quantitative easing of the money supply will be put in place to resolve a problem of congress's own making.

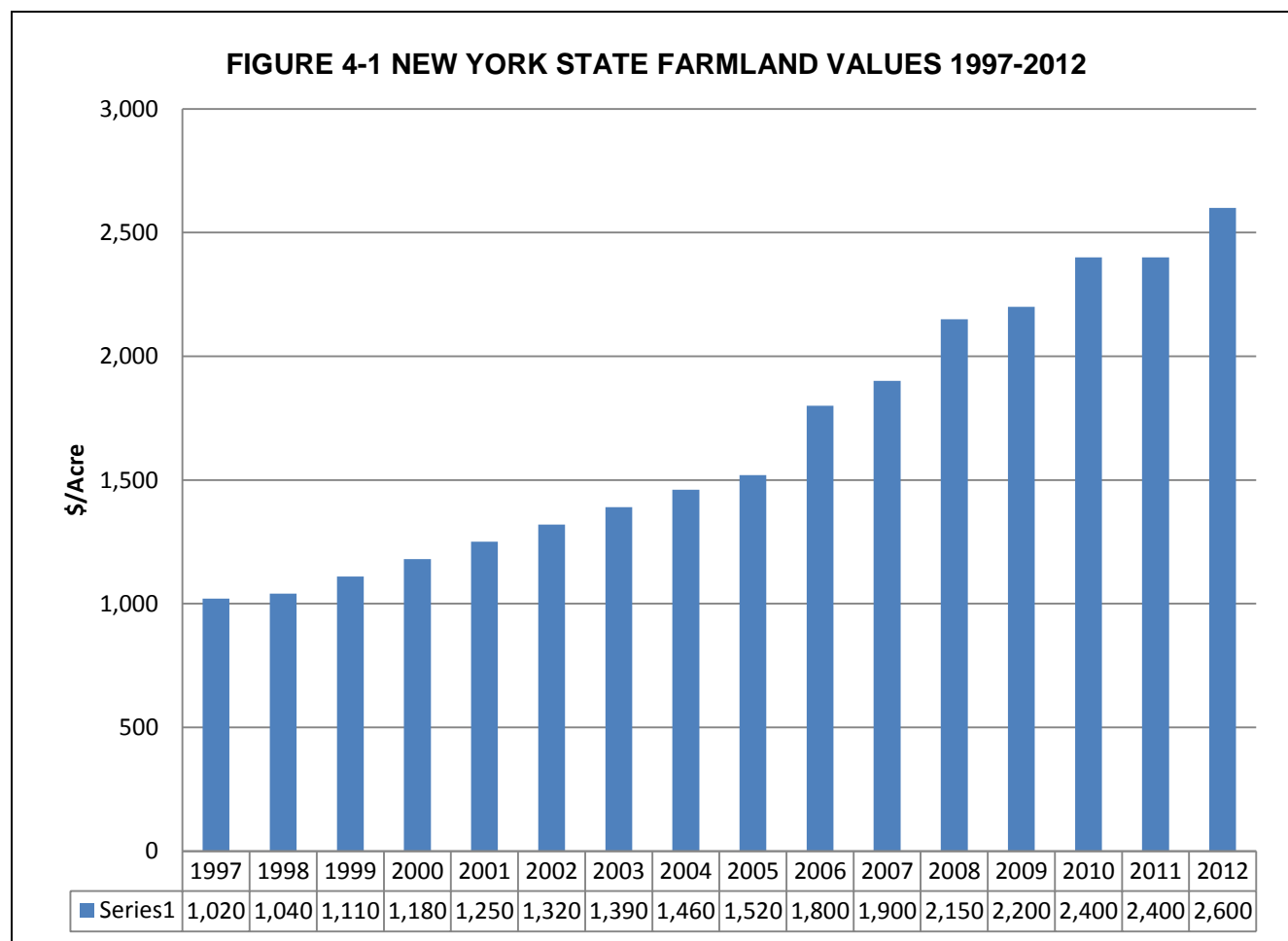
On the other side failure to pass a Farm Bill will return policy to permanent law in which age-old subsidy rates, such as \$38 milk, will enrich many farmers while distorting market based production incentives, opening up U.S. agriculture to trade litigation, while driving up the deficit. Moreover, any targeted disaster assistance for 2012 will be lost as will be any modernization of publicly supported revenue assurance or farm programs targeted towards the current realities of today.

### **Farmland Values**

Agricultural land is, for most farmers, the largest asset item with unrealized capital gains being the largest contributor to equity. Some extraordinary rises in farmland prices in recent year has led to questions of whether a bubble exists and if so whether a bust is imminent.

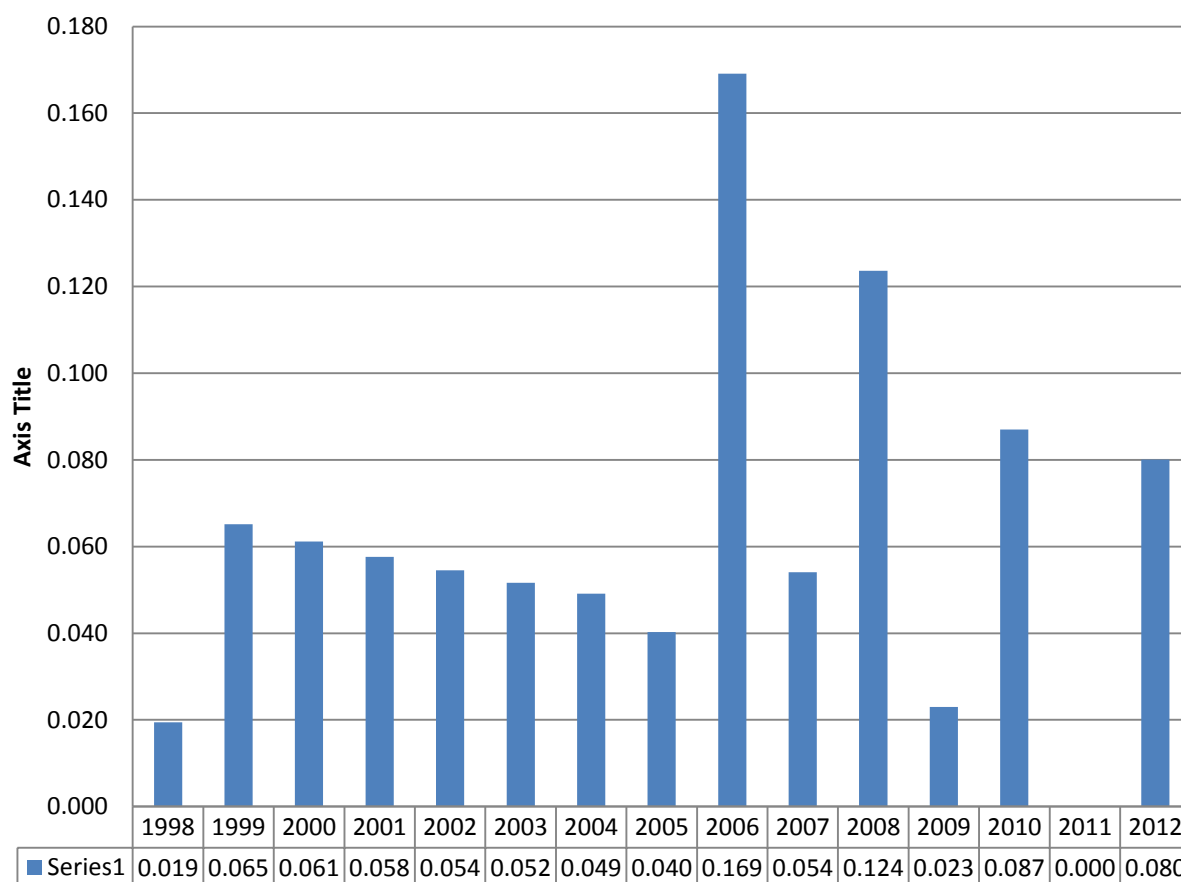
Using reports from the Kansas City Federal Reserve land values are still rising in much of the USA with Illinois, Indiana, Iowa, Missouri and Wisconsin land prices rising 15% higher than June of 2011, Maryland, North Carolina South Carolina, Virginia and West Virginia by 6%; Louisiana, New Mexico and Texas by 11%; Michigan, Minnesota, Montana, North and South Dakota and Wisconsin saw dry land values increase by 21%, irrigated land fall by 5% and ranchland increase by 6%; Colorado Kansas Missouri Nebraska New Mexico Oklahoma and Wyoming with dry land increases of 27%, irrigated land increases of 28% and ranchland increases of 18%; and Alabama, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah and Washington saw a 26% increase in irrigated land, a 20% increase in rangeland and a modest 2% increase in dry land.

With this backdrop farmland prices in NY State have been quite modest as illustrated in Figure 4-1 which shows that prices have increased by \$200 in each of the past 3 years according to the USDA or about 8% per year. Even so as Figure 4-2 shows the percentage change in farmland prices has been higher in the past six years has been higher than the 6 years following 2000.



The largest rise in farmland prices in New York was 16.9% in 2006 and second was 12.4% in 2008. The recent rise of about 8% pales in comparison to what is being observed throughout the rest of America. It should be noted, of course that these prices are as reported by the USDA and not the New York Federal Reserve. The numbers reported by the Kansas City Reserve are consolidated by the various Federal Reserve Banks across the United States as reported from transactions data and thus come from a different source than the USDA estimates. Having said this, it does not appear that there is a farmland price bubble in New York, at least to the extent of what is seen in the mid-western states. The caveat to this is that farmland prices appear to be increasing almost regardless of what is going on from year to year in the agricultural economy which is what agricultural economists refer to as the 'farmland pricing puzzle'. This immunity to economic forces suggests that drivers other than the real economy are pushing land prices higher. For example dairy and other livestock producers need additional land in order to increase herd size so the price of land is driven not by cash crops but by the incremental benefits to farmers in its alternative use. Also, land parcels come up for sale so infrequently that farmers are willing to pay a substantial premium for the land above its economic value because it may be decades later before the parcel comes up for sale again. In other cases farmers can increase the economic efficiency of the whole farm by adding additional land so the economic benefit is not what can be obtained marginally on the purchased land but also any economic gains in efficiency for the farm as a whole. In addition, there is evidence that payments from government programs are capitalized into farmland values but in reality the role of support and emergency programs will do more to set a floor on the value of land, rather than a key driver of its rise in value.

**FIGURE 4-2 YEAR-OVER-GROWTH RATES IN FARMLAND VALUES,  
NEW YORK 1997-2012**



Percentage Change in Farmland Prices

Nonetheless, when land is purchased for more than it's worth there is a reverse equity transfer where the current generation of buyers transfers its future equity to the last generation (sellers). This will result in lower returns to equity in the short and long term. These losses in equity can only be recovered if the rate at which land values grow turns out to be greater than what was implied by the originating land price. It does not appear, at least in the short run, that land prices will flatten out or decrease any time soon although anything can happen at any time. However it should be noted that the busts in farmland markets in the past were driven by many factors including in the 1920s and 1930s a collapse of farm credit supply from commercial lenders (leading then to the formation of the Farm Credit System). The driver of the 1980's boom and bust is largely attributed to optimism in commodity markets, the perception that land was a hedge against inflation, and imprudent lending practices that were focused more on asset values and capital gains than cash flow. None of these factors are in play in 2012 so while history may repeat itself the cause will not be repeated. Rather it appears that what is occurring in land markets, particularly in the mid-west is more of a greater fool theory in which individuals will continue to buy land at ever increasing prices so long as they believe that there is a greater fool to pay an even higher price in the future. If so, all there is to do is wait until the pool of fools runs out!

### **Financial Conditions of U.S. and NY Farms**

As indicated earlier New York is no longer surveyed as part of the USDA's periodic Agricultural Resource Management Survey but from past experience financial conditions in New York were fairly consistent with the financial conditions of farmers elsewhere in the USA. Table 4-1 presents data obtained from the Agricultural Census to provide a picture of what these financial conditions are.

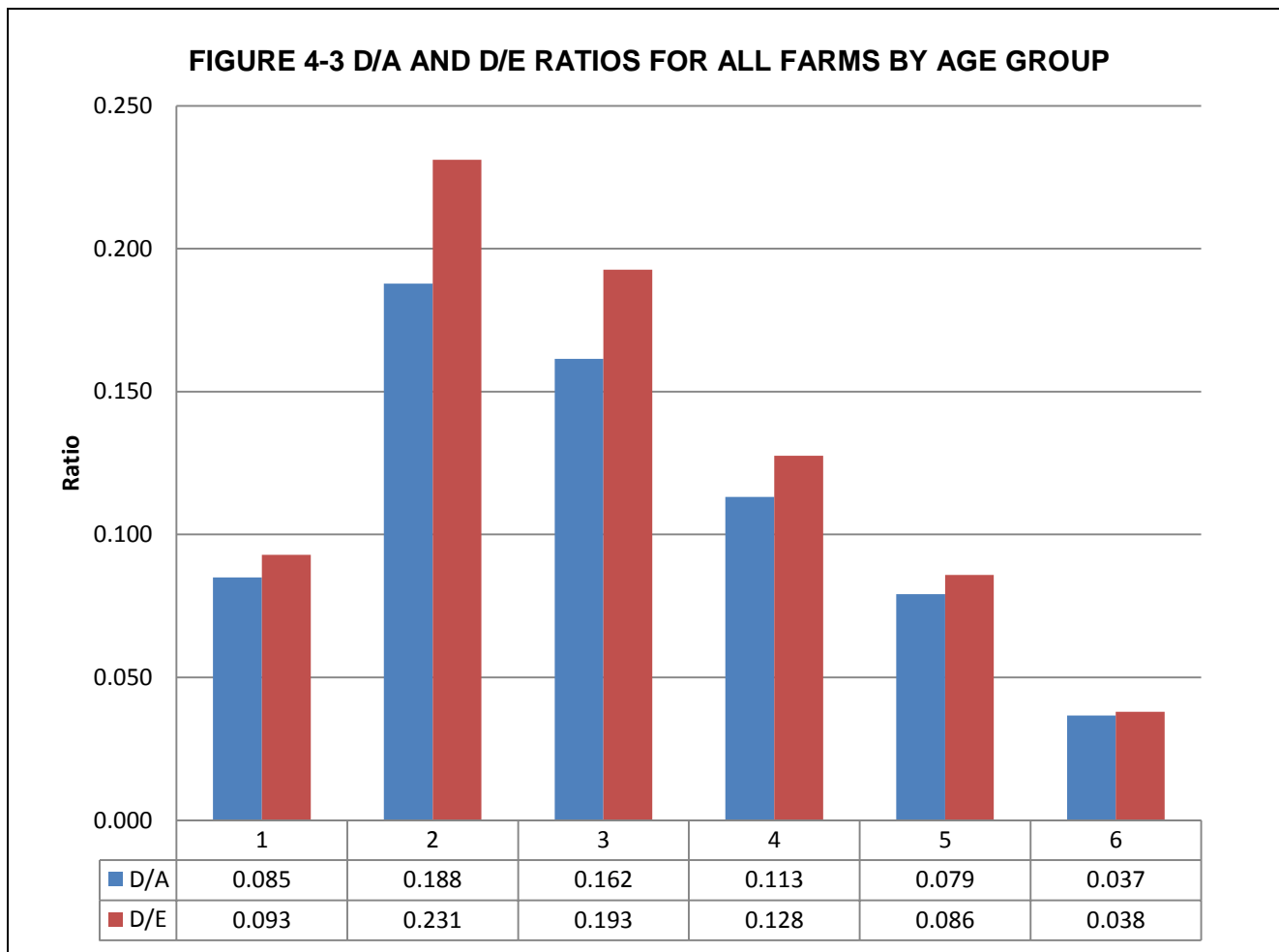
**TABLE 4-1 DEBT POSITION OF U.S. FARMERS**

A. General Conditions		All	<35	35-44	45-54	55-64	>64
Number of farms		2,192,774	96,389	223,386	519,097	698,943	654,958
Age Distribution		1.000	0.044	0.102	0.237	0.319	0.299
Number of farms with debt		645,674	49,099	99,457	191,167	197,240	108,711
% within age		0.294	0.509	0.445	0.368	0.282	0.166
% of All		0.294	0.022	0.045	0.087	0.090	0.050
% of All with Debt		1.000	0.076	0.154	0.296	0.305	0.168
Total Assets		930,003	642,072	807,250	940,743	990,795	940,857
Current Assets		110,620	106,361	114,336	122,086	117,163	93,911
Non-Current Assets		819,382	535,711	692,914	818,657	873,632	846,946
Total Liabilities		79,049	120,539	130,371	106,442	78,373	34,450
Current Liabilities		25,248	36,385	39,636	34,431	24,461	12,263
Non-Current Liabilities		53,801	84,153	90,735	72,012	53,912	22,187
Equity		850,953	521,533	676,879	834,301	912,422	906,408
Debt/Asset Ratio	D/A	0.085	0.188	0.162	0.113	0.079	0.037
Debt/Equity Ratio	D/E	0.093	0.231	0.193	0.128	0.086	0.038
<b>B. Scenario Analyses</b>							
With Debt							
Assets		930,003	642,072	807,250	940,743	990,795	940,857
Total Liabilities		268458.4	236636.9	292820.6	289033.8	277723.9	207553.1
Equity		661,545	405,435	514,429	651,709	713,071	733,304
Debt/Asset Ratio	D/A	0.289	0.369	0.363	0.307	0.280	0.221
Debt/Equity Ratio	D/E	0.406	0.584	0.569	0.444	0.389	0.283
<b>C. Scenario Analysis</b>							
No Debt							
Assets		930,003	642,072	807,250	940,743	990,795	940,857
Total Liabilities		0	0	0	0	0	0
Equity		930,003	642,072	807,250	940,743	990,795	940,857

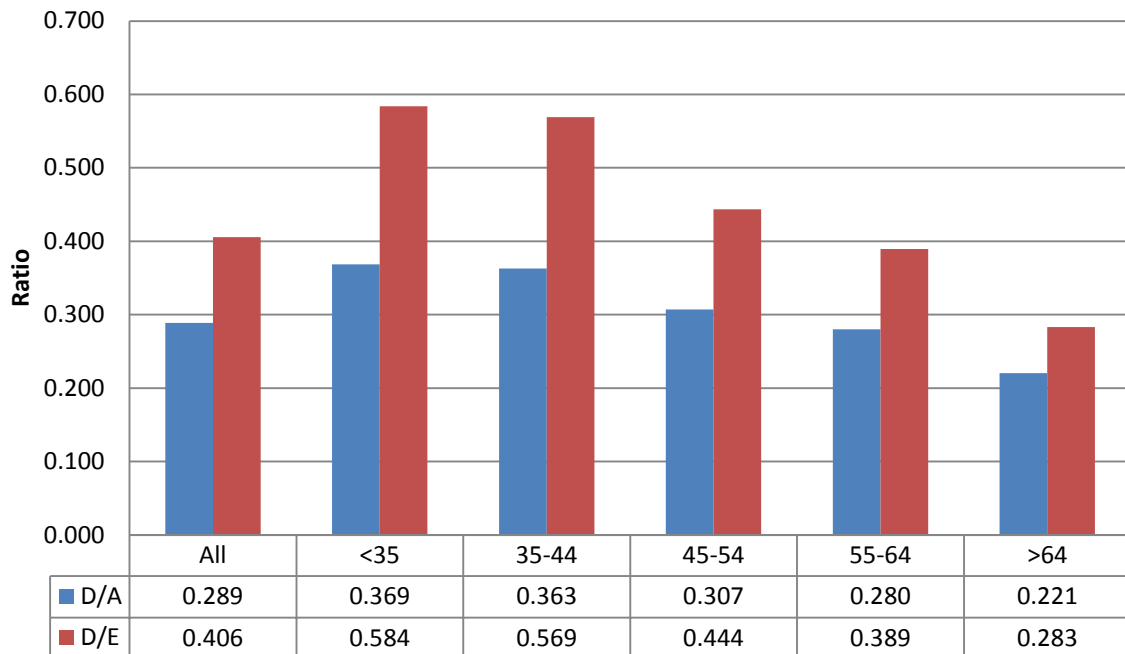
Overall, farm debt in agriculture is low with plenty of equity for investment and expansion. The debt to asset ratio sector-wide is only 8.5% and the debt to equity ratio is only 9.3%. However these scenarios are misleading because they include farms with and without debt. Farms with no debt would hold no mortgage on the land and would typically have paid off any operating loans or other short term credit. It is significant, economically speaking, that only 29.4% of American farmers have debt. Thus from a financial point of view the focus should not be on all farms but those that are exposed to financial risks.

In Part B of Table 4-1 the debt is adjusted using a simple pro-ratio to glimpse at what this might mean. On a pro-rated basis the average debt to asset ratio of farms with debt is 28.9% and the debt to equity ratio is 40.6%. Even at 28.9%, this is not a degree of over-leverage that will bring widespread harm to the agricultural economy should a down-turn occur.

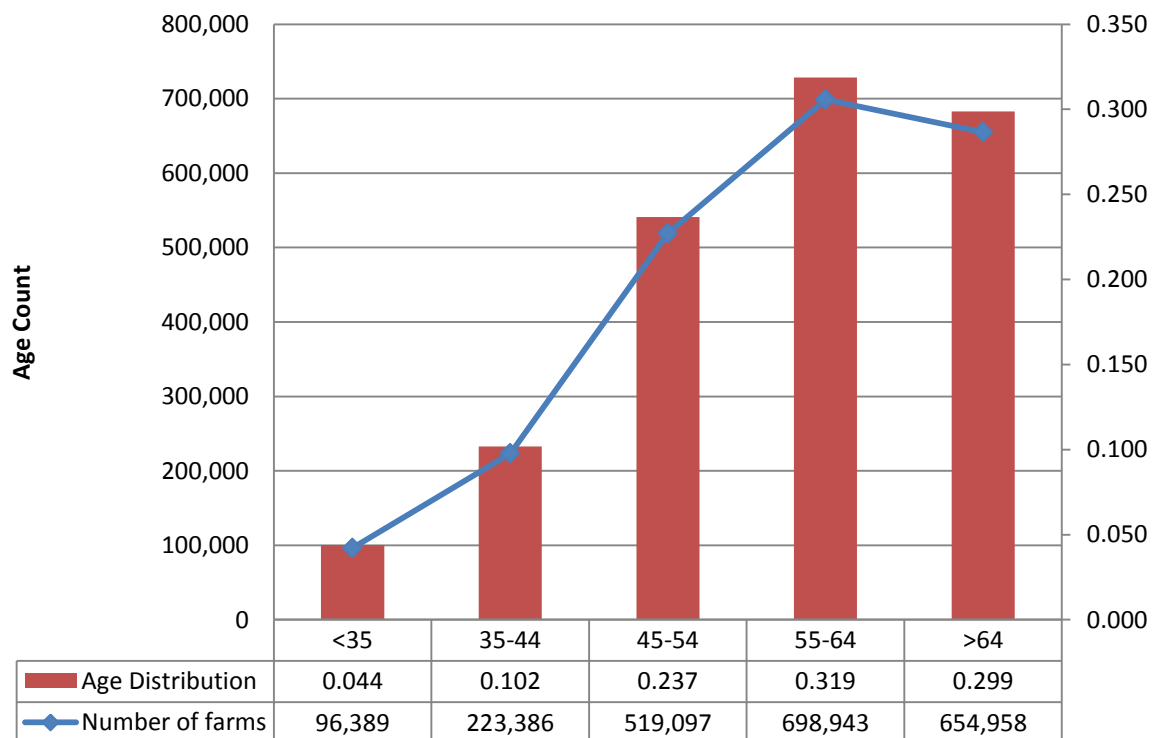
What is interesting in Table 4-1 is the classification of financial conditions according to age. As expected, younger farmers hold more debt relative to assets or equities (36.9% and 58.4%) than older farmers (22.1% and 28.3%). These are depicted in Figures 4-3 and 4-4.



Average Debt to Asset and Debt to Equity Ratio for all Farmers and by Age Group

**FIGURE 4-4 D/A AND D/E RATIOS FOR FARMS WITH DEBT BY AGE GROUP**

Average Debt to Asset and Debt to Equity Ratio for all Farmers with debt and by Age Group

**FIGURE 4-5 FARMER AGE DISTRIBUTION, TOTAL FARMS=2,192,774**

Distribution of Age of U.S. Farmers

### **Commentary on the Age Distribution of Farmers**

A piece of information in Table 4-1 that is often overlooked in any outlook presentation is the age distribution of farmers. This is depicted in Figure 4-4. What the figure reveals is that the average age of farmers is getting quite old. Nearly 60% of farmers are 55 years or older while only about 15% are 44 years or younger. This raises an important question as to who will be farming in 20 or 30 years. It seems quite clear that there are not enough young farmers to replace retiring farmers. In 10 years' time as 519,097 farmers migrate from the 45-54 age group to the 55-64 age group there are only 223,386 farmers currently aged 35-44 to replace them leaving a void of 295,711 farmers. In 20 years' time the group currently 55 or older numbers 1,353,901 but the group replacing them number only 742,483. Of course more and more young farmers will enter the business but the problem is not the absolute number but the rate at which they are entering the business. What Figure 4-4 suggests is a basic problem in population dynamics in which the rate at which people exit farming exceeds the rate at which there are new entrants will ultimately result in a significant economic adjustment.

What will this require? If buyers are fewer than is required to absorb land put up for sale upon retirement then land prices must fall, and in fact will fall, until it is low enough to attract new entrants. On the other hand, existing farmers must purchase that land and expand their own operations which will require substantial capital investments and access to credit and credit markets. If capital is available then farmers wishing to expand might compete and bid up land prices. Failing this is an opening for corporate-agriculture-what has in previous days been called the suitcase farmers – made up of equity investment funds that will purchase farmland as an investment and redistribute its worth amongst multiple owners in the form of shares with the land being managed by private farm management companies. Should these shares become tradable on formal markets their values can rise and fall on speculative forces by traders who may or may not know anything about commodity markets let alone agriculture? Initially it will be more or less true that the value of such shares will be valued according to measureable farm conditions, but one can imagine where the weight of shares so traded, and the number of traders so large, that there will be a tipping point at which it will become the equities markets and not agricultural conditions that will ultimately determine the value of land. This is rather critical. Cash flows from agriculture are typically uncorrelated with cash flows in the industrial sector and this degree of correlation is very attractive to mutual and pension funds for diversification purposes. Thus the demand for shares on agricultural land will put additional and upward pressure on the price for farmland.

### **New York Dairy**

2012 has been a year of mixed blessings for New York farmers with much of the state escaping the full throat of the great drought that browned the Midwest and record high prices for grains and oilseeds. For many farmers in the crop sector revenues driven by higher prices offset reduced yields. But as so much of agriculture history tells us the magical web of the cob-cycle ensures that it is a zero sum gain with one sector of the economy thriving but at the expense of another sector. For livestock and dairy farmers the rise in corn, soybean and forage prices was dramatic. If there is one law that always stands it is the law of economics and in 2012 the gavel defining the laws swung many times.

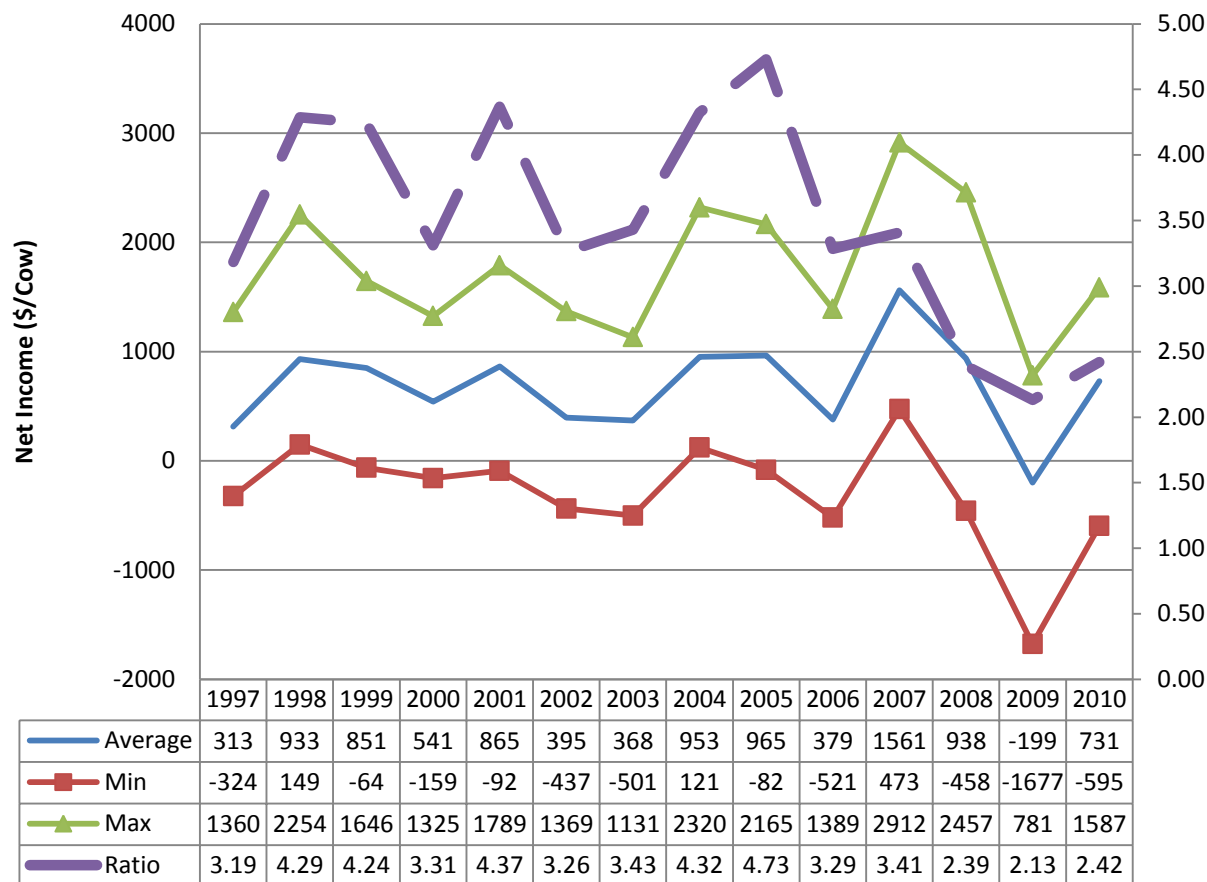


To say the least, the agricultural economy was not ready for a drought of the magnitude seen in the Midwest. The structure of agriculture has changed dramatically especially since 2007 when ethanol standards were set and this change has resulted in a new demand with even greater inelasticity than before. Tying the price of corn to gas, which in turn is driven by global oil markets, means that a structural shift has occurred removing part of commodity volatility from the food chain (feed and processing) to some combination of energy markets and food demand. From this point the agricultural cobweb cycle starts with more land being put into corn production, and fewer in other grains and oilseeds. That lower supply coupled with increasing global demand results in all-round increase in crop prices that is favorable to crop producers but placing great stressors on dairy and livestock producers, particularly grain fed cow calf and finishing operations and poultry in which the key cost driver is corn. The Midwest drought of 2012 did not help matters. While more than 80% of crop farmers will receive some relief through crop insurance protection for dairy and livestock producers, beyond futures and options, is limited.

At the beginning of 2012 the Class III futures prices was \$17.34/cwt which was 19.2% lower than its all-time high of \$21.46 on August 29<sup>th</sup> 2011. Corn at the turn of the New Year was \$5.95/bu. By the beginning of February 2012 Class III milk prices had fallen below \$16/cwt while corn was rising towards \$6.50 per bushel. On April 11<sup>th</sup> milk futures fell below \$15 while corn prices held steady, but by mid-June concerns over a drought in the mid-west became more of a worry and on July 3 corn broke \$7/bu and milk futures had once again broken \$17 to close at \$17.25. About two weeks later on August 19<sup>th</sup> corn futures broke the \$8 mark. At the time of this writing on November 14<sup>th</sup> 2012 corn was holding steady around \$7.26 and milk, now oscillating between \$19 and \$20 was at \$19.69. For the year corn prices were up 22% while milk price were up 13.5%. Corn peaked at an all-time high of \$8.3125 on August 21 2012 and on September 4 soybeans hit an all-time price of \$17.71/bushel. The cost of feed calculated using weights on corn, soybean and hay prices as calculated for the MILC program started out the year at \$11.071/cwt rising by 14.4% to \$12.66/cwt. The Milk to corn (milk/corn) price ratio started out at 2.67 in January 2012 and closed at 2.71 as of November 14<sup>th</sup> 2012.

Given these changes in market structure and market volatility the ratio of class III milk future to corn futures becomes an important indicator of a price-cost or margin squeeze in the dairy sector. The ratio works in a couple of dimensions but most important as milk prices rise relative to the price of corn margins tend to increase, as corn prices rise relative to milk the ratio falls. In fact it does not really matter whether milk prices rise by 13.5% if corn prices – which makes up the bulk of feed costs – rise at a faster rate of 22%.

To investigate whether there is a strong relationship between net income per cow and the milk/corn price ratio we gathered the records from 35 dairies in New York who had participated in Cornell's Dairy Farm Summary Project between 1997 and 2010. We then averaged the costs across all farms and also identified the highest and lowest incomes for each year. The results of this investigation are shown in Figure 4-6.

**FIGURE 4-6 DAIRY INCOME PER COW AND MILK/CORN RATIO**

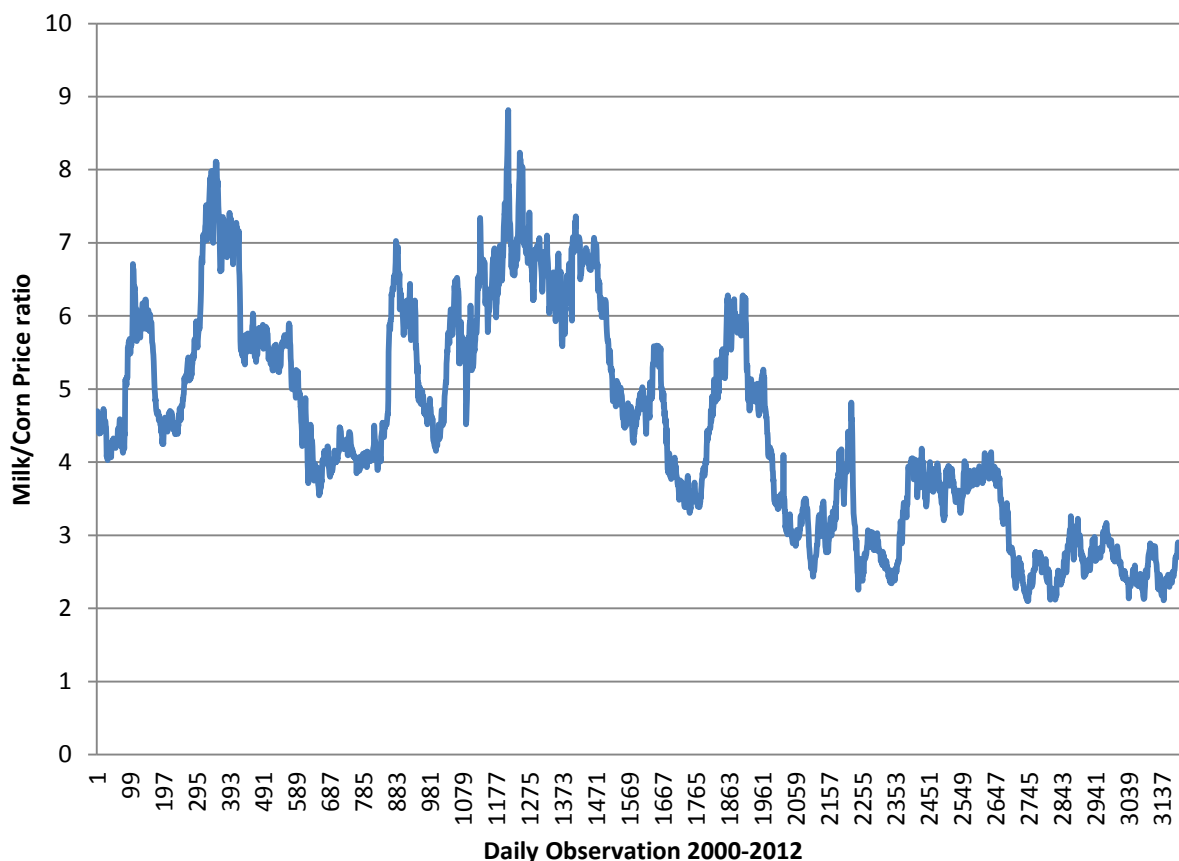
Dairy Income per Cow and the Milk/Corn Price ratio 1997-2010

It can be seen from Figure 4-6 that there is a strong relationship between the ratio as an indicator of stress for all three farm types. Using statistical techniques (linear regression) it is found for the average farm that a 1 unit increase in the price ratio increases income/cow by \$248/year, for the low income farms it is \$429.42/cow and for the high valued farm it is \$273.22/cow. Most certainly efficiency is a good hedge against a margin squeeze but when the ratio falls from 3.5 to 2.5 a less efficient farm would see a reduction of \$429.42/cow.

And why is this important? If we examine the price ratio between 2000 and 2007 (Figure 4-7) when ethanol standards were set and corn markets began to respond the average price ratio were 5.39. But from 2008 to the present that ratio has fallen by 43.8% to an average of 3.03. By these calculations the net income per cow between 2000-2007 and 2008-2012 would have fallen by \$585.28/cow. For the less efficient farms the reduction is on average \$1,103/cow. On August 10<sup>th</sup> 2012 the price ratio hit an all-time low of 2.109 when corn closed at \$8.20 and Class III milk closed at \$17.3. So in 2012 with the ratio averaging 2.52 farm income per cow might be \$1,232 lower than the 2000-2007 periods for the low efficiency farms and \$711.76/cow for the average farm.

Using daily data from 2000 to 2012 the mean ratio was 4.48 but with a standard deviation of 1.48 measured on a daily basis. In terms of the change in the ratio, it has been declining on average at a rate of about 4.15% per year but is highly volatile with an annual volatility of 40.8%. This means that year over year there is a 67% chance that the ratio will be higher or lower by as much as 40.8%.

**FIGURE 4-7 CLASS III FUTURES TO CORN FUTURES PRICE RATIO 2000-2012 DAILY**

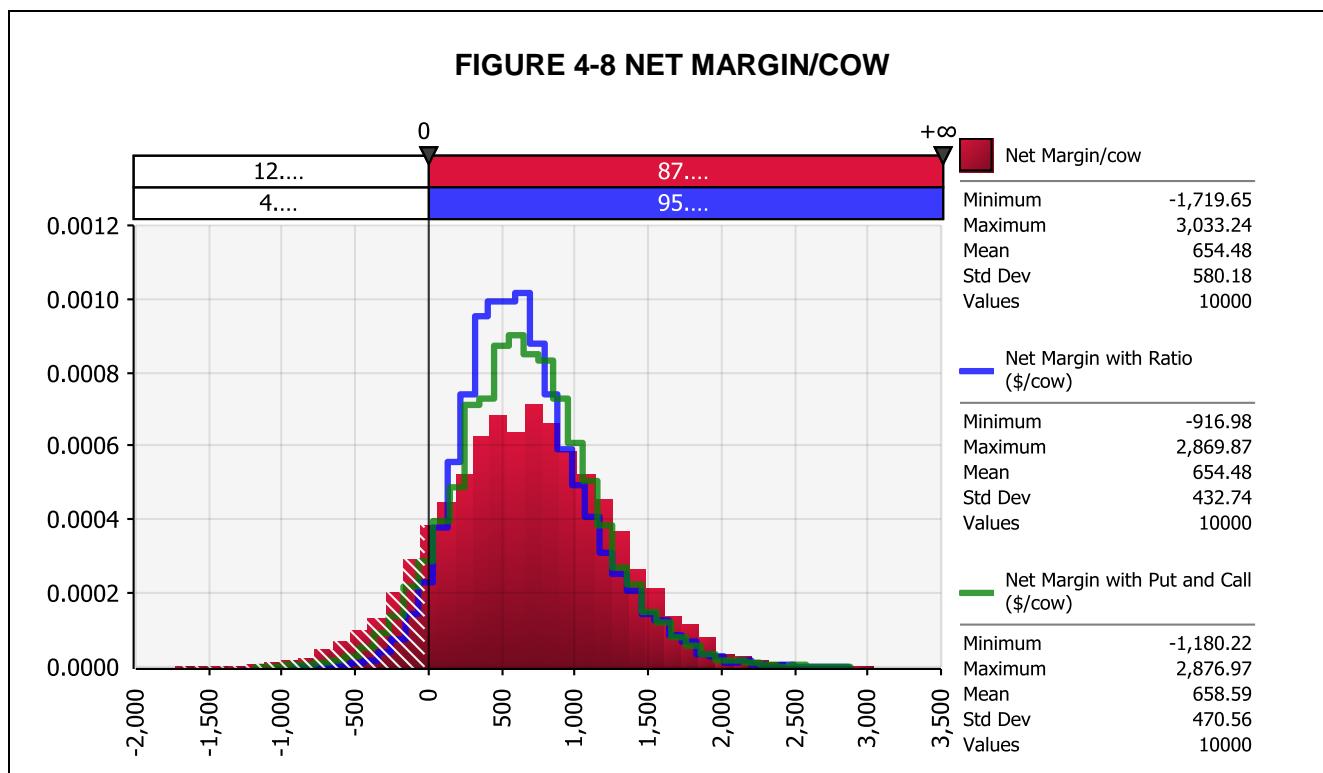


Milk to Corn Price Ratio

### **Risk Management Using the Corn to Price Ratio**

The corn to price ratio is interesting. First, it is comprised of observable market prices. The ratio as shown in Figure 4-7 is calculated using daily close prices of the nearby Class III milk and corn futures contracts. Second it places no bounds on the prices of either commodity. The basic rule that is the price of corn increases faster than the price of milk farmers' margins will be pressed regardless of whether the price of milk is at \$13 or \$20. Third, the milk to feed cost ratio is widely regarded as an indicator of farm profitability and because the price of corn dominates feed costs using the milk to corn price ratio provides a highly correlated metric of farm performance as previously shown in Figure 4-6. Fourth, because the ratio is comprised of two tradable futures contracts, the ratio itself can be efficiently priced in a market and can thus be used as a legitimate hedging instrument, perhaps even as a substitute for the current or proposed MILC program.

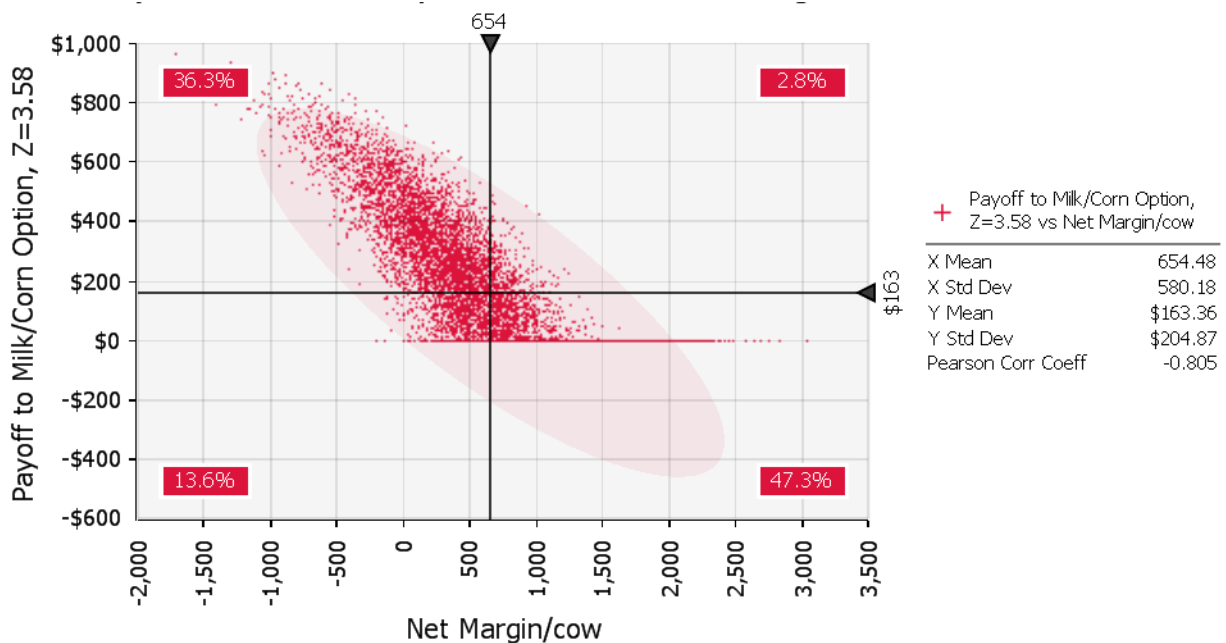
We investigate this and without providing the technical details we designed an option (insurance on the Class III to corn price futures ratio) based upon the average annual ratio so that the accumulated rise and fall in milk and feed prices that make up farmers' income are adequately captured. The average milk to corn price ratio is about 3.58 so we use this as the strike price and consider an Asian option which will pay out \$507 for every 1 unit drop in the ratio. For example if the average ratio is 2.58 the farmer will receive  $(3.58 - 2.58) \times 507 = \$507/\text{cow}$ . We also allow for variability in milk production as well as variability in other feed cost components such as soybeans and hay. As points of comparison we also compare the ratio outcomes against a strategy which buys milk put options at the money and corn call options at the money as well as the payout based on the MILC program which also has options like qualities.



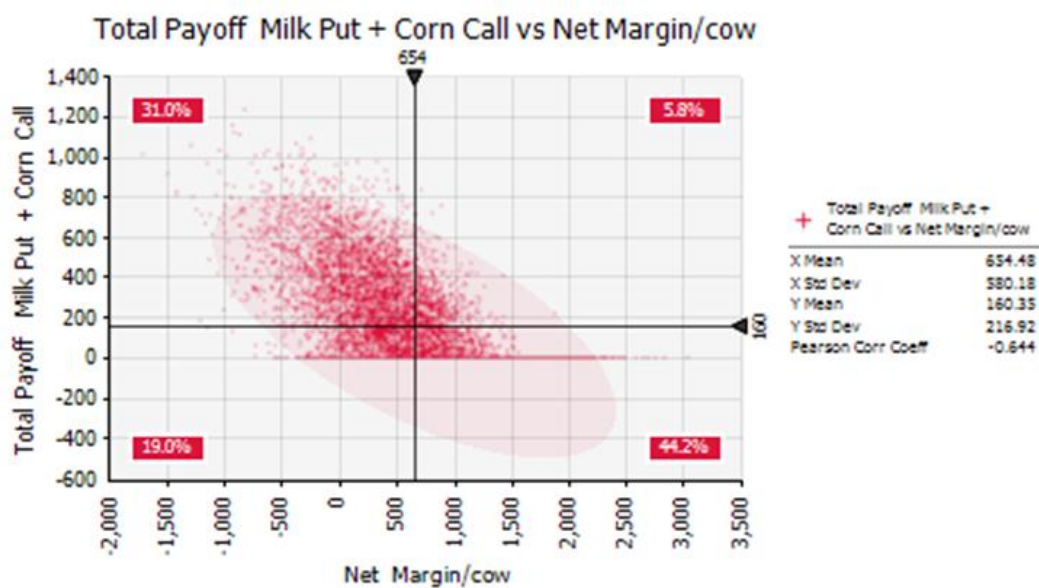
Probability distributions of Net Margin per Cow with and without Options

Figure 4-8 provides the probability distribution for these results. Using random number techniques (Monte Carlo simulation) the lowest margin without protection is -\$1,719.65 but with the option on ratio the lowest simulated outcome is -\$916.98 and with market calls and puts it is -\$1,180.22. Thus it appears that offering protection based on the milk/corn price ratio does a better job of reducing downside risk than conventional options strategies.

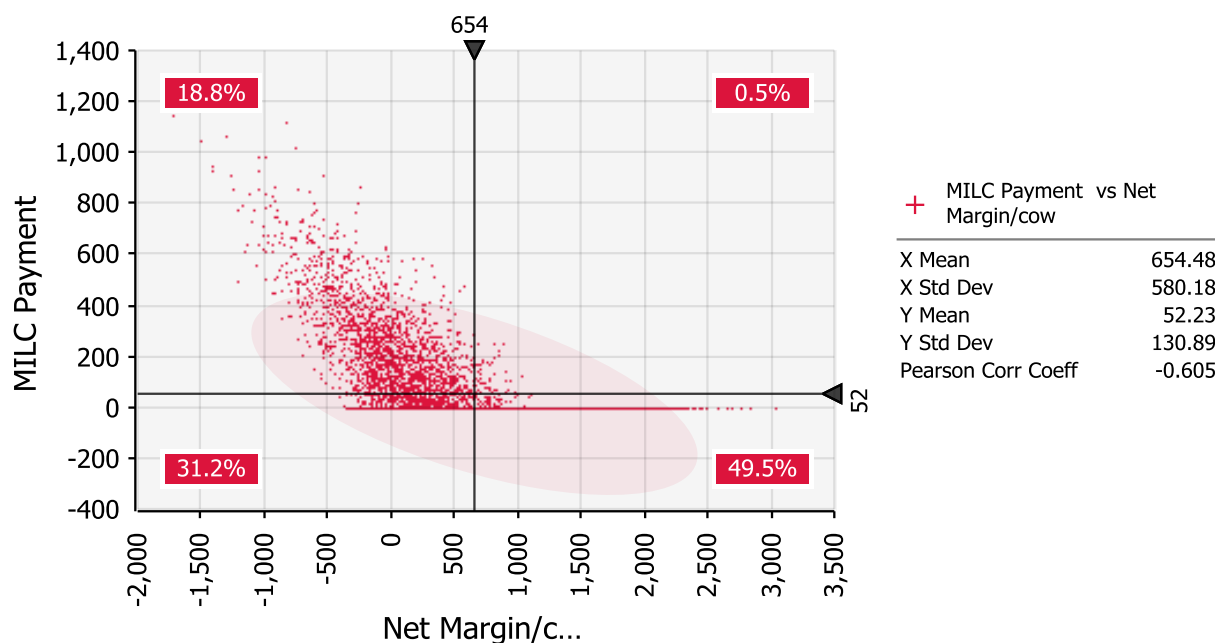
In Figures 4-9 to 4-11 we plot out the payoff structure of the option (measured on the Y-axis) and margin per cow (measured on the x-axis). What is important to note is the tightness of the payoffs in the upward sloping part of Figure 4-7 relative to the other two strategies. This again indicates that the ratio does a better job of targeting market risk and is more likely to provide a payoff when it is needed rather than when it is not (the difference being called basis risk).

**FIGURE 4-9 PAYOFF TO MILK/CORN OPTION, Z=3.58 VS NET MARGIN/COW**

Options Payoff to Milk/Corn Asian Option

**FIGURE 4-10 PAYOFF TO NAÏVE MILK PUT + CORN CALL ASIAN OPTION**

Options Payoff to Put Option on Milk Price and Call Option on Corn Price

**FIGURE 4-11 MILC PAYMENT VS NET MARGIN/COW**

Options Payoff to MILC Payment

**Summary and Conclusions**

2012 has been a mixed year for New York farmers. On the one hand the drought has resulted in lower crop yields but the increases in prices have for many offset the yield losses. In addition crop farmers have access to crop insurance will also provide many with protection. We focused on the dairy industry because the ratio of milk to corn prices indicate that for many farmers the cost price squeeze will lead to reduced profits. Farmers with diversified livestock and crop operations or grew enough grain and forage will fare better than farmers who are less diversified and rely on purchased feed. All indications suggest that once the year's production is tabulated net income per cow will not likely be much higher than in 2011. We also commented on the source of corn price volatility in relationship to ethanol prices and warn that so long as the price of food is linked through ethanol to global oil prices large swings in feed prices can be expected.

We also believe that it is time to reconsider risk management strategies for dairy and livestock farms. The Milk to corn price ratio as we defined it based on futures contracts is a transparent metric that is highly correlated with farm incomes per cow. While exploratory at this time it is important that innovative approaches to risk management be investigated.

Even so it appears that farmland values are increasing but only at a rate of about 8% a year which is far below the 25% increases that have been recorded in several western states. This may be the beginnings of a bubble but should that bubble burst the impact on New York's agricultural economy will be far less severe than in other states in which few economists can provide any economic justification for substantial price increases.

State wide uncertainty will put some farms under financial pressure and Farm Credit East, as an example, has increased loan loss provisions as a precaution. But many NY farmers have no debt and typically the New York farmer does not have so much debt that a year such as 2012 will result in significant defaults. Even farms that have been hit fairly hard will generally have enough liquidity reserves in terms of cash, liquid investments, feed inventories, and unused short term credit capacity to remain afloat.

Using national data it was noted that there is an age discrepancy amongst farmers. Within the next 10 years there will be a large number of farmers retiring and it is not evident that there are enough new farmers to replenish the numbers. This will result in large structural changes to agriculture within the next decades but in the short run is not of great concern.





## **Chapter 5. Grain and Feed**

A. Edward Staehr, Sr. Extension Associate

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The past year was another year of volatility in the grain markets. Predictions for reduced grain prices, in the wake of record planting intentions resulted in lower futures prices for a short time. Optimism for reduced feed prices eroded as news of a strengthening drought affected the markets. Commodity prices surpassed the previous year's gains and continued to strengthen until recent reports were released. Income growth in China is merely one factor that has fueled commodity prices. Although China's economic growth slowed, there was growth in total meat demand, resulting in a 3.6% increase over last year. By the end of the decade, pork production in China is projected to grow by approximately 20 %. China's appetite for commodities has also resulted in an increase in nitrogen demand of 25 % in the last ten years.

Uncertainty over avoiding the "fiscal cliff" also impacts commodity prices and could result in lower prices for commodities. On the other side of the Atlantic, actions taken by EU countries to strengthen the Euro will have an impact on commodity prices. If there is a default on debt, commodity prices would likely decline. An area to watch is bond yields by countries in the EU, especially Italy and Spain. Rising bond yields indicate a lack of confidence in a country's ability to repay its debt.

Another concern this coming year centers on our capacity to rebuild major commodity stocks. Record tight carry over supplies of most commodities will make any news of yield potential a major influence on markets. Drought conditions have improved in the Eastern Corn Belt; however, there are concerns over improvement in other regions of the Corn Belt.

### **Wheat**

Projected hard red winter wheat plantings are up by 1.5 million acres, when compared to last year; however, increased exports and feed use are expected to decrease ending stocks from the previous year. Feed use is expected to be the largest since 1998 to 1999, and is a result of low corn supply. Harvested acres of 49.0 million acres in 2012/13 are projected to be 3.3 million acres over the previous year (Table 5-1). Projected production will increase over the previous year; however, increased food and feed use is expected to result in lower stocks to use when compared to last year.

Increased wheat supplies are expected to be more than offset by increased use (up 9.3%), and are projected at 2.27 bb (Table 5-1). Export projections are expected to show a slight increase over the last year. Should corn supplies remain tight, wheat feeding will remain higher over last year.

U.S. ending stocks are projected at 704 million bushels, down from 2011/12, but consistent with lower overall use projected in 2012/13 (Table 5-1). Ending stocks have decreased over the last two years, relative to use. Two years ago, ending stocks were 35.7% compared to use. World wheat stocks are projected to decrease, with a stocks-to-use ratio that is expected to be 25.6%, compared to 28.8% in the previous year. Projected foreign stocks to use are also expected to decline by 2.6 percent compared to the previous year.

<b>TABLE 5-1. U.S. SUPPLY AND DEMAND BALANCE SHEET FOR WHEAT<sup>a</sup></b>			
	2010-2011	2011-12E	2012-13P
<b>Supply:</b>			
Harvested Acres (million)	47.6	45.7	49.0
Yield (bushels per acre)	46.3	43.7	46.3
	(Million Bushels)		
Beginning Stocks	976	862	743
Production	2,207	1,999	2,269
Imports	97	112	130
<b>Total Supply</b>	<b>3,279</b>	<b>2,947</b>	<b>3,142</b>
<b>Use:</b>			
Food	926	941	950
Seed	71	76	73
Feed and Residual	132	164	315
<b>Total Domestic Use</b>	<b>1,128</b>	<b>1,182</b>	<b>1,138</b>
Exports	1,289	1,050	1,100
<b>Total Use</b>	<b>2,417</b>	<b>2,231</b>	<b>2,438</b>
Ending Stocks	862	743	704
Stocks/Use Ratio	35.7%	33.3%	28.9%
Avg. Farm Price, U.S., \$ per bushel	\$5.70	\$7.24	\$7.75 \$8.45
Avg. Farm Price, NYS, \$ per bushel	\$7.10	\$ -	\$ -
Note : Totals may not add due to rounding; marketing year beginning June 1; E = estimated, P = projected. <sup>a</sup> U.S. data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2012) WASDE-512, P.11. New York State (NYS) data from "Field Crop Data," USDA NASS, New York Field Office, <a href="http://www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/FieldCrops/FieldCropsIndex.htm">www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/FieldCrops/FieldCropsIndex.htm</a> .			

Higher corn prices are supportive to wheat prices, and encourage the use of wheat for feed. This is expected to result in a relatively high average wheat price during 2012/13 (on a market-year basis) with a price range that varies from \$7.75 per bushel to \$8.45 per bushel. Record high wheat prices have not discouraged increased use of wheat for both food and feed. A consequence of such demand is that a minor change in supply may cause a significant variability in prices.

Continued tightness in corn stocks, and the threat of a persistent drought in wheat growing regions will be a supportive factor in the price of wheat. Higher and volatile wheat prices are expected into next year. Futures markets' prices are one way to assess market expectations about the ability of future supplies to meet growing demands. Given current and expected supply and demand levels, as of 28 November 2012, December 2012 futures contracts are over \$8.75 per bushel, with per bushel (about \$2.80 more than year-prior levels), with one- and two-year-out contracts trading in excess of \$8 per bushel and approaching \$9 (Table 5-2). USDA forecasts appear high relative to the Chicago futures. However, the Chicago (CME) futures contract is pricing for soft red winter wheat. Kansas City (KSBT) futures contract prices are for hard red winter wheat, which is the primary wheat type grown in the United States, and have December futures trading in the \$9.18 range. The Minneapolis Grain Exchange (MGEX) reports on hard red spring wheat, and is currently trading at over \$9.41 per bu. New market information will continue to drive prices, in light of a projected decrease in stocks relative to use.

**TABLE 5-2. FUTURES PRICES FOR WHEAT,  
CHICAGO MERCANTILE EXCHANGE,  
28 NOVEMBER 2012**

Contract Month	\$ per bushel
December 2012	\$8.760
March 2013	8.912
May 2013	8.976
July 2013	8.887
September 2013	8.920
December 2013	8.984
December 2014	8.534

## **Corn**

Table 5-3 provides a supply-demand balance sheet for corn in the United States as of 9 November 2012. Projected U.S. 2012 corn yields are 122.3 bushels per acre, lower than last year's yield of 147.2 bushels per acre and 142.2 bushels in 2003. A persistent drought in the majority of the Corn Belt has impacted 2012 corn yields, despite record plantings. Although farmers planted an additional 5 million acres of planted corn compared to last year, total production has decreased by over 1.6 billion bushels compared to last year.

The November USDA WASDE report increased projected U.S. production by an average of 0.3 bushel per acre and left harvested acreage unchanged from the previous report. This projection of lower U.S. corn production follows a year of reduced yield expectations. This has resulted in significant tightening of U.S. corn supply-demand balances and has provided support for record high U.S. corn prices in the 2011/12 marketing year. Beginning stocks of 647 million bushels is the lowest level since record lows of 1995/96. Total U.S. corn supply for 2012/13 is estimated at 11.814 billion bushels (bb), down from last year's supply of 13.515 bb and significantly below that of 14.182 bb in 2010-2011 (Table 5-3).

USDA adjusted projected imports up from the October WASDE report, and also increased yield slightly. This results in a 20 cent decrease in price at the mid-point. Corn imports are projected to increase from 75 million bushels in October's estimate to 100 million bushels for the coming year. In marketing year 2011 through 2012, US corn imports were 29 million bushels. Corn for ethanol use projections are down by over 10.2 million bushels when compared to last year. The Volumetric Ethanol Excise Tax Credit (VEETC) expired at the end of last year, and is a factor contributing to lower ethanol production.

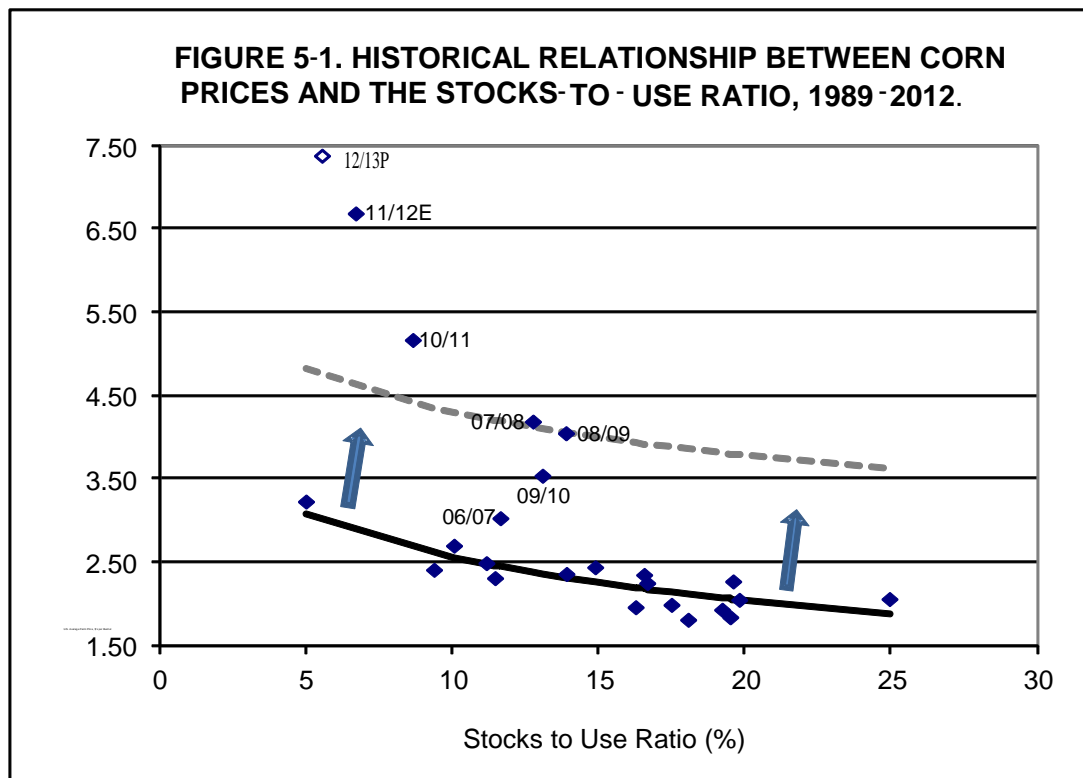
A continuous reduction in US corn exports over the last two years could have a long term impact, as purchasers source corn from other countries or expand their domestic production. Exports are projected to decline to a level lower than the previous record low set in 1993/1994. Rebuilding export demand for corn could be challenging in the future and affect corn price.

<b>TABLE 5-3. U.S. SUPPLY AND DEMAND BALANCE SHEET FOR CORN<sup>a</sup></b>			
	2010-2011	2011-12E	2012-13P
<b>Supply:</b>			
Harvested Acres (million)	81.4	84.0	87.7
Yield (bushels per acre)	152.8	147.2	122.3
	(Million Bushels)		
Beginning Stocks	1,708	1,128	988
Production	12,447	12,358	10,725
Imports	28	29	100
<b>Total Supply</b>	<b>14,182</b>	<b>13,515</b>	<b>11,184</b>
<b>Use:</b>			
Feed and Residual	4,795	4,547	4,150
Food, Seed and Industrial	6,426	6,437	5,867
Ethanol and By-Products <sup>b</sup>	5,019	5,011	4,500
<b>Total Domestic Use</b>	<b>11,221</b>	<b>10,984</b>	<b>10,017</b>
Exports	1,834	1,543	1,150
<b>Total Use</b>	<b>13,055</b>	<b>12,527</b>	<b>11,167</b>
Ending Stocks	1,128	988	647
<b>Stocks/Use Ratio</b>	<b>8.6%</b>	<b>7.9%</b>	<b>5.8%</b>
Avg. Farm Price, U.S., \$ per bushel	\$3.55	\$6.22	\$6.95 \$8.25
Avg. Farm Price, NYS, \$ per bushel	\$4.02	\$6.55	\$ -
Note : Totals may not add due to rounding; marketing year beginning September 1; E = estimated, P = projected. <sup>a</sup> U.S. data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2012) WASDE-512, P.12. New York State (NYS) data from "Field Crop Data," USDA NASS, New York Field Office, <a href="http://www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/Field_Crops/FieldCropsIndex.htm">www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/Field_Crops/FieldCropsIndex.htm</a> . <sup>b</sup> Corn used to produce ethanol and by-products including distillers' grains, corn gluten feed, corn gluten meal, and corn oil. It is included in the food, seed, and industrial category and is presented for illustrative purposes.			

U.S corn ending stocks are projected to be 647 million bushels, or 5.8% relative to total use (Table 5-3). This projection of stocks-to-use is down from 7.9 % last year and 8.6% in 2010/11. Ending stocks may be revised in the January WASDE report. In recent history, the lowest stocks to use ratio of 5% occurred during the 1995 through 1996 marketing year. Any production concerns could significantly impact prices during the following year.

Federal legislation proposed during the last year (HR 3097) entitled "The Renewable Fuel Standard Flexibility Act," and aims to base the Renewable Fuel Standard on projected corn stocks-to-use ratios. The bill was introduced to the Senate and referred to committee this July. For more information, one can go to <http://www.govtrack.us/congress/bills/112/s3428> to see the status of this bill. If stocks to use are greater than 10%, there will be no change in the standard. However, when stocks-to-use fall below this level, reductions in RFS mandates will be triggered.

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 5-1). The observations for 1989/90 through 2005/06 have a constant relationship (i.e., the lower collection of points on the figure and estimated solid trend line). During this time, the demand for corn was growing, but supply growth was keeping up with the demand; hence, the mean price over those years was stable. A small upward shift is observable in 2006/07, followed by larger shifts in 2007/08 through 2009/10. The 2012/2013P combination represents another sizable price jump. Some may make the case that we are now in a new plateau of prices; i.e., the mean has shifted (and represented by the dashed line). However, a case was made in the mid 1990's that corn prices would remain at high levels, only to significantly decline when production and world economic factors changed. This graph illustrates how relatively small changes in supply can affect price movement.



The USDA Foreign Agricultural Service increased total world coarse grain production slightly from October to November. Ending stocks were increased from 146.316 million metric tons in October to 147.075 million metric tons in November. Despite increased production prospects, this is still below last year's total production of 1.151 billion metric tons (Table 5-4A). Production increases in China, Argentina, and Mexico partially offset decreases in other countries.

The world's use and stock balances for corn are summarized in Table 5-4. Total use is projected to be over 853.29 million metric tons in 2012/13. This is a 3.1% decrease over the previous year, but is still above levels used during 2010 through 2011. As incomes in developing countries rise, demand for food increases. 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 13.7% is projected for 2012/13 -- a lower level in recent history not seen since the level observed in 2006/07.

**TABLE 5-4A**  
**. WORLD COARSE GRAINS PRODUCTION**  
In Thousand Metric Tons

	2008/09	2009/10	2010/11	2011/12	2012/13Oct	2012/13Nov
Production						
Argentina	19,634	30,231	33,258	30,105	39,052	39,352
Australia	12,280	10,920	11,472	12,905	11,422	11,422
Brazil	53,486	58,412	60,380	75,883	73,493	73,493
Canada	27,184	22,477	22,263	21,831	23,635	23,635
China	172,391	169,775	183,398	199,660	207,010	207,010
Ethiopia	9,034	8,046	10,469	11,435	11,330	11,330
EU-27	162,102	155,038	140,497	147,149	140,995	140,276
India	39,550	33,890	43,370	42,060	37,610	37,610
Indonesia	8,700	6,900	6,800	8,900	8,500	8,900
Mexico	32,222	27,273	29,226	25,707	28,978	27,778
Nigeria	26,670	23,250	23,250	23,800	24,010	24,010
Russia	40,881	31,843	16,416	32,796	27,850	28,350
South Africa	13,084	13,881	11,321	12,497	13,973	13,973
Turkey	10,408	11,176	10,185	11,275	10,175	10,575
Ukraine	26,275	24,143	21,442	33,336	29,060	29,060
Others	131,832	137,277	143,946	138,203	138,794	139,394
Subtotal	785,733	764,532	767,693	827,542	825,887	826,168
United States	325,867	348,755	330,236	323,697	284,240	284,840
World Total	1,111,600	1,113,287	1,097,929	1,151,239	1,110,127	1,111,008

Source: USDA Foreign Agricultural Service

**TABLE 5-4. WORLD SUPPLY-DEMAND BALANCE FOR CORN,  
2005-06 to 2012-13<sup>a</sup>**

Marketing Year	Domestic Use	Ending Stocks	Stocks/ Use Ratio
	(Million Metric Tons)		(%)
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 – 10	822.76	144.05	17.5
2010 – 11	849.24	127.00	14.9
2011 – 12E	880.49	132.08	15.0
2012 – 13P	853.29	117.27	13.7

<sup>a</sup>Data from USDA, "World Agricultural Supply and Demand Estimates". Various issues; E = estimated, P = projected

Price quotations for corn futures for nearby and distant contracts, as of 28 November 2012, help summarize the current situation (Table 5-5). Research suggests that these prices are an adequate 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, going out one year, corn is expected to be \$1.21 per bushel lower than today, and corn for delivery in December 2014 is expected to be \$1.59 lower when compared to corn for delivery this year. Acres planted to corn this spring were at record levels, and for spring 2013, high prices will be a major influence on planting decisions. The market is expecting an increase in production, and there is limited incentive for farmers to store grain. Price differences in the current month, compared to future months do not warrant storing grain until summer.

Since the USDA November report release, corn prices have come down marginally, but remain highly variable from day to day. In summary, look for continued tight supply-demand conditions and historically high feed grain prices at least through July 2013, with a necessity to replenish stocks amid strong competition for crop acres. Concerns about sufficient U.S. corn supplies will make production risks from weather increasingly problematic. Price volatility will be on continued high alert until an ample crop is confirmed next year.

**TABLE 5-5. FUTURES PRICES FOR CORN,  
CHICAGO MERCANTILE EXCHANGE,  
28 NOVEMBER 2012**

Contract Month	- \$ per bushel-
December 2012	\$7.602
March 2013	7.640
May 2013	7.610
July 2013	7.530
September 2013	6.606
December 2013	6.396
December 2014	6.016

### **Soybeans**

Current crop soybean projections were increased by 111 million bushels in the November crop report, when compared to October. Soybean imports are expected to be 4 million bushels greater this year, compared to last year. However, projected exports were raised by 80 million bushels in the November crop report relative to the October report. Although harvested acres increased over last year, total supply decreased, owing to a persistent drought in the Midwest and other areas. The supply and demand balance sheet for soybeans is summarized in Table 5-6. An increase in harvested acres by 1.9 million acres was not enough to offset a 2.6 bushel per acre decrease in yield. Weather stress at pod filling time contributed to lower yields, with estimated U.S. production in 2012/13 reduced to 2.97 bb, a 3.97% reduction from 2011/12. Continued reductions in projected crop production, combined with lower beginning stocks from year-ago levels imply a total supply for 2012/13 of 3.021 bb, off 4.2% from last year.



<b>TABLE 5-6. U.S. SUPPLY AND DEMAND BALANCE SHEET FOR SOYBEANS<sup>a</sup></b>			
	2010-2011	2011-2012E	2012-13P
<b>Supply:</b>			
Harvested Acres (millions)	76.6	73.8	75.7
Yield (bushels per acre)	43.5	41.9	39.3
	(Million Bushels)		
Beginning Stocks	151	215	169
Production	3,329	3,094	2,971
Imports	14	16	20
<b>Total Supply</b>	<b>3,495</b>	<b>3,325</b>	<b>3,160</b>
<b>Use:</b>			
Crushings	1,648	1,703	1,560
Exports	1,501	1,362	1,345
Seed	87	90	89
Residual	43	1	29
<b>Total Use</b>	<b>3,280</b>	<b>3,155</b>	<b>3,021</b>
Ending Stocks	215	169	140
Stocks/Use Ratio	6.6%	5.4%	4.6%
Avg. Farm Price, U.S., \$ per bushel	\$11.30	\$12.50	\$13.90 \$15.90
Avg. Farm Price, NYS, \$ per bushel	\$9.10	\$11.00	\$ -
Note : Totals may not add due to rounding; marketing year beginning September 1; E = estimated, P = projected. <sup>a</sup> U.S. data from USDA, "World Agricultural Supply and Demand Estimates," (November 9, 2012) WASDE-512, P.15. New York State (NYS) data from "Field Crop Data," USDA NASS, New York Field Office, <a href="http://www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/Field_Crops/FieldCropsIndex.htm">www.nass.usda.gov/statistics_by_State/New_York/Historical_Data/Field_Crops/FieldCropsIndex.htm</a> .			

Most of the movement on the use side has been on changes in expected export sales for the United States. USDA's November forecast increased soybean exports by 80 million bushels over October's estimate, resulting in a 6.3% increase. (Table 5-6). Export sales, although increased over previous projections, are still expected to be 1.2% lower than last year. Until Brazil's soybean crop is harvested, there may be increased export demand over current projections. However, Brazil is expected to surpass the United States as the world's largest soybean producer in the next year.

Ending stocks are expected decrease by 0.8% compared to last year, and are having an impact on price. An increase of 4.2% in total use, along with consistent exports compared to last year resulted in a stocks to use ratio of 4.6%. Corn will be competing with soybeans for planted acreage this spring.

Increased yield projections in November compared to October have increased ending stocks by 10 million bushels, or a 7.69% increase over October. Global supply balance for soybeans is not as tight as it is for corn, with a 2012/13 projected stocks-to-use ratio of 21.8%, a level only surpassed in 2008-2009 (Table 5-7). Continued growth in world soybean use despite a return to production levels seen in 2010 through 2011 is a significant factor affecting prices. Import demand in China remains strong and accounts for over 50% of all imports.

<b>TABLE 5-7. WORLD SUPPLY-DEMAND BALANCE FOR SOYBEANS, 2005-06 to 2012-13<sup>a</sup></b>			
Marketing Year	Domestic Use	Ending Stocks	Stocks/ Use Ratio
	(Million Metric Tons)		(%)
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
2009-2010	238.22	59.41	24.9
2010 – 11	251.51	70.44	28.0
2011– 12E	239.22	56.00	23.4
2012 – 13P	264.28	57.56	21.8
<sup>a</sup> Data from USDA, "World Agricultural Supply and Demand Estimates". Various issues; E = estimated, P = projected			

Average farm prices are projected to be higher than last year, with a forecasted range between \$13.90 and \$15.90 per bushel. While prices have moderated more recently, soybeans remain in a tenuously high price position, even relative to a new higher level of prices over the past few years. Given expectations for future supply, the market is expecting year-over-year decreases in futures commodity prices for beans and meal (Table 5-8). Last year at this time, January contracts were trading about \$2.78 per bu. lower for beans and were over \$102 per ton lower for meal. Since contracts for delivery in subsequent crop years are trading below prices than for current delivery, the implication is that markets are expecting increased production over the current crop year.

Uncertainty regarding potential policy changes relative to biofuels production will also be on the radar in soybean markets. The U.S. Renewable Fuels Standard includes mandates of minimum volumes of certain types of biofuels, e.g., conventional ethanol, biodiesel, and cellulosic ethanol. The total mandate increases to 36 billion gallons (bg) in 2022, with increasing submandated usage of at least 1 bg of biodiesel and 16 bg of biofuels from cellulosic biomass (both considered advanced biofuels). If the Administrator of the Environmental Protection Agency, after consultation with the Secretary of Agriculture, determines that the "implementation of the requirement would severely harm the economy or environment," he/she can waive part or the entire mandate. Waivers have already been granted on the cellulosic mandate, but the volumes were negligible in the first two years minimal impact was realized from the decisions.

<b>TABLE 5-8. FUTURES PRICES FOR SOYBEANS AND SOYBEAN MEAL, CHICAGO MERCANTILE EXCHANGE, 28 NOVEMBER 2012</b>		
Contract Month	Beans \$ per Bushel	Meal \$ per Ton
January 2013	\$14.462	\$432.7
March 2013	14.350	425.3
May 2013	14.104	411.7
July 2013	13.776	405.9
September 2013	13.406	386.2
November 2013	13.050	367.7 (Dec 2013)
November 2014	12.774	360.6 (Dec 2014)

Future waivers under larger volumes may very well influence grain and oilseed commodity prices, particularly if intra-category adjustments in conventional and advanced mandate levels are considered. Furthermore, biodiesel helps to meet the submandate for advanced biofuels, but other advanced biofuels do not help to meet the biodiesel mandate. Particular adjustments in biodiesel mandates may result in further adjustments in commodity prices for oilseeds.

### **Feeds**

Reduced production estimates for major feed commodities have increased prices for feed inputs and reduced livestock margins. According to ERS data, consumer meat prices are expected to increase over the next year. Beef prices increased 0.5 percent in October, resulting in a 5.5% increase over last October. ERS predicts that consumer beef prices this year will be 5.5 to 6.5% higher than last year. Consumer poultry prices increased 1.5% in October and are now 5.5% above last year's prices.

Domestic feed grain utilization in 2012/13 is projected 5.9% below last season, a result of reduced grain feeding in the face of record prices. Both beef and broiler animal product production is expected down in 2013 (-4.2% and -1.2%, respectively) from 2012 estimated levels. Pork production is forecast lower in early 2013 compared with 2012, down 1.4%. Projected milk production in 2013 is expected to be at the same level as 2012, suggesting a limited impact on grain consumption for dairy. However, total red meat and poultry exports are predicted to drop by 4.2% compared to last year.

Corn and soybean meal futures prices as of 28 November 2012 (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 year is shown in Table 5-9. They suggest, for example, that 18% protein dairy feed could be about \$20 per ton lower this coming spring than a year earlier. Hog feed costs are forecast to drop \$50 per ton while layer feed costs are forecast to decline \$12 per ton.

**TABLE 5-9. APRIL COMPLETE FEED PRICES FOR DAIRY AND LAYERS, NORTHEAST U.S., 2007-2012<sup>a</sup>**

Year	Dairy (18%)	Hog (14-18%)	Layer
2007	\$259	\$330	\$288
2008	312	376	332
2009	285	352	330
2010	272	284	368
2011	367	424	398
2012	376	461	422
2013F	356	414	410

<sup>a</sup> Historical prices from USDA *Agricultural Prices*. Authors' 2013 forecasts are based on CME March 2013 contract settlement prices (23 November 2012) for corn and soybean meal. Specifically, assumed prices are respectively: corn \$7.64 per bu, soybean meal \$425 per ton, distillers dried grains with solubles \$250 per ton, and meat & bone meal \$460 per ton.

These particular results assume, among other things, that corn prices will be \$7.64 per bu and soybean meal will be \$425 per ton for 2013. These prices are consistent with recent quotes for corn and soybean meal futures contracts for March delivery (and exclude basis adjustments). While the forecast estimates are a welcome reprieve from feed costs in 2012, the forecasts remain significantly above levels realized in 2007 for all three livestock sectors. 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.

The challenge is to buy feed or feed ingredients at prices that will provide an acceptable profit. Feed prices should not be looked at in isolation from output prices; it is the relative prices that are important. Thus, it is useful to think in terms of “assuring” a profit margin between feed costs and output prices. Market prices may not provide an acceptable margin at various points in time, but it is useful to look for opportunities to lock in an acceptable margin. In last year’s chapter, we examined two hedging examples – one for cattle feeding and one for milk production.

As also suggested previously, another possible way to protect against ingredient price increases is to consider buying call options on futures contracts. However, since the futures contract underlying the option has a volatile price, the premium paid for the option will be relatively high. On November 28, when the March corn futures settled at \$7.640 per bushel (Table 5-4), the at-the-money call (strike price of \$7.60) option’s premium was 33.3 cents per bu. In other words, a livestock farmer would have paid \$11.89 per ton to protect against corn prices rising above \$271 per ton. This may look like rather expensive price insurance, but the premium reflects the possibility that March corn prices were nearly \$8 per bu back in September. Is purchasing an option worth offsetting potential future risk?

## Chapter 6. Dairy — Markets and Policy

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### 2013 Dairy Outlook

Positive Factors:

- High levels of exports
- Modest increase in U.S. milk supplies
- Continued recovery of U.S. economy

Negative Factors:

- Continued dry weather conditions across much of the U.S.
- High feed prices
- Substantial increase in Oceania milk production

Uncertainties:

- Drought
- World economy influenced by the European Union
- Dairy Policies in a new Farm Bill

New York Dairy Situation and Outlook 2011, Projected 2012, and Estimated 2013					
Item				Percent Change	
	2011	2012	2013	11-12	12-13
Number of milk cows (thousand head)	610	610	610	0.0	0.0
Milk per cow (lbs.)	21,026	21,590	21,967	2.4	2.0
Total milk production (million lbs.)	12,826	13,170	13,400	2.4	2.0
Blended milk price (\$/cwt.) <sup>a</sup>	20.64	18.74	20.40	-9.2	8.9

<sup>a</sup> Northeast federal order statistical uniform price for farms shipping milk to Suffolk County, MA (Boston).

Table 6-1. U.S. Milk Supply and Utilization, 2004 - 2013

	2004*	2005	2006	2007	2008*	2009	2010	2011 <sup>a</sup>	2012* <sup>b</sup>	2013 <sup>c</sup>
<b>Supply</b>										
Cows Numbers (thous.)	9,011	9,043	9,137	9,189	9,315	9,203	9,119	9,194	9,237	9,221
Production/cow (lbs)	18,968	19,566	19,894	20,204	20,396	20,572	21,148	21,346	21,651	21,880
Production	170.9	176.9	181.8	185.7	190.0	189.3	192.8	196.3	200.0	201.8
Farm Use	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Marketings	169.9	175.9	180.8	184.6	189.0	188.4	191.9	195.3	199.1	200.8
Beginning Commercial Stocks	8.3	7.2	8.0	9.5	10.4	10.0	11.3	10.9	11.0	11.3
Imports	5.3	5.1	5.0	4.6	3.9	4.1	3.1	3.1	3.6	3.6
<b>Total Supply</b>	<b>183.6</b>	<b>188.2</b>	<b>193.8</b>	<b>198.8</b>	<b>203.3</b>	<b>202.5</b>	<b>206.3</b>	<b>209.3</b>	<b>213.6</b>	<b>215.7</b>
<b>Utilization</b>										
Commercial Disappearance	176.5	180.2	184.2	188.4	193.2	190.4	195.2	198.3	202.3	206.4
Ending Commercial Stocks	7.2	8.0	9.5	10.4	10.0	11.3	10.9	11.0	11.3	9.3
DEIP	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Removals (excluding DEIP)	-0.2	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.0	0.0
<b>Total Use</b>	<b>183.6</b>	<b>188.2</b>	<b>193.8</b>	<b>198.8</b>	<b>203.3</b>	<b>202.5</b>	<b>206.3</b>	<b>209.3</b>	<b>213.6</b>	<b>215.7</b>

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.

<sup>a</sup> Revised.

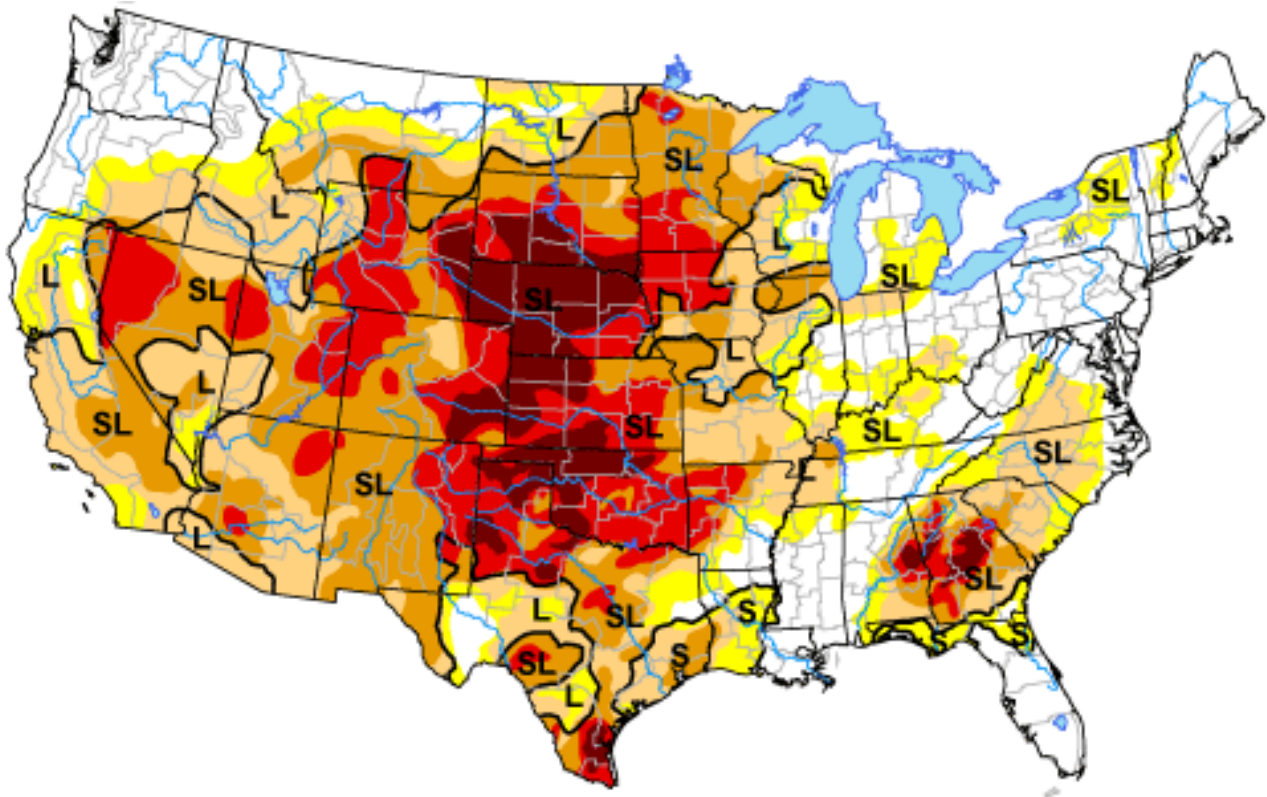
<sup>b</sup> Based on preliminary USDA data and Cornell estimates.

## The Dairy Situation

For dairy producers 2010 and 2011 were recovery years from the recession and low milk prices of 2009. The 2012 milk price declined by about two dollars per hundredweight from the all-time high average price of 2011, but producers might characterize 2012 as a “disastrous year” or a “middling year” depending on their business model or their geographic location. Milk production in New Zealand and widespread drought in the U.S. have really defined this year for the U.S. dairy industry.

## The Drought

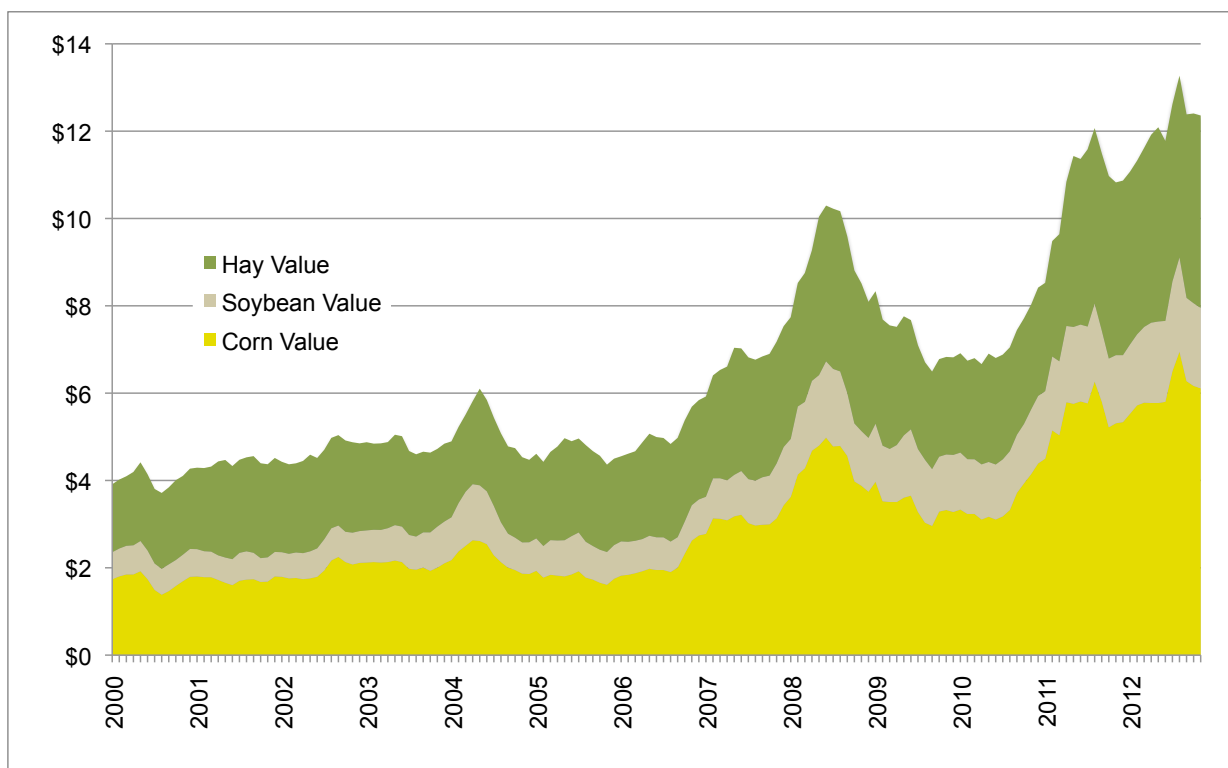
The related, but very different, weather patterns of La Niña and El Niño were both a part of the 2012 story. We have had a couple of years of La Niña which is a colder body of water in the equatorial Pacific. This tends to create warmer and drier weather in the central portion of the U.S. In fact, the drought here was widespread and one of the worst that we have seen causing significant loss of crops throughout the central portion of the country. Dairy farms located within drought-affected areas experienced outcomes which ranged from total crop loss to greatly reduced yields. All dairy farms have experienced significantly higher purchased feed costs, but if your business model is one which depends on both purchased concentrates and forages, the milk price may not have been adequate to cover your variable costs of production.



**Figure 1. U.S. Drought Monitor, November 27, 2012.**

La Niña also affects the other side of the Pacific by bringing higher-than-normal rains to Oceania. New Zealand has benefited from excellent pastures both last year and in the 2011-12 season. They increased milk production 10.43% in 2011 and are on track to increase just less than 5% this year. New Zealand production is important to the U.S. dairy industry because they compete for the same export markets that we do. New Zealand production impacts U.S. milk prices just as U.S. production now impacts New Zealand milk prices.

El Niño is a warmer-than-normal body of water in the equatorial Pacific ocean and it typically brings greater quantities of rain to the western U.S. and drier weather conditions to Oceania. El Niño was expected to form this summer bringing needed rains to relieve the U.S. drought and it would have been expected to worsen the pasture conditions in New Zealand. However, the El Niño did not form and the National Oceanic and Atmospheric Administration does not expect one in the year ahead.



**Figure 2. NASS Value of the Dairy Ration.**

There was little direct impact of the drought on the traditional dairy regions in the Northeast. Drought impacts varied in Midwest from severe on farms in southern Wisconsin, northern Illinois, and in Minnesota and Iowa. But many farms outside these areas were largely spared or even had excellent crop yields. Even the farms that were impacted may have had lower quantity but the quality of the forages were quite good. However, the price of feed was heavily impacted in all parts of the country.

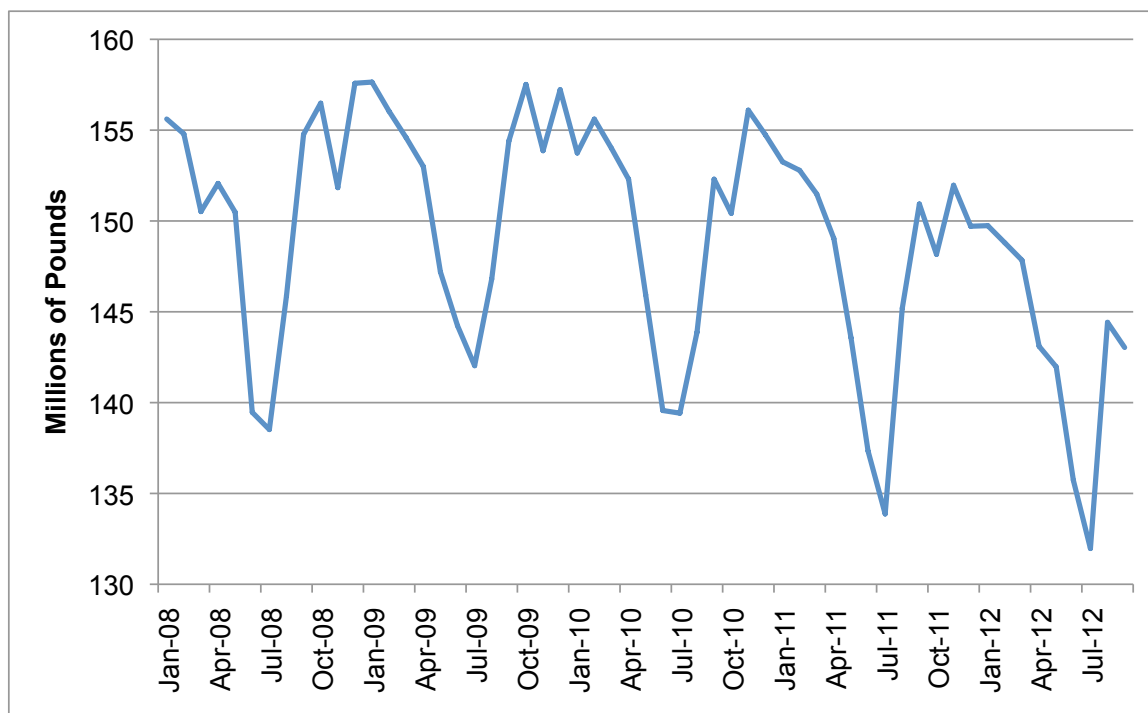
Western dairy business models where all feeds are purchased and where the feed basis is higher than in the Midwest, have suffered substantially. This is evidenced by the milk production reports in the last quarter of 2012. For example, September and October milk production in California declined by



3.9% and 3.5% respectively while Wisconsin milk production increased by 3.5% and 4.7% in those same months.

### Dairy Product Demand

Unemployment has remained stubbornly high following the recession in 2009. However, there has been some evidence of optimism on the part of consumers as evidenced by increases in the purchase of durable goods and other measures of consumer sentiment. In fact, retail dairy prices have not increased more rapidly than other food or the general economy. Per capita consumption of most dairy products has increased with the yogurt category a particularly bright spot. However, beverage milk is the negative exception to most dairy products and created headlines for dropping below a threshold of 20 gallons per capita.

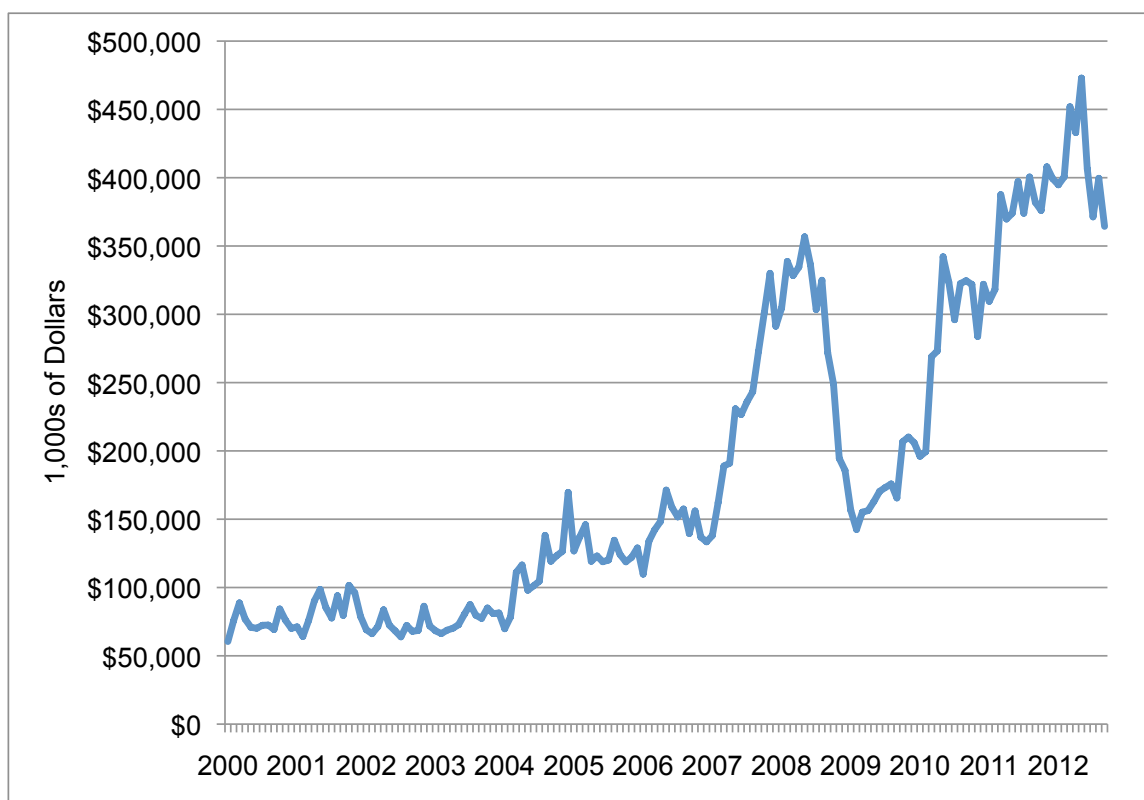


**Figure 3. U.S. Average Daily Sales of Fluid Milk.**

### Dairy Exports

The U.S. continues to solidify its place as a major world dairy product exporter. The European Union and New Zealand are essentially tied with 35% and 34% shares of world trade respectively. The U.S. comes in at third place with about a 19% share of world exports. Australia is the fourth largest exporter with 7% of the trade share.

Nonfat Dry Milk or Skim Milk powder is the largest volume of U.S. export followed closely by dry whey products. Lactose, cheese and butter round out the remaining bulk of export products. From January, 2012 through September, 2012, the milk solids exported represent about 13.6% of the total milk solids produced.



**Figure 4. Monthly Dollar Value of U.S. Dairy Exports.**

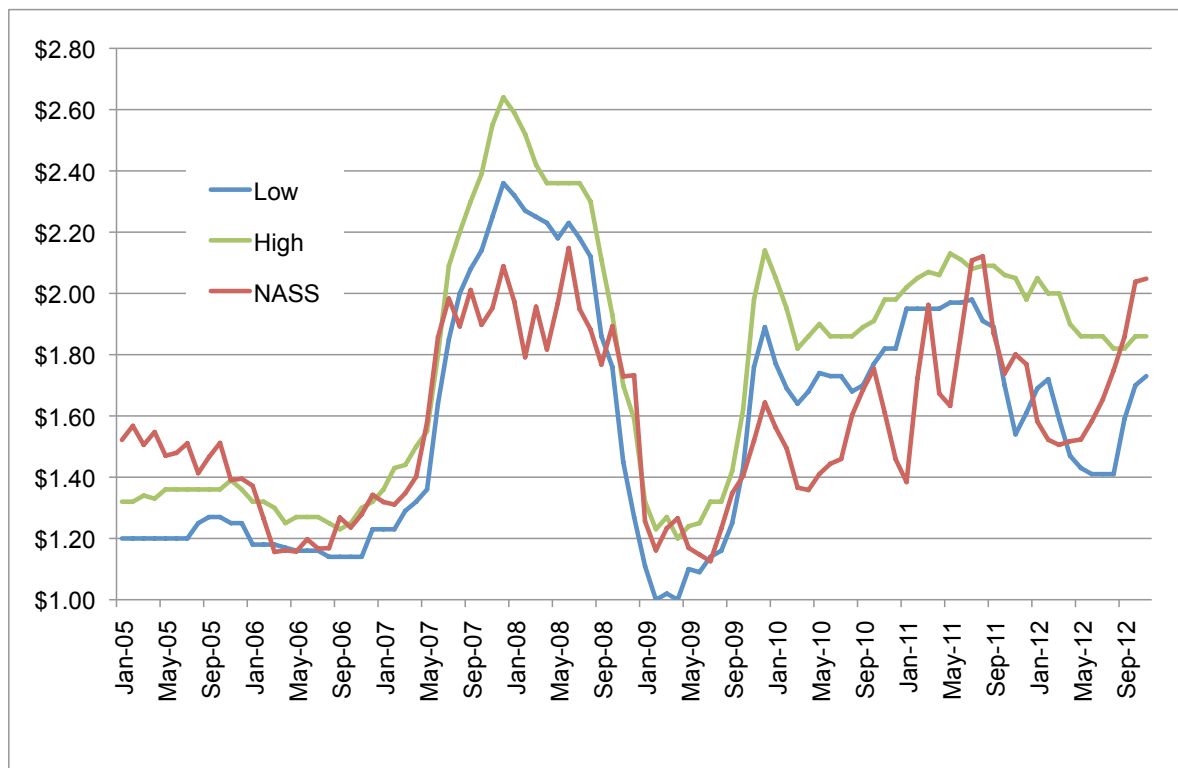
### Dairy Stocks

Strong U.S. milk production in the first half of the year has given way to almost flat milk production or even modest declines in some months. Domestic and export demands have remained strong enough to take all of dairy product produced and, depending on the product, stocks are normal to tight in the third quarter. Butter stocks are in a normal range, but cheese, whey and to a lesser extent nonfat dry milk stocks are tight.

### The Dairy Outlook

Short inventories of dairy products would normally suggest strong product and milk prices. Yet product prices have been falling precipitously on the spot markets in recent weeks. This points out another complexity of our emerging dependence on export markets.

Figure 5 shows the high and low monthly prices for Oceania and the NASS/AMS monthly prices for cheddar cheese. U.S. products normally trade at a discount relative to Oceania prices in world markets. Since September of 2012, U.S. cheese and butter prices have been substantially higher than those of Oceania producers. Even though our stock levels are not burdensome and would normally indicate strengthening prices, our ability to compete for export sales is eroded when prices are higher than our competitors. That is the most likely reason that domestic prices have fallen.



**Figure 5. Oceania High and Low Cheese Prices, NASS/AMS Cheese Prices.**

Oceania has very seasonal milk production and they are now several months past their peak lactation. World markets have absorbed the products during their flush and this is an indication of a robust demand for dairy products. It is likely that U.S. prices will not have much further to fall but rather that world prices will come up to meet our prices.

I am projecting a New York All Milk price to average about \$20.75 in 2013. This would be an increase of about \$1.35 from the 2012 levels. Moreover, the futures markets show a continual decline in soybean meal prices from now through the next harvest season representing a \$70 drop. Corn prices are expected to remain at the current high levels until next harvest season when futures markets anticipate a decline of about \$1 per bushel. The combination of increased milk price and an easing of feed prices would improve farm margins.

### Dairy Policy

At the time of this writing, we are in the lame duck session of congress. Although Democrats picked up a few seats, the balance of power was not altered and a stalemate exists on most pieces of legislation. The Senate has passed their version of a farm bill and the House Agricultural Committee has reported their version out but it has not made it to the floor of the House for a vote. If the House moves on the farm bill before the end of the year, it is likely that the dairy provisions in the House and Senate (which are quite similar) will be the new policy for dairy.

The dairy provisions are a marked departure from previous policy. They would seek to find budget savings by eliminating the Dairy Product Price Support Program and the Milk Income Loss Contracts. These safety net programs would be replaced by a voluntary margin insurance program and a market stabilization program.

The most likely scenario for passage in the lame duck session is to attach the farm bill to whatever legislation may be passed to address the so-called “fiscal cliff”. If that doesn’t happen, then it is likely that congress would pass an extension of the previous farm bill until new legislation can be passed later on. This is a dangerous proposition for promoters of the current House and Senate bills.

By March, the Congressional Budget Office will have a new baseline against which all bills with fiscal consequences will be evaluated. Few believe that the new CBO baseline will look better than last year’s and most believe that it will look much worse. If that is true, then congress will have to go back and reconsider the proposed House and Senate farm bills and find new areas for cost saving. Opening up the bills to new scrutiny increases the likelihood that we could see substantial changes in any of the programs—including dairy.

Substantial changes in dairy policy are likely. But, what those changes will be and when they will take place is an unknown at this 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, 2002–2012

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Farm Milk (\$/cwt.)</b>											
All Milk (ave. fat)	12.18	12.55	16.05	15.13	12.88	19.13	18.33	12.82	16.26	20.14	18.54
Class III (3.5%)	10.42	11.42	15.39	14.05	11.89	18.04	17.44	11.36	14.40	18.37	17.57
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	2.60	2.61	3.10	3.24	2.57	2.81	2.01	1.78	2.26	1.88	1.52
MILC payments <sup>f</sup>	1.21	1.09	0.22	0.01	0.61	0.01	0.00	1.15	0.02	0.00	0.68
<b>Cheddar Cheese, Blocks (\$/lb.)</b>											
CCC Purchase	1.131	1.131	1.131	1.131	1.131	1.131	1.131	1.130	1.130	1.130	1.130
Wholesale, Chicago Mercantile Exchange	1.182	1.317	1.649	1.492	1.239	1.758	1.856	1.296	1.496	1.806	1.727
<b>Butter (\$/lb.)</b>											
CCC Purchase, Grade A or higher, Chicago	0.855	1.050	1.050	1.050	1.050	1.050	1.050	1.050	1.050	1.050	1.050
Wholesale, Gr. AA, Chicago Merc. Exchange	1.106	1.145	1.817	1.549	1.236	1.368	1.465	1.243	1.728	1.962	1.637
<b>Nonfat Dry Milk</b>											
CCC Purchase, Unfortified (\$/lb.)	0.900	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
Wholesale, Central States	0.928	0.838	0.858	0.985	1.001	1.804	1.300	1.010	1.247	1.564	1.375
<b>Retail Price Indices (1982–84=100.0)</b>											
Milk	110.6	111.5	125.0	127.0	125.5	140.1	148.5	129.0	133.6	145.8	146.7
Cheese	170.0	169.4	180.8	183.3	180.8	191.5	214.6	203.5	204.8	217.5	222.2
All Dairy Products	168.1	167.9	180.2	182.4	181.4	194.8	210.4	197.0	199.2	212.7	216.9
All Food	176.2	180.0	186.2	190.7	195.2	202.9	214.1	218.0	219.7	227.8	233.4
All Consumer Prices	179.9	184.0	188.9	195.3	201.6	207.3	215.3	214.5	218.1	224.9	229.5

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

<sup>a</sup> Revised.<sup>b</sup> Estimated by Mark Stephenson.<sup>c</sup> Milk Income Loss Contract payments began in October of 2001.

<b>MILK PRICE PROJECTIONS*</b> <b>Northeast Federal Order Statistical Uniform Price</b> <b>3.5 Percent, Suffolk County, Massachusetts</b> <b>Last Quarter 2011-2012, Four Quarters 2012-2013</b>			
Month	2011	2012	Difference
(dollars per hundredweight)			
October	20.42	20.78	0.36
November	20.23	21.78 <sup>a</sup>	1.55
December	19.57	21.49 <sup>a</sup>	1.92
<i>Fourth Quarter Average</i>	20.07	21.35 <sup>a</sup>	1.28
<b>Annual Average</b>	<b>20.64</b>	<b>18.74 <sup>a</sup></b>	<b>-1.91</b>
Month	2012	2013 <sup>a</sup>	Difference
(dollars per hundredweight)			
January	19.37	20.43	1.06
February	18.09	20.42	2.33
March	17.64	20.47	2.83
<i>First Quarter Average</i>	18.37	20.44	2.07
April	17.20	20.50	3.30
May	16.79	20.62	3.83
June	16.58	20.67	4.09
<i>Second Quarter Average</i>	16.86	20.60	3.74
July	17.26	20.66	3.40
August	18.40	20.49	2.09
September	19.45	20.38	0.93
<i>Third Quarter Average</i>	18.37	20.51	2.14
October	20.78	20.18	-0.60
November	21.78 <sup>a</sup>	20.11	-1.67
December	21.49 <sup>a</sup>	19.81	-1.68
<i>Fourth Quarter Average</i>	21.35 <sup>a</sup>	20.03	-1.32
<b>Annual Average</b>	<b>18.74 <sup>a</sup></b>	<b>20.40 <sup>a</sup></b>	<b>1.66</b>

\* Averages may not add due to rounding.

<sup>a</sup> Projected.

## Chapter 7. Dairy -- Farm Management

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### Herd Size Comparisons

The 190 New York dairy farms that participated in the Dairy Farm Business Summary (DFBS) Project in 2011 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; and that was the case for 2011 (Table 7-1). Net farm income without appreciation averaged \$27,613 per farm for the less than 60 cow farms and \$1,606,213 per farm for those with more than 900 cows. Return to all capital without appreciation generally increased as herd size increased. With herd sizes less than 200 cows, many farms find it difficult to find a low cost combination of technology and labor to produce milk. Thus profits are lower for these herds than other herd sizes.

It is more than size of herd that determines profitability on dairy farms. The over 900 herd size category had the highest net farm income per cow at \$1,189 while the under 60 herd size category had the lowest net farm income per cow at \$608. In some years, other herd size categories have averaged the highest net farm income per cow. Other factors that affect profitability and their relationship to the size classifications are shown in Table 7-2.

<b>TABLE 7-1. COWS PER FARM AND FARM FAMILY INCOME MEASURES 190 New York Dairy Farms, 2011</b>						
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	20	45	\$27,613	\$608	\$ -5,773	-2.0%
60 to 99	23	75	46,993	628	3,174	0.2%
100 to 199	30	142	132,825	836	40,182	5.1%
200 to 399	24	317	329,007	1,037	127,176	9.3%
400 to 599	26	506	564,133	1,114	184,927	11.0%
600 to 899	28	733	862,484	1,176	305,690	11.6%
900 & over	39	1,351	1,606,213	1,189	444,449	12.2%

Note: All data in this chapter 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 generally exhibit the usual increase as herd size increased. All herd size categories saw an increase 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 25,689 pounds of milk sold per cow, farms in the largest herd size group averaged 9.3 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 7 percent of the 43 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 13 percent of the herds milking more often than 2 times per day, the 200-399 cow herds reported 67 percent, 400-599 cow herds reported 62 percent, 600-899 cow herds reported 82 percent, and the 900 cow and larger herds reported 95 percent exceeding the 2 times per day milking frequency.

**TABLE 7-2. COWS PER FARM AND RELATED FARM FACTORS  
190 New York Dairy Farms, 2011**

Number of Cows	Average Number of Cows	Milk Sold Per Cow (lbs.)	Milk Sold Per Worker (cwt.)	Tillable Acres Per Cow	Forage DM Per Cow (tons)	Farm Capital Per Cow	Cost of Producing Milk/Cwt.	
							Operating	Total
Under 60	45	17,158	4,213	3.6	7.4	\$13,450	\$15.71	\$26.75
60 to 99	75	19,148	5,840	3.0	8.6	11,391	16.08	24.03
100 to 199	142	20,785	7,307	2.7	8.2	10,973	15.65	21.50
200 to 399	317	23,461	9,967	2.0	7.9	9,745	15.55	19.47
400 to 599	506	23,759	10,347	2.4	8.2	9,137	15.58	19.34
600 to 899	733	24,580	11,105	2.0	7.5	9,714	15.57	18.99
900 & over	1,351	25,689	11,738	1.9	7.4	9,470	15.72	18.87

Milk output per worker has always shown a strong correlation with herd size. The farms with 100 cows or more averaged over 1,111,879 pounds of milk sold per worker while the farms with less than 100 cows averaged less than 519,500 pounds per worker.

In achieving the highest productivity per cow and per worker, the largest farms had the fewest crop acres per cow but also the lowest forage dry matter harvested per cow. The 400 to 599 herd size group had the more efficient use of farm capital with an average investment of \$9,137 per cow.

The 39 farms with 900 or more cows had the lowest total cost of producing milk at \$18.87 per hundredweight. This is \$0.74 below the \$19.61 average for the remaining 151 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 \$0.70 per hundredweight above the average of the other 151 DFBS farms.



**Dairy Operations and Milk Cow Inventory**

<b>TABLE 7-3. NUMBER OF DAIRY FARMS AND MILK COWS BY SIZE OF HERD</b> <b>New York State, 2011<sup>a, b</sup></b>				
Size of Herd	Farms		Milk Cows	
Number of Cows	Number	% of Total	Number	% of Total
1 – 29	800	17.3%	8,000	1.3%
30 – 49	850	18.5%	30,000	4.9%
50 – 99	1,600	34.8%	120,000	19.7%
100 – 199	846	18.4%	108,000	17.7%
200 – 499	250	5.4%	80,000	13.1%
500 – 749	123	2.7%	76,000	12.5%
750 – 999	39	0.8%	34,000	5.6%
1,000 – 1,499	51	1.1%	63,000	10.3%
1,500 – 1,999	21	0.5%	36,000	5.9%
2,000 or more	20	0.5%	55,000	9.0%
Total	4,600	100.0%	610,000	100.0%
<sup>a</sup> 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 2011. - CAFO (Concentrated Animal Feeding Operations) permit reports for 2011. Some small CAFO farms (farms with 200 plus 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. <sup>b</sup> 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 <a href="mailto:GJC4@cornell.edu">GJC4@cornell.edu</a> .				

In 2011, there were 4,600 dairy farms in New York State, and 610,000 milk cows. The table above was prepared based on the NYASS data plus the CAFO permit filing for additional herd size categories.

Eighty-nine percent of the farms (less than 200 cows per farm) had 44 percent of the milk cows. The remaining eleven percent of the farms had 56 percent of the cows.

About 6 percent of the farms (those with 500 or more cows) had 43 percent of the cows.

Farms with less than 50 cows represent 36 percent of all farms but kept only 6 percent of the cows.

Farms with 1,000 or more cows (92 farms) represent about 2.0 percent of the farms but kept over 25 percent of the cows.

**Ten-Year Comparisons**

The total cost of producing milk on DFBS farms has increased \$5.06 per hundredweight over the past 10 years (Table 7-4). In the intervening years, total cost of production increased in 2003 and 2004, decreased in 2005 and 2006, increased in 2007 and 2008, decreased in 2009, increased to \$17.73 in 2010 and \$19.92 in 2011. 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 10 percent and cows per worker increased 7 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, 2002 to 2011**

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<u>Operating Expenses</u>										
Hired labor	\$2.44	\$2.51	\$2.67	\$2.66	\$2.58	\$2.70	\$2.79	\$2.70	\$2.61	\$2.75
Purchased feed	4.10	4.29	4.88	4.37	4.30	5.21	6.17	5.45	5.41	6.53
Machinery repair, vehicle expense & rent	1.01	.91	1.09	1.07	1.04	1.27	1.24	1.07	1.16	1.36
Fuel, oil & grease	.28	.33	.41	.53	.58	.67	.91	.57	.65	.88
Replacement livestock	.16	.15	.16	.11	.07	.07	.08	.06	.06	.08
Breeding fees	.21	.19	.21	.22	.23	.24	.26	.21	.21	.22
Veterinary & medicine	.56	.56	.59	.62	.65	.65	.68	.63	.63	.67
Milk marketing	.65	.69	.72	.76	.80	.80	.85	.88	.89	.88
Other dairy expenses	1.25	1.30	1.27	1.32	1.29	1.41	1.52	1.44	1.45	1.48
Fertilizer & lime	.27	.26	.30	.34	.31	.40	.47	.41	.37	.45
Seeds & plants	.20	.20	.24	.22	.23	.28	.33	.35	.36	.39
Spray & other crop expense	.22	.19	.20	.19	.19	.25	.26	.20	.21	.25
Land, building & fence repair	.19	.14	.21	.25	.22	.32	.34	.23	.26	.37
Taxes	.20	.21	.22	.23	.21	.23	.21	.22	.22	.23
Insurance	.16	.15	.16	.16	.17	.19	.18	.17	.17	.18
Utilities (farm share)	.34	.34	.36	.39	.41	.44	.43	.38	.41	.42
Interest paid	.61	.56	.57	.65	.78	.83	.54	.51	.53	.48
Misc. (including rent)	.44	.40	.43	.37	.45	.49	.49	.44	.44	.49
Total Operating Expenses	\$13.27	\$13.39	\$14.67	\$14.54	\$14.51	\$16.46	\$17.77	\$15.90	\$16.04	\$18.12
Less: Nonmilk cash receipts	1.91	1.57	1.70	1.96	1.94	1.75	1.57	1.89	1.62	2.11
Increase in grown feed & supplies	.12	.27	.17	.12	.22	.39	.66	-.04	.36	0.17
Increase in livestock	.23	.09	.22	.21	.27	.30	.33	.34	.30	0.18
OPERATING COST OF MILK PRODUCTION	\$11.01	\$11.46	\$12.58	\$12.25	\$12.08	\$14.02	\$15.21	\$13.71	\$13.76	\$15.66
<u>Overhead Expenses</u>										
Depreciation: machinery & buildings	\$1.39	\$1.23	\$1.32	\$1.32	\$1.26	\$1.32	\$1.38	\$1.28	\$1.32	\$1.38
Unpaid labor	.08	.10	.07	.06	.07	.07	.04	.05	.04	.04
Operator(s) labor <sup>a</sup>	.74	.70	.67	.61	.63	.65	.58	.54	.50	.53
Operator(s) management (5% of cash receipts)	.75	.73	.90	.90	.79	1.07	1.10	.80	.96	1.16
Interest on farm equity capital (5%)	.89	.85	.92	1.02	1.06	1.20	1.29	1.21	1.15	1.15
Total Overhead Expenses	\$3.85	\$3.61	\$3.88	\$3.91	\$3.81	\$4.31	\$4.39	\$3.88	\$3.97	\$4.26
TOTAL COST OF MILK PRODUCTION	\$14.86	\$15.07	\$16.46	\$16.16	\$15.89	\$18.33	\$19.60	\$17.59	\$17.73	\$19.92
AVERAGE FARM PRICE OF MILK	\$12.98	\$13.24	\$16.64	\$15.98	\$13.85	\$20.34	\$19.24	\$13.88	\$17.81	\$21.67
Return per cwt. to operator labor, capital & mgmt.	\$0.50	\$0.45	\$2.67	\$2.35	\$0.44	\$4.93	\$2.61	\$-1.16	\$2.69	\$3.61
Rate of return on farm equity capital	-5.6%	-5.7%	6.0%	4.1%	-4.6%	13.4%	3.6%	-10.3%	5.2%	13.6%

<sup>a</sup>2002 = \$2,100/month, 2003 through 2005 = \$2,200/month, 2006 = \$2,300/month, 2007 = \$2,400/month, 2008 through 2010 = \$2,500/month, and 2011 = \$2,550/month of operator labor.

**TABLE 7-5. TEN YEAR COMPARISON: SELECTED BUSINESS FACTORS  
New York Dairy Farms, 2002 to 2011**

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Number of farms</b>	219									
<b>Cropping Program</b>										
Total tillable acres	660	659	701	729	730	758	883	965	987	1,086
Tillable acres rented	337	323	345	365	360	385	446	482	493	519
Hay crop acres	323	321	339	361	366	384	421	464	469	477
Corn silage acres	232	233	245	246	249	258	297	348	340	405
Hay crop, tons DM/acre	3.1	3.2	3.5	3.2	3.2	3.0	3.5	3.4	3.5	3.4
Corn silage, tons/acre	15.4	17.2	17.7	18.8	18.4	18.9	19.9	18.7	19.6	16.6
Fertilizer & lime exp./tillable acre	\$27	\$28	\$31	\$33	\$30	\$40	\$49	\$42	\$43	\$50
Machinery cost/cow	\$520	\$497	\$565	\$624	\$618	\$708	\$800	\$660	\$712	\$839
<b>Dairy Analysis</b>										
Number of cows	297	314	334	340	350	358	414	469	489	531
Number of heifers	226	240	260	270	283	289	348	391	415	459
Milk sold, cwt.	66,177	70,105	73,767	78,250	80,862	82,315	99,884	113,555	119,782	130,898
Milk sold/cow, lbs.	22,312	22,302	22,070	22,998	23,083	22,983	24,115	24,208	24,508	24,648
Purchased dairy feed/cwt. milk	\$4.10	\$4.27	\$4.86	\$4.37	\$4.29	\$5.20	\$6.16	\$5.45	\$5.39	\$6.52
Purchased grain & concentrate as % of milk receipts	30%	30%	27%	26%	29%	24%	31%	38%	29%	29%
Purchased feed & crop exp/cwt.milk	\$4.79	\$4.92	\$5.60	\$5.12	\$5.02	\$6.13	\$7.23	\$6.41	\$6.32	\$7.62
<b>Capital Efficiency</b>										
Farm capital/cow	\$6,794	\$6,748	\$7,010	\$7,508	\$7,762	\$8,426	\$9,145	\$9,060	\$9,141	\$9,629
Real estate/cow	\$2,612	\$2,722	\$2,809	\$2,950	\$3,030	\$3,356	\$3,606	\$3,713	\$3,857	\$3,951
Machinery investment/cow	\$1,261	\$1,208	\$1,226	\$1,314	\$1,384	\$1,448	\$1,535	\$1,553	\$1,570	\$1,614
Asset turnover ratio	0.53	0.54	0.64	0.60	0.52	0.67	0.59	0.44	0.56	0.64
<b>Labor Efficiency</b>										
Worker equivalent	7.21	7.50	7.97	8.18	8.19	8.40	9.75	10.74	10.93	12.13
Operator/manager equivalent	1.82	1.86	1.64	1.60	1.63	1.62	1.72	1.83	1.82	1.88
Milk sold/worker, lbs.	917,854	934,733	925,553	956,698	987,530	980,234	1,024,799	1,057,063	1,095,897	1,079,423
Cows/worker	41	42	42	42	43	43	42	44	45	44
Labor cost/cow	\$725	\$738	\$752	\$765	\$757	\$784	\$823	\$794	\$771	\$818
Hired labor exp./hired worker equiv.	\$31,755	\$32,659	\$33,311	\$33,539	\$34,071	\$34,924	\$36,312	\$35,908	\$35,643	\$37,152
<b>Profitability &amp; Financial Analysis</b>										
Labor & mgmt. income/operator	\$-14,243	\$-15,360	\$78,061	\$64,745	\$-31,269	\$189,019	\$75,945	\$-147,313	\$101,484	\$227,028
Farm net worth, end year	\$1,173,836	\$1,207,964	\$1,466,674	\$1,690,427	\$1,736,505	\$2,200,655	\$2,640,168	\$2,639,640	\$3,012,912	\$3,759,325
Percent equity	57%	56%	60%	63%	62%	68%	68%	62%	65%	70%

**TABLE 7-6. COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**Same 87 New York Dairy Farms, 2002 - 2011**

Selected Factors	2002	2003	2004	2005
Milk receipts per cwt. milk	\$13.02	\$13.28	\$16.78	\$16.05
<u>Size of Business</u>				
Average number of cows	375	394	420	436
Average number of heifers	286	302	315	341
Milk sold, cwt.	86,701	90,707	95,417	102,482
Worker equivalent	8.90	9.38	9.93	10.29
Total tillable acres	769	814	862	891
<u>Rates of Production</u>				
Milk sold per cow, lbs.	23,130	23,031	22,723	23,490
Hay DM per acre, tons	3.4	3.4	3.5	3.4
Corn silage per acre, tons	15	17	19	19
<u>Labor Efficiency</u>				
Cows per worker	42	42	42	42
Milk sold per worker, lbs.	974,167	967,029	960,901	995,939
<u>Cost Control</u>				
Grain & concentrate purchased as % of milk sales	29%	31%	27%	26%
Dairy feed & crop expense per cwt. milk	\$4.72	\$4.96	\$5.55	\$5.08
Operating cost of producing cwt. milk	\$10.79	\$11.19	\$12.20	\$11.95
Total cost of producing cwt. milk	\$13.93	\$14.20	\$15.30	\$15.20
Hired labor cost per cwt.	\$2.52	\$2.56	\$2.70	\$2.64
Interest paid per cwt.	\$0.53	\$0.49	\$0.48	\$0.57
Labor & machinery costs per cow	\$1,247	\$1,244	\$1,311	\$1,371
Replacement livestock expense	\$12,138	\$13,606	\$17,175	\$17,422
Expansion livestock expense	\$20,808	\$14,513	\$30,533	\$15,372
<u>Capital Efficiency</u>				
Farm capital per cow	\$6,687	\$6,682	\$6,839	\$7,404
Machinery & equipment per cow	\$1,223	\$1,180	\$1,188	\$1,297
Real estate per cow	\$2,510	\$2,580	\$2,611	\$2,756
Livestock investment per cow	\$1,782	\$1,801	\$1,832	\$1,994
Asset turnover ratio	0.56	0.56	0.68	0.64
<u>Profitability</u>				
Net farm income without appreciation	\$70,144	\$71,343	\$307,034	\$272,178
Net farm income with appreciation	\$137,988	\$140,575	\$422,365	\$438,696
Labor & management income per operator/manager	\$-4,378	\$-6,801	\$129,759	\$93,626
Rate return on:				
Equity capital with appreciation	4.2%	4.1%	19.6%	17.2%
All capital with appreciation	4.3%	4.1%	13.6%	12.9%
All capital without appreciation	1.6%	1.5%	9.6%	7.7%
<u>Financial Summary, End Year</u>				
Farm net worth	\$1,522,222	\$1,587,206	\$1,910,499	\$2,234,618
Change in net worth with appreciation	\$11,878	\$57,066	\$316,467	\$308,353
Debt to asset ratio	0.40	0.41	0.37	0.34
Farm debt per cow	\$2,679	\$2,775	\$2,608	\$2,630

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 87 New York Dairy Farms, 2002 - 2011**

2006	2007	2008	2009	2010	2011
\$13.88	\$20.45	\$19.33	\$13.95	\$17.86	\$21.72
456	478	493	518	547	559
362	377	406	436	464	480
107,311	113,631	120,076	126,616	134,843	137,745
10.52	11.05	11.48	11.97	12.27	13.08
915	976	1,040	1,081	1,120	1,147
23,517	23,751	24,351	24,439	24,661	24,636
3.4	3.1	3.6	3.4	3.6	3.4
19	19	20	19	19	16
43	43	43	43	45	43
1,020,067	1,028,337	1,045,960	1,057,780	1,098,966	1,053,095
29%	24%	30%	38%	29%	29%
\$5.00	\$6.12	\$7.22	\$6.49	\$6.35	\$7.67
\$12.02	\$13.72	\$15.21	\$13.70	\$13.88	\$15.28
\$15.18	\$16.94	\$18.63	\$16.96	\$17.09	\$19.37
\$2.67	\$2.74	\$2.89	\$2.76	\$2.70	\$2.86
\$0.71	\$0.72	\$0.53	\$0.51	\$0.55	\$0.49
\$1,368	\$1,469	\$1,640	\$1,455	\$1,494	\$1,691
\$10,731	\$12,499	\$14,409	\$8,863	\$10,787	\$19,284
\$21,462	\$11,363	\$28,818	\$20,259	\$8,091	\$4,132
\$7,686	\$8,135	\$8,914	\$8,896	\$8,795	\$9,455
\$1,344	\$1,399	\$1,555	\$1,605	\$1,567	\$1,657
\$2,901	\$3,023	\$3,303	\$3,431	\$3,445	\$3,696
\$2,094	\$2,213	\$2,313	\$2,238	\$2,163	\$2,206
0.54	0.72	0.62	0.45	0.60	0.66
\$58,673	\$618,698	\$327,255	\$-131,471	\$361,652	\$614,074
\$168,278	\$797,424	\$401,475	\$-118,968	\$490,036	\$761,198
\$-33,845	\$270,189	\$95,077	\$-149,722	\$111,148	\$228,166
3.7%	27.2%	10.3%	-7.6%	12.8%	18.4%
4.6%	20.3%	8.5%	-3.4%	9.5%	13.5%
1.4%	15.7%	6.8%	-3.7%	6.8%	10.7%
\$2,276,668	\$2,917,905	\$3,078,660	\$2,798,346	\$3,182,276	\$3,814,699
\$30,899	\$638,857	\$146,980	\$-270,102	\$373,725	\$618,914
0.37	0.30	0.33	0.40	0.36	0.32
\$2,809	\$2,647	\$2,963	\$3,428	\$3,209	\$3,115

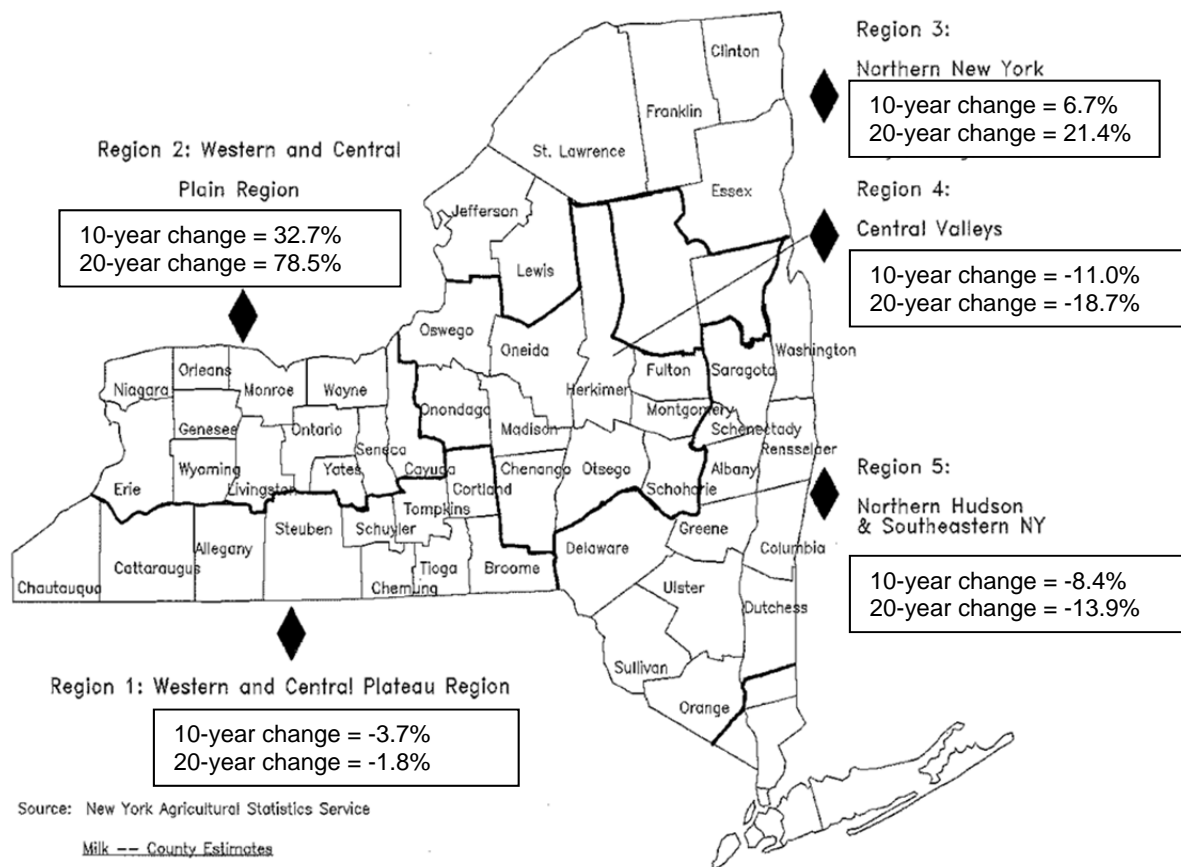
Debt to asset ratio has remained stable and debt per cow increased 16 percent while farm net worth more than doubled. During this time, crop yields have fluctuated, largely due to weather. Purchased grain and concentrate as a percent of milk sales varied from 24 to 38 percent, with the high in 2009, and the low in 2007.

**TABLE 7-7. COMPARISON OF DAIRY FARM BUSINESS DATA BY REGION**  
**192 New York Dairy Farms, 2011**

Item	Western & Central Plateau Region	Western & Central Plain Region	Northern New York	Central Valleys	Northern Hudson & Southeastern New York
Number of farms	33	57	25	31	46
<b>ACCRUAL EXPENSES</b>					
Hired labor	\$215,864	\$503,502	\$484,134	\$295,066	\$272,546
Feed	559,374	1,185,580	1,185,994	650,100	672,844
Machinery	183,802	356,303	440,651	266,790	228,541
Livestock	277,282	593,926	619,395	338,262	337,731
Crops	78,658	174,950	224,834	132,532	106,281
Real estate	83,864	154,175	147,520	96,619	77,628
Other	95,333	220,199	273,522	149,298	130,268
Total Operating Expenses	\$1,494,176	\$3,188,635	\$3,376,050	\$1,928,667	\$1,825,839
Expansion livestock	14,226	5,387	10,771	6,839	4,251
Extraordinary expense	99	0	288	2,877	0
Machinery depreciation	67,552	142,628	166,165	111,086	69,337
Building depreciation	40,415	107,047	109,739	58,055	37,249
Total Accrual Expenses	\$1,616,468	\$3,443,698	\$3,663,013	\$2,107,523	\$1,936,675
<b>ACCRUAL RECEIPTS</b>					
Milk sales	\$1,904,536	\$3,707,509	\$4,101,723	\$2,445,843	\$2,101,853
Livestock	132,333	287,287	268,280	144,243	145,003
Crops	15,452	67,146	111,423	30,852	45,340
Government receipts	8,608	25,785	11,488	14,451	15,461
All other	17,406	95,640	94,446	44,485	49,741
Total Accrual Receipts	\$2,078,336	\$4,183,368	\$4,587,360	\$2,679,875	\$2,357,397
<b>PROFITABILITY ANALYSIS</b>					
Net farm income (w/o appreciation)	\$461,868	\$739,670	\$924,347	\$572,352	\$420,722
Net farm income (w/ appreciation)	\$530,372	\$974,337	\$1,036,578	\$669,332	\$481,404
Labor & management income	\$318,499	\$512,513	\$697,603	\$410,590	\$292,790
Number of operators	1.70	2.06	1.87	1.92	1.72
Labor & mgmt. income/operator	\$187,352	\$248,793	\$373,050	\$213,849	\$170,227
<b>BUSINESS FACTORS</b>					
Worker equivalent	8.04	15.18	16.60	10.83	9.80
Number of cows	357	694	768	459	392
Number of heifers	317	600	671	377	339
Acres of hay crops <sup>a</sup>	389	547	689	455	447
Acres of corn silage <sup>a</sup>	327	584	605	379	356
Total tillable acres	738	1,249	1,573	1,052	852
Pounds of milk sold	8,872,489	17,084,900	19,447,453	11,210,008	6,484,692
Pounds of milk sold/cow	24,878	24,630	25,310	24,400	24,197
Tons hay crop dry matter/acre	2.9	3.6	3.6	3.4	3.2
Tons corn silage/acre	15.9	16.5	18.6	15.5	16.3
Cows/worker	44	46	46	42	40
Pounds of milk sold/worker	1,103,086	1,125,426	1,171,474	1,035,168	967,414
% grain & conc. of milk receipts	30%	30%	26%	26%	30%
Feed & crop expense/cwt. milk	\$7.19	\$7.95	\$7.25	\$6.98	\$8.21
Fertilizer & lime/crop acre	\$42.87	\$57.32	\$58.77	\$46.10	\$45.04
Machinery cost/tillable acre	\$376	\$433	\$415	\$397	\$387

<sup>a</sup>Excludes farms that do not harvest forages.

**FIGURE 7-1. PERCENT CHANGE IN MILK PRODUCTION  
Five Regions in New York, 1990-2010**



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

Item	Region <sup>a</sup>				
	1	2	3	4	5
<b>Milk Production<sup>b</sup></b>	(million pounds)				
1990	2,062.0	2,539.0	2,085.2	2,823.0	1,545.4
2000	2,103.8	3,415.2	2,372.3	2,576.1	1,452.6
2010	2,025.5	4,531.5	2,530.5	2,294.0	1,331.3
Percent change, 2000 to 2010	-3.7%	+32.7%	+6.7%	-11.0%	-8.4%
Percent change, 1990 to 2010	-1.8%	+78.5%	+21.4%	-18.7%	-13.9%
<b>2011 Cost of Producing Milk<sup>c</sup></b>	(\$ per hundredweight milk)				
Operating cost	\$15.04	\$15.91	\$14.92	\$15.18	\$16.60
Total cost	18.88	19.45	18.12	19.04	19.96
Average price received	21.47	21.70	21.09	21.82	22.16
Return per cwt. to operator labor, management & capital	\$5.15	\$4.32	\$4.73	\$5.06	\$4.35

<sup>a</sup>See Figure 7-1 for region descriptions.

<sup>b</sup>Source: New York Agricultural Statistics Service, Milk-County Estimates. The 2011 data was not available.

<sup>c</sup>From Dairy Farm Business Summary data.

**TABLE 7-9. COMPARISON OF FARM BUSINESS SUMMARY DATA**  
**New York Dairy Farms, 1961 - 2011**

Selected Factors	1961	1971	1981	1991	2001	2011
Number of farms	490	569	553	407	228	190
<u>Size of Business</u>						
Average number of cows	38	67	79	111	277	531
Average number of heifers	23	44	59	92	207	459
Milk sold, cwt.	3,787	8,617	11,420	20,060	60,290	130,898
Worker equivalent	1.80	2.20	2.80	3.38	6.72 <sup>c</sup>	12.13 <sup>c</sup>
Total tillable acres	99 <sup>a</sup>	185 <sup>a</sup>	257	330	618	1,086
<u>Rates of Production</u>						
Milk sold per cow, lbs.	9,965	12,900	14,456	18,027	21,762	24,648
Hay DM per acre, tons	2.3	2.4	2.5	2.4	2.8	3.4
Corn silage per acre, tons	12	16	15	14	16	17
<u>Labor Efficiency</u>						
Cows per worker	21	30	29	33	41 <sup>c</sup>	44 <sup>c</sup>
Milk sold per worker, pounds	210,380	391,700	415,273	593,297	897,167 <sup>c</sup>	1,079,423 <sup>c</sup>
<u>Cost Control</u>						
Grain & conc. as % of milk sales	28%	24%	26%	29%	25%	29%
Dairy feed & crop expense/cwt.	\$1.53	\$1.95	\$4.67	\$4.67	\$5.03	\$7.62
Operating cost of prod. cwt. milk	\$1.90	\$3.27	\$10.05	\$10.35	\$12.21	\$15.66
Total cost of producing cwt. milk	\$4.54	\$5.84	\$15.88	\$14.55	\$15.45	\$19.21
Milk receipts per cwt. milk	\$4.47	\$6.21	\$13.66	\$12.95	\$15.98	\$21.67
<u>Capital Efficiency</u>						
Total farm capital	\$53,722	\$153,305	\$448,404	\$742,368	\$1,871,135	\$5,112,999
Farm capital per cow	\$1,414	\$2,288	\$5,676	\$6,688	\$6,755	\$9,629
Machinery & equipment per cow	\$291	\$480	\$1,078	\$1,267	\$1,222	\$1,614
Real estate per cow	\$680	\$1,125	\$2,693	\$3,063	\$2,713	\$3,951
Livestock investment per cow	\$375	\$527	\$1,538	\$1,478	\$1,720	\$2,199
Asset turnover ratio	0.42	0.42	0.42	0.43	0.63	0.64
<u>Profitability</u>						
Net farm income without apprec. <sup>d</sup>	NA <sup>b</sup>	NA <sup>b</sup>	\$57,941	\$43,545	\$189,286	\$605,123
Net farm income with apprec. <sup>d</sup>	\$47,978	\$114,330	\$78,919	\$67,772	\$306,309	\$733,275
Labor & management income per operator/manager <sup>d</sup>	\$25,207	\$59,085	\$13,343	\$621	\$57,758	\$227,028
Rate of return on:						
Equity capital with appreciation	NA	NA	3.6%	1.4%	16.3%	18.0%
All capital with appreciation	NA	NA	5.6%	3.8%	12.2%	13.4%
All capital without appreciation	NA	NA	3.8%	1.8%	7.3%	10.9%
<u>Financial Summary, End Year</u>						
Farm net worth	\$37,000	\$101,146	\$301,975	\$486,215	\$1,181,055	\$3,759,325
Change in net worth with apprec.	NA	NA	\$14,566	\$12,169	\$161,553	\$592,030
Debt to asset ratio	0.41	0.37	0.37	0.36	0.40	0.30
Farm debt per cow	\$530	\$890	\$2,212	\$2,327	\$2,759	\$3,049
<sup>a</sup> Acres of cropland harvested.						
<sup>b</sup> NA = not available.						
<sup>c</sup> Based on hours actually worked by owner/operator instead of standard 12 months per full-time owner/operator.						
<sup>d</sup> Profitability measures adjusted for inflation using Consumer Price Index – 2011 dollars.						



## **Identifying Bottlenecks in Your Business**

### *Introduction*

Before a recommendation can be made regarding where a dairy farm business can improve, it must first be determined what the business is striving to accomplish. A mission statement is very helpful in this respect as a mission statement will describe why the farm exists. An example mission statement is “Our mission is to produce and market high quality milk in sufficient quantities to provide a good standard of living for our family. The business should also be sufficiently profitable to provide above average compensation for employees and long term security for our family”. The above mission statement will not be right for all farms and mission statements will change over time as the age of the operator increases and family situation changes. An analysis of a farm business is most useful to the manager when the mission is known and thereby conveys to the evaluator what the business wants to accomplish.

The objectives of the farm are also of value to the evaluator because they more specifically state business direction. Objectives are general, challenging and untimed directions for the business. Example objectives might be to build net worth, increase profits and allow more time for personal and family activities.

Operating a profitable dairy farm business requires that the factors of production such as land, labor and capital be combined and managed to achieve a value of production that is greater than the cost of production. There are numerous ways to accomplish a profit in dairying; striving for high output per cow but with corresponding costs, low output per cow but with low costs or high output per cow with low costs. The latter category, high output with low costs is a characteristic of most of the highly profitable dairy farms.

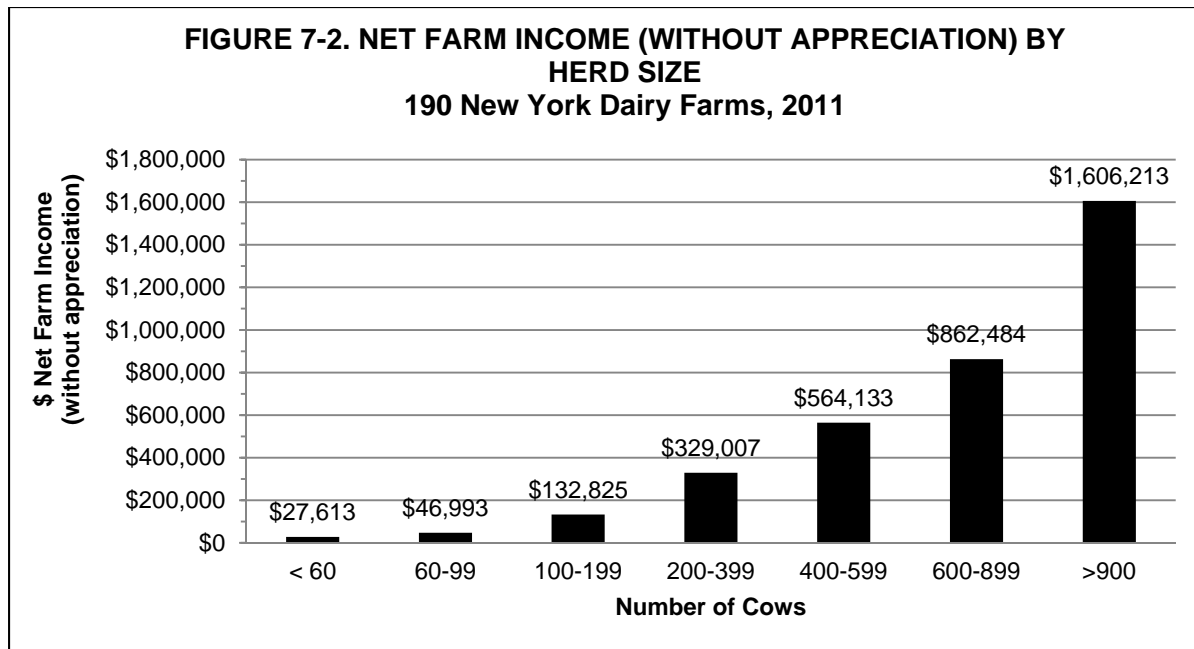
### *Evaluating a Dairy Farm Business*

Evaluating a business to determine areas for improvement can be accomplished in the most simple terms by ascertaining if the business has 1) an adequate herd size, 2) excellent rates of production, 3) high labor efficiency, 4) stringent cost control and 5) strong financial position. Again, the evaluation should be set within the context of the mission and objectives of the farm family.

#### *Farm Size*

The question to be answered when examining the size of a dairy farm is “Is size of the farm sufficient to meet the family mission and objectives”? Or if the objective of the family is to increase profitability, is the size of the business a limiting factor?

There is a strong and well established relationship between farm size and farm income on well managed farms. Net farm income without appreciation increases as size of herd increases, ranging from about \$27,000 on farms with less than 60 cows to over \$1,606,000 on farms with more than 900 cows. See Figure 7-2.



In 1918, George F. Warren made an insightful observation regarding the relationship between farm size and income. “Not only are average incomes much larger on larger farms, but the chances of making a good profit are much better. However, no farm is large enough to ensure a profit.”

#### Rate of Production

Achieving high rates of milk production per cow does not guarantee a profit, but on average, farms with higher rates of production do achieve higher incomes. As pounds of milk sold per cow increase, net farm income, net farm income per cow and labor and management income per operator generally increase. See Table 7-10.

Profitability measured as net farm income per cow rather than per farm removes the influence of herd size and also shows a positive relationship with milk sold per cow. In 2011, net farm income per cow generally increased as pounds milk sold per cow increased.

**TABLE 7-10: MILK SOLD PER COW AND FARM INCOME MEASURES  
190 New York Dairy Farms, 2011**

Pounds of Milk Sold Per Cow	Number of Farms	Average Number of Cows	Net Farm Income without Appreciation	Net Farm Income Per Cow	Labor & Management Income Per Operator
Under 16,000	20	137	\$61,596	\$451	\$7,608
16,000 to 18,999	18	128	110,872	866	36,189
19,000 to 20,999	18	147	98,549	670	25,041
21,000 to 22,999	28	430	413,415	962	154,883
23,000 to 24,999	41	571	557,482	977	179,007
25,000 to 26,999	52	876	1,086,142	1,240	358,218
27,000 & over	13	941	1,466,160	1,558	576,234

### Labor Efficiency

Labor efficiency is a measure of the amount of work done, on average, by one full time equivalent worker. A full time equivalent worker is considered to represent 230 hours of work per month. The labor efficiency measure used here is pounds of milk sold per worker. As can be seen from Table 7-11, as pounds of milk sold per worker increases, so does net farm income and labor and management income per operator.

<b>TABLE 7-11. MILK SOLD PER WORKER AND NET FARM INCOME 190 New York Dairy Farms, 2011</b>					
Pounds of Milk Sold Per Worker	Number of Farms	Number of Cows	Pounds Milk Sold Per Cow	Net Farm Income (without appreciation)	Labor & Management Income Per Operator
Under 500,000	22	107	20,515	\$68,951	\$12,887
500,000 to 699,999	31	125	19,152	94,106	24,672
700,000 to 899,999	27	288	23,007	257,453	88,241
900,000 to 1,099,999	48	611	23,834	613,725	217,514
1,100,000 & over	62	931	25,804	1,199,265	393,260

In a stanchion barn, labor efficiency should be 600,000 pounds of milk sold per worker or higher. Small freestall barns should achieve 800,000 pounds per worker or higher and large freestall barns over 1,000,000 pounds of milk sold per worker.

### Cost Control

Cost control is very important in operating a profitable dairy farm. If the three major costs in operating a business are under control, some of the smaller expense categories can be slightly higher and not seriously impact overall profit. The three largest cost categories on a dairy farm are purchased feed, hired labor, and machinery repairs; with milk marketing expense a close fourth. In this analysis, purchased feed and crop production expense per hundredweight of milk and machinery costs will be discussed. Hired labor was discussed under the category of labor efficiency.

Purchased feed and crop expense per hundredweight of milk is one of the most useful feed cost measures because it accounts for some of the variations in feeding and cropping programs, and milk production between herds. It includes all purchased feeds used on the farm, and it includes crop expenses that are associated with feed production.

On the average, farms with purchased feed and crop expenses exceeding \$8.00 per hundredweight of milk sold reported below average farm profits. Farms reporting less than \$8.00 per hundredweight showed above average profits. However, reducing feed and crop expenses does not necessarily lead to higher profits particularly when milk output per cow falls below average. See Table 7-12.

**TABLE 7-12. PURCHASED FEED AND CROP EXPENSE PER HUNDREDWEIGHT  
OF MILK AND FARM INCOME MEASURES  
190 New York Dairy Farms, 2011**

Feed & Crop Expense Per Cwt. of Milk	Number of Farms	Number of Cows	Forage Dry Matter Harvested Per Cow	Pounds Milk Per Cow	Net Farm Income Without Appreciation	Labor & Management Income Per Operator
\$9.00 or more	34	359	7.3	21,961	\$263,560	\$104,507
8.50 to 9.00	18	508	7.3	24,450	410,524	119,950
8.00 to 8.49	23	602	7.4	25,310	542,948	154,354
7.50 to 7.99	29	589	7.8	25,292	625,919	254,440
7.00 to 7.50	34	628	7.3	24,915	852,013	312,533
6.49 to 7.00	22	679	7.8	25,496	981,923	375,132
Less than 6.50	30	423	8.3	24,397	600,860	236,970

Most machinery costs are associated with crop production and should be analyzed with the crop enterprise. Total machinery expenses include the major fixed costs (interest and depreciation), as well as the accrual operating costs. Machinery costs have not been allocated to individual crops, but they are calculated per total tillable acre. See Table 7-13.

Controlling machinery costs can have a significant impact on profitability. Machinery costs should be evaluated along with labor efficiency. If machinery costs are high, as a result of use of labor saving technologies, then a high labor efficiency must result to offset the high machinery costs.

**TABLE 7-13. ACCRUAL MACHINERY EXPENSES  
184 New York Dairy Farms That Grow Forages, 2011**

Machinery Expense Item	Average 184 Farms		Average Top 10% Farms <sup>a</sup>	
	Total Expenses	Per Tillable Acre	Total Expenses	Per Tillable Acre
Fuel, oil & grease	\$ 117,486	\$105.30	\$175,065	\$107.45
Machinery repairs & vehicle expense	128,451	115.13	178,230	109.39
Machine hire, rent & lease	53,562	48.01	72,706	44.62
Interest (5%)	43,734	39.20	61,178	37.55
Depreciation	112,311	100.66	154,092	94.57
Total	\$455,544	\$408.30	\$641,271	\$393.58

<sup>a</sup> Average of 19 farms with highest rates of return to all capital (without appreciation) that grow forages.

### Financial Position

Farm debt per cow should be below \$3,500. Businesses that have been in operation for many years without an increase in herd size should have a very low debt per cow, below \$1,000. Total farm investment per cow (market value) should be less than \$9,000 and for large dairy farms \$8,000 or less. See Table 7-16.

### Farm Business Charts

For a complete analysis of the business, a farm business chart can be very useful. 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 190 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 10 percent for any other factor. See Tables 7-14 and 7-15.

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.

<b>TABLE 7-14. FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS</b>							
<b>190 New York Dairy Farms, 2011</b>							
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
37.4	1,706	43,858,755	27,706	5.3	23	63	1,458,922
22.9	1,021	26,336,021	26,440	4.4	20	51	1,243,329
17.6	785	20,082,453	25,674	3.9	18	48	1,167,110
14.1	612	14,432,284	24,907	3.6	18	45	1,088,025
10.6	466	11,020,599	24,206	3.4	17	42	1,010,627
7.0	325	7,344,654	23,151	3.1	16	40	925,116
4.7	174	3,679,214	21,982	2.8	15	37	793,037
3.1	108	2,120,345	20,278	2.3	14	33	667,413
2.3	69	1,296,787	17,715	2.1	13	28	550,182
1.6	45	726,923	12,283	1.6	10	21	343,454
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		
\$651	18%	\$493	\$1,152	\$898	\$5.24		
1,014	23	651	1,413	1,300	6.42		
1,136	26	716	1,533	1,473	6.94		
1,258	27	779	1,625	1,617	7.24		
1,384	28	843	1,691	1,739	7.55		
1,475	29	901	1,759	1,827	7.82		
1,564	31	960	1,842	1,936	8.19		
1,653	32	1,038	1,933	2,030	8.61		
1,731	34	1,126	2,102	2,150	9.24		
1,947	38	1,384	2,606	2,388	10.66		

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 7-15. FARM BUSINESS CHART FOR FARM MANAGEMENT COOPERATORS**  
**190 New York Dairy Farms, 2011**

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 Production Per Cwt.
\$6,127	\$23.60	\$1,932	\$12.19	\$3,184	\$16.71
5,705	22.51	2,646	13.62	3,969	17.95
5,520	22.08	3,015	14.29	4,328	18.65
5,369	21.81	3,355	14.98	4,506	19.22
5,188	21.63	3,601	15.53	4,650	19.75
4,959	21.41	3,740	16.05	4,757	20.34
4,719	21.21	3,881	16.62	4,910	21.30
4,381	21.00	4,083	17.35	5,104	22.92
3,837	20.75	4,353	17.88	5,317	25.38
2,658	20.24	4,711	19.90	5,728	31.41

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
\$2,341,294	\$1,900	0.31	\$2,707,050	\$2,395	\$1,794,884	\$864,454
1,264,736	1,606	0.27	1,485,514	1,927	951,356	476,538
867,967	1,344	0.23	1,079,176	1,610	628,200	311,166
616,369	1,165	0.20	792,265	1,395	457,712	212,547
438,110	1,017	0.18	552,379	1,238	289,617	153,689
274,291	913	0.16	349,944	1,111	150,363	84,765
143,833	773	0.14	185,513	994	66,657	48,741
80,696	612	0.12	109,297	833	29,919	20,449
34,852	399	0.09	56,294	566	-10,042	-8,376
-10,917	-25	-0.01	15,314	222	-90,536	-56,785

The farm financial analysis chart, Table 7-16, is designed just like the farm business chart shown in Tables 7-14 and 7-15 and may be used to measure the financial health of the farm business.

**TABLE 7-16. FINANCIAL ANALYSIS CHART**  
**190 New York Dairy Farms, 2011**

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
\$ 63	\$1,607	10.52	13.41	3%	\$ 133	57%	48.32
283	1,339	3.30	4.56	5	1,137	41	6.16
419	1,157	2.47	3.36	7	1,841	31	3.96
485	989	1.96	2.79	9	2,316	26	3.17
575	867	1.64	2.34	10	2,787	21	2.54
642	750	1.45	1.96	11	3,167	17	2.01
703	641	1.23	1.61	13	3,635	13	1.74
799	558	1.02	1.30	15	4,210	10	1.43
932	444	0.88	0.83	17	4,916	4	1.05
1,446	86	0.24	0.08	25	6,691	-13	0.41

Solvency				Operational Ratios		
Leverage Ratio <sup>a</sup>	Percent Equity	Debt/Asset Ratio		Operating Expense Ratio	Interest Expense Ratio	Depreciation Expense Ratio
		Current & Intermediate	Long Term			
0.01	99%	0.01	0.00	0.61	0.00	0.02
0.12	89	0.09	0.00	0.65	0.01	0.04
0.20	83	0.17	0.01	0.68	0.01	0.04
0.27	79	0.24	0.10	0.70	0.01	0.05
0.35	74	0.27	0.19	0.73	0.02	0.06
0.48	68	0.32	0.30	0.75	0.02	0.06
0.61	62	0.37	0.39	0.77	0.03	0.07
0.75	57	0.43	0.49	0.79	0.03	0.08
0.98	51	0.54	0.59	0.82	0.04	0.10
1.91	38	0.73	0.83	0.89	0.08	0.14

Efficiency (Capital)				Profitability		
Asset Turnover (ratio)	Real Estate Investment Per Cow	Machinery Investment Per Cow	Total Farm Assets Per Cow	Change in Net Worth With Appreciation	Percent Rate of Return With Appreciation on:	
					Equity	Investment <sup>b</sup>
0.92	\$1,960	\$662	\$6,389	\$2,323,290	35%	23%
0.77	2,744	1,032	7,721	1,203,378	25	17
0.70	3,065	1,335	8,235	886,807	22	15
0.65	3,357	1,567	8,929	659,342	19	14
0.61	3,684	1,735	9,627	394,739	16	12
0.57	4,277	1,884	10,269	256,529	12	10
0.52	4,745	2,046	11,111	116,070	9	8
0.47	5,543	2,367	11,989	63,416	6	5
0.39	6,721	2,816	13,236	23,571	0	1
0.27	9,736	4,002	16,747	-6,842	-18	-4

<sup>a</sup>Dollars of debt per dollar of equity, computed by dividing total liabilities by total equity.

<sup>b</sup>Return on all farm capital (no deduction for interest paid) divided by total farm assets.

### *Conclusion*

The saying “You can’t manage what you can’t measure” is equally valid in dairy farm management as it is in an industrial or commercial business. Effective managers measure the most important factors for success in their business, compare the values with the performance of similar businesses and set annual goals for improvement. The most effective goals are SMART. That is, they are Specific, Measurable, Attainable, Rewarding and Timed. Annually setting goals and then measuring progress towards goals is an important component of management. Research has shown that goals that are written are much more likely to be achieved than are goals that are only verbalized or goals that are not shared.

Evaluating a dairy farm business is not something to do once in a lifetime, but rather progress should be measured annually and new goals set for the following year. If a farm is not moving forward while other farms are, then the farm is moving backward relative to the industry. Performing an annual analysis and setting goals for the future is an excellent process to use in moving your business forward.



# **Chapter 8. Risk and Opportunity for Labor-Intensive Agriculture in 2013**

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## **Introduction**

Farm employers continue to be concerned about difficulties in hiring an adequate number of productive, motivated and legal workers to perform the most labor-intensive agricultural production jobs. The presence of unauthorized agricultural workers in New York and around the country creates uncertainty and risks for farm managers attempting to complete farm operations in a timely manner to ensure product quality and ultimately farm profitability. Anecdotal reports indicate that some New York farmers faced tighter labor supplies this year as compared to the previous several years. Some reported fewer workers available at peak harvest periods resulting in harvest delays. This was particularly true with the New York apple crop. Several factors contributed to the shortage of workers. Cold spring temperatures led to a severe decrease in the New York apple crop prompting many harvest workers to seek work in other states. Immigration enforcement pressure also appears to have deterred workers from traveling to New York to seek jobs in the fruit and vegetable industries. Immigration enforcement officials maintained a continuous presence with an increased focus on the dairy industry in New York 2012. Farm employers using the H-2A program occasionally report difficulties with the program including the rejection of worker applications and problems with worker qualifications. Many New York farm employers continue to use the H-2A program despite its high costs and administrative requirements because it is a way to reduce the risks associated with not having a sufficient supply of legally authorized workers during critical work periods. Because of these challenges, many New York farm employers are pessimistic regarding the farm labor outlook and report that they are reluctant to expand farm operations when such a high level of labor supply uncertainty exists. In addition, some farm owners report that they have shifted some of their fresh vegetable and fruit production to highly mechanized row crop production. Although immigration was an important campaign topic, no progress on immigration reform was expected during the 2012 Presidential election year. However, now that a new Congressional session is set to start on January 1, 2013, farm employers are hopeful that progress can be made on immigration reform including workable solutions for agriculture.

## **Important Immigration Issues 2012**

In the absence of Federal immigration in 2012, several important labor issues including mandatory E-Verify, the Executive Order DREAM Act, and the ongoing challenges with H-2A each received considerable attention from agricultural leaders.

**Mandatory E-Verify** – E-Verify is an internet based system that allows employers to check information on the employees I-9 form against the databases from the U.S. Department of Homeland Security and the Social Security Administration to confirm that the employee has legally entered the United States. E-Verify is currently a voluntary program available to employers through the Department of Homeland Security. In June 2011, a bill was introduced in the House Judiciary Committee that would make E-Verify mandatory for most employers in all states. The proposed Legal Workforce Act (HR 2164) would repeal the current I-9 system and gradually phase in mandatory participation in E-Verify. Opposition from agriculture to the proposal was strong and immediate. Agricultural leaders insisted that the measure would cause serious problems for agriculture if a large number of unauthorized workers were to exit farm employment. Representative Lamar Smith, House Judiciary Committee Chairman and sponsor of the bill, tried to move the legislation throughout 2011. Attempts were also made to modify the bill by adding solutions that would help

agricultural employers. Congressman Smith continued to advocate for mandatory E-Verify into the 2012 Presidential election year with no success, diminishing the likelihood that the stand alone bill would be successful in the House of Representatives. If introduced in the next Congress, it is unlikely that mandatory E-Verify would move on its own, but it is very likely that it will be an important part of any comprehensive immigration reform legislation. Agricultural leaders appear willing to support mandatory E-Verify legislation as long as it is accompanied by a process for hiring an adequate supply of legally authorized agricultural workers.

“Executive Order DREAM Act” – In June 2012, President Obama issued an executive order intended to halt the deportation of illegal immigrants who arrived in the United States as children. It is estimated that at least 800,000 unauthorized immigrants fall into this category. The intent of the Executive Order is to protect from enforcement actions young immigrants who are brought to this country as children, know only this country as home, and lacked the intent to violate the law. It is intended to temporarily remove the threat of immigration enforcement for young immigrants until a long-term legislative solution can be found. To be eligible young immigrants must meet several criteria. They must have: entered the United States under the age of 16; continuously resided in the United States for at least five years; have participated in the U.S. education system or been honorably discharged from the Armed Forces; have not been convicted of a felony offense and not be above the age of 30. In agriculture there appears to be a small number of workers and children of agricultural workers who will benefit from this action while waiting for a legislative solution.

H-2A Challenges – In the absence of immigration reform a number of agricultural employers continue to rely heavily on the H-2A program to meet their labor needs. Despite its high costs and bureaucratic challenges, some farmers continue to use the program to ensure that they will have the legal workers they need on a timely basis. As immigration policy discussions move forward, it is likely that recommendations from agriculture will include a major overhaul or replacement of the current H-2A system. It is also important to note that immigrant workers are important to the dairy industry and there is no opportunity for dairy farm employers to hire temporary workers under the H-2A system. It is expected that this issue also will also be part of any H-2A and guestworker discussions in the year ahead.

Mexican Migration – In April 2012, the PEW Hispanic Center released a report describing numerous changes in the migration patterns from Mexico to the United States. Over the last four decades migration from Mexico, (much of it illegal migration) increased rapidly. However in recent years it has come to a standstill. There are a number of factors contributing to these changes. Increasing unemployment in the United States and a weak job market has meant fewer job opportunities for Mexicans in the United States decreasing the incentive to migrate. At the same time enforcement at the U.S.- Mexican border has reduced the number of border crossings while criminal activity and the number of deportations by the Department of Homeland Security have increased. In addition, crime at the border has made illegal crossings far more dangerous so many Mexicans are reluctant to make the attempt.

Conditions in Mexico are also likely to make a difference in the number of Mexicans migrating to the United States in the years ahead. Mexican women are having significantly fewer children than they were a few decades ago. In 1960, Mexico had a birth rate of 7.3 children per woman. In 2009, that figure dropped to 2.4, slightly higher than the U.S. rate of 2.0 children per woman. Looking ahead, there will be fewer Mexican young people available to fill agricultural jobs than there have been in recent decades. At the same time the Mexican economy is slowly improving. In the past two years the growth in the Mexican economy has been stronger than in the United States. While median income is still a concern, the Mexican economy is in a better position to create jobs than it was several years ago. All of these factors suggest that as U.S. employers seek immigrant employees to fill labor-intensive jobs; those employees will increasingly come from countries other than Mexico.

## **The Political Economy of Agriculture and Immigration Reform**

Even before voters went to the polls on November 6<sup>th</sup>, President Obama designated immigration reform as a high priority for his second term; and after the results came in leaders of the Republican Party appeared willing to consider meaningful changes to the status quo. Americans of Hispanic origin, by a margin of 71%-27%, voted for the President, strengthening the administration's resolve and prompting an apparent change of heart by many reform opponents in Congress. For agriculture, this impending period of action on federal policy will present both real opportunities and significant risks.

Countless, very diverse interest groups, from the National Council of Agricultural Employers to the National Association of Evangelicals, the U.S. Chamber of Commerce and the League of United Latin American Citizens, have profound stakes in the outcomes of any legislative process leading to immigration reforms that are now decades overdue. Since the last meaningful reform of the nation's immigration policies in 1986, each of these groups has developed agendas that have taken on new importance now that the 2013 window seems to be open. These individual agendas for change emphasize different aspects of this complex issue. The risks associated with a comprehensive approach to reform stem from conflicts among the priorities championed by disparate groups that appear, at least on the surface, to share a common cause for change. If such differences are not resolved, employers as well as advocates for immigrant rights risk wasting "the moment" or producing policies and regulations that fail to repair the currently broken system or even make the situation worse. Agriculture is only one voice in this highly charged pursuit of long unmet aspirations for reform. A successful outcome will incorporate a functional, streamlined guest worker program and provisions to deal with unauthorized immigrants already working and living in the United States, major objectives for agricultural businesses, into a system that might also address high expectations for border security, paths to citizenship, family reunification, the DREAM Act, opportunities for workers to move freely within the U.S. labor market, changes in enforcement and detention and perhaps much more.

In the political swirl of what could be an unusually active legislative season, it is important to remember the economic imperatives that drive urgent calls for immigration and labor policy reform from U.S. farm employers. Labor costs make up an average of 48% of total expenses for fruit growers; 46% in nursery operations; 35% for vegetable producers; and 14% for dairy farm businesses. The fact that New York's dairy industry (the state's largest farm production sector) seeks year-round employees while fruit and vegetable growers have met the challenges of securing a seasonal work force for decades complicates the political, economic and management issues associated with federal labor policy reform. These sectors generate nearly all of New York State's \$4.6 billion value of farm production. Occasional labor shortages and the almost constant uncertainty that surrounds the availability of qualified workers push labor costs higher; as does meeting the requirements associated with acquiring workers through the H-2A program. One Hudson Valley fruit grower illustrates important aspects of the labor economics situation from his farm vantage point this way:

*"In apples, labor accounts for about 40% of our cost of production. And I continue to consider it our largest business risk, since crop insurance does not cover a labor shortage. Bottom line? An acute labor crunch cannot be overcome by H-2A alone and will cause some of our businesses to fail. Labor-intensive tree crops (apples and stone fruit) have long-term, large capital investment and cannot be realigned into other agricultural uses very quickly. In Eastern New York much of our terrain and soils are not even usable for other crops. In my opinion, food production requiring significant labor will continue to move to other countries where the labor is willing and able unless our federal government and the 2nd term President can put politics aside and come to workable solutions."*

This is a critical economic issue for New York State agriculture.

### **In the 113<sup>th</sup> Congress**

Shortly after the election, House Speaker John Boehner joined the President in singling out comprehensive immigration reform as an achievable legislative goal for the administration and the new Congress. After decades of Congressional inaction on federal immigration policy, positive, post-election comments from House and Senate leaders appear to have opened the door for meaningful reform during the next two years. Behind the sound bites, however, it will be essential for advocates for agricultural employers and workers alike to understand who in Congress will be charged with moving reform legislation forward and to participate actively and in concert to achieve well-defined goals as the political “sausage-making” process unfolds.

In the House of Representatives, the Judiciary Committee and its Subcommittee on Immigration Policy and Enforcement are responsible for action on immigration reform. Robert Goodlatte (R-VA) will take over as chair of the Judiciary Committee; and Steve King (R-IA) will probably move into the chairmanship of the immigration subcommittee. Both have been active, vocal opponents of less restrictive immigration laws such as those proposed in the most recently failed comprehensive reform legislation, S. 3932/H.R.4321 in 2010; and DREAM Act provisions incorporated into President Obama’s “deferred action” policy announced in June 2012. Speaker Boehner will need to exercise all of the leadership influence at his disposal if he is serious about moving a comprehensive reform package through this committee to the House floor. In the lame duck House, current Judiciary chair Lamar Smith (R-TX) has introduced a revised version of an earlier “STEM” bill, designed to increase the number of visas available to overseas students who have earned advanced degrees in science and technology at U.S. universities. Some regard this as a signal that Republicans are prepared to move ahead on additional reforms in the new session.

The U.S. Senate is likely to take the lead in moving immigration bills forward and would develop proposed immigration reform legislation in the Senate Judiciary Committee, chaired by Patrick Leahy (D-VT) and its Subcommittee on Immigration, Refugees, and Border Security, led by Charles Schumer (D-NY). The subcommittee is populated by senior senators who are leaders in their respective political parties and of the Senate itself, including Democrats Richard Durbin (D-IL) and Diane Feinstein (D-CA) and Republicans Charles Grassley (R-IA), Jon Cornyn (R-TX), and Orrin Hatch (R-UT). As in the House, a test of Republican intentions to move toward broad immigration reform will be considered during the Senate’s lame duck session. Departing Senators Kay Bailey Hutchinson (R-TX) and Jon Kyl (R-AZ) have submitted a Republican version of the DREAM Act bill, which failed to come up for a vote in December 2011. Rising Republican Party star, Senator Marco Rubio (R-FL) has also signaled his intentions to play a lead role in the coming debate.

### **In the Obama Administration**

In September, Jorge Ramos and Maria Elena Salinas, the well-respected anchors of the Spanish language program Univision Noticias, called President Obama to task in front of a nationwide audience of Latino voters on his unfulfilled campaign promise to introduce and work with Congress to pass comprehensive immigration reform legislation early in his first term. In response, Mr. Obama said, “My biggest failure so far is we haven’t gotten comprehensive immigration reform done, so we’re going to be continuing to work on that. It’s not for lack of trying or desire, and I’m confident we’re going to accomplish that.” The decisive Hispanic vote for the President less than two months later heightened expectations for the new term and appears to have moved the issue to a place just behind “fiscal cliff” resolution for action early in 2013.

As noted above, achieving comprehensive immigration reform will require fitting many complicated moving parts (policy, regulation, enforcement) together into a functional national system. Key officials in

the administration will be called upon to take on this difficult task with their Congressional counterparts. For example, Secretary of Education Arne Duncan, who apparently will stay on for the second term, was the President's point person in the failed 2011 attempt to move the DREAM Act through the last lame duck Congress. Secretary of Labor, Hilda Solis wants to continue in the new term. Her department administers H-2A and other current programs and regulations that could be targeted for reform in 2013. There is speculation that Department of Homeland Security Secretary, Janet Napolitano, wants to be Attorney General, but if Eric Holder continues for another year, she will play a major role in determining the enforcement implications of any immigration law reforms. The length of Secretary of Agriculture Tom Vilsack's tenure seems uncertain, but whoever leads that department in the new term will have an important voice in how any new approaches to agricultural labor policy might evolve. The political discussion has already moved USDA into a more important position given the desire of many agricultural advocates to move administration of existing and proposed regulatory programs and regulations to that department.

### **On the Farm**

While leaders of farm organizations such as the American Farm Bureau Federation and the Agriculture Council for Immigration Reform have been working overtime to build agricultural sector unity in anticipation of an apparent moment of political opportunity to reform a broken system, many New York growers remain highly skeptical of Washington's ability to capitalize on that moment. One prominent vegetable grower in the Finger Lakes puts it this way, "I have no faith that the government will fix the problem or if they try to, that it will be a workable system... I am looking to solve our problem by making changes in our business, not expecting to fix a system to make it work for the long term." Moreover, on-farm decisions during the long period of governmental paralysis on this issue have started to reflect such pessimism. A Western New York fruit grower described one such decision, "Corn for grain and soybeans are looking less risky than planting new orchards. I have no faith that Congress will do anything but continue the posturing they have been doing with no action. Our plan for the next few years is to plant one acre of orchard for every two that we take out and grow more grains."

In addition to considering changes in crop mixes to move away from labor-intensive production, farmers have taken a variety of other steps to manage labor uncertainty in their businesses. Many of these were described in the *2012 New York Economic Handbook*. Given projections of curtailed migration from Mexico to the United States, it will be critical that farmers access alternative labor sources aggressively and effectively, regardless of progress on policy reform in 2013.

Successful "hire local" strategies, for example, are characterized by recruitment via social media and other non-traditional means, creative compensation packages, flexibly-designed work schedules, a continuous, intensive focus on training, significant interaction among managers and employees, and a willingness by employers to hire workers with relatively little agricultural experience, but who are eager to learn and commit to the success of the business.

In Western New York fruit growers and dairy farmers have worked closely with church support groups and regional transit authorities to improve opportunities for refugee employment in agriculture. Potential refugee workers have valid visas, valuable agricultural skills and a strong work ethic to offer. Nearly all refugees, however, have settled in cities, making the high cost of transportation a limiting factor in efforts to match employees with promising farm jobs in relatively isolated rural areas. Farm operations close to the "end of the line" for regional bus routes have successfully employed workers from this labor pool; and collaborative pilot programs to solve the transportation problem for employers farther from the city are underway.

Given the post-election "open door" for immigration reform and all its possible ramifications for farm employment, it will be more important than ever for New York State's labor-intensive agricultural businesses

to participate actively and constructively in the political process during 2013. New York Farm Bureau (NYFB) has already moved aggressively with the American Farm Bureau Federation (AFBF) to start crafting a policy framework that will work for the state's diverse agricultural employers. Julie Suarez, Public Policy Director for NYFB, recently reported on her participation in an AFBF immigration task force consisting of farm leaders from California, Arizona, New York, North Carolina, Washington, Louisiana, Michigan, Florida, Ohio, Pennsylvania, and New Jersey. This important group made policy recommendations for reform that would bridge difficult interregional differences and set the stage for a united grassroots agricultural campaign for positive immigration reform provisions in federal law and regulatory practice. These recommendations were incorporated into AFBF's Agricultural Labor-Immigration Reform policy statement, issued in October 2012. The ultimate goal of this effort is the introduction of agricultural worker program legislation that will resolve existing needs for full-time workers and provide a means to replenish the farm work force in the future.

### **The Way Forward**

Bringing Farm Bureau leaders from states with very different political priorities together behind consensus labor policy proposals represents a major political step forward for labor-intensive agriculture. Now that agriculture has found its one voice, farm business leaders will gain additional leverage from building constructive, perhaps unusual alliances with other very influential groups engaged in their own long running efforts to repair the nation's immigration system.

Key considerations for New York State producers as the debate unfolds include:

1. Maintaining strong lines of communication with Senator Schumer's office due to his leadership role in this matter, and other members of the New York congressional delegation.
2. Understanding the points on which compromise with various advocacy groups could be necessary and which principles must be defended. For example, the issue of "portability", or the opportunities workers with visas will have to move from job to job throughout the labor market, has not been resolved.
3. Maintaining strong lines of communication with officials in important executive branch departments.
4. Emphasizing areas where Hispanic American and worker advocate priorities coincide with those of agricultural employers.
5. Maintaining and reinforcing a unified agricultural position on immigration reform.

### **The New York Agricultural Outlook for 2013**

New York farm managers who hire immigrant agricultural workers continue to urge Congressional leaders to address immigration reform. Enforcement efforts at both the employer and the employee level create uncertainty for many farm operations. A legislative solution is viewed by many as the most constructive way forward. The 2012 Presidential and Congressional elections have created some optimism that 2013 could bring immigration policy changes allowing unauthorized immigrants legal authorization to work in the United States and addressing the need for a workable guest worker program in agriculture.

We anticipate the following agricultural labor conditions as we look ahead to 2013.

- 1) **Enforcement** - In the absence of legislative solutions to the immigration challenges facing agriculture, the risks and uncertainties related to immigration enforcement at the employer level and the worker level will continue. Detentions and deportations of immigrants working on New York farms are ongoing. Enforcement at the employer level in the form of I-9 audits has

increased in recent years. The audits are time-consuming for farm managers and bring with them the potential that employment of some immigrants will be terminated if they are determined to be unauthorized. This situation continues to create staffing problems for farm managers attempting to plan for their workforce needs, particularly when harvesting perishable crops.

- 2) **Continued pressure for immigration reform** - The Presidential and Congressional elections created an opportunity to discuss immigration reform and Hispanic voters had a major influence on the election. President Obama and Congressional leaders appear willing to recommit to legislative solutions to address the country's immigration problems. One of the greatest challenges facing agricultural employers is the ongoing presence of unauthorized immigrant workers. Farm employers are likely to support proposals that will allow unauthorized immigrants the opportunity to stay in the United States to work. Farm employers in labor-intensive agriculture rely heavily on the immigrant workforce and feel that legal status for immigrant workers will help ensure the future viability of their businesses. In recent months, agricultural organizations that represent agricultural employers have worked hard to unify around a set of policies that all parties can support and to advocate for those policies in the next Congress.
- 3) **Continued pressure to improve the H-2A program** - Many of New York's fruit and vegetable growers depend heavily on the H-2A program for a reliable source of legal immigrant workers. Throughout its history, farm employers have highlighted some of the difficulties in using the program. Wage rates are high, transportation and housing must be provided by the employer and there is considerable paperwork required on the part of the employer. In recent years farm managers have been concerned about work order rejections and delays in workers arriving to the farm. Many farm employers who use the program suggest that the program should either be substantially overhauled or replaced by a new program that will be less expensive and easier for employers to use. It is likely that upcoming discussions of immigration reform for agriculture will include proposals for a more effective guestworker program.
- 4) **Employers will weigh labor options** - In the year ahead it is very likely that farm employers will continue to make careful decisions about the meeting their labor needs. They will continue to look for alternatives to unauthorized workers. Some have already looked at the possibility of using refugees or foreign-born workers entering the United States on J-1 training visas. Some farm managers have renewed efforts to attract and retain local employees. Others have switched from labor-intensive fruits and vegetables to more mechanized crops. Continued interest in mechanization to replace some labor is likely. Many farm employers would prefer to hire immigrant workers but are concerned about the possibility that they are unauthorized so they continue to look for alternatives.





# Chapter 9. Fruits and Vegetables

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Specialty crops are an important component of New York State's agricultural economy. In 2011 the total farm value of all agricultural products produced in New York was approximately \$5.26 billion, which has increased from the average total farm value over the period between 2006 and 2010. In 2011, fruit and vegetable crops accounted for nearly 13% of the total value of agricultural production in New York State. Fruits and vegetables were planted on 232 thousand acres in New York State in 2010 and this represents only 6.3% of total harvested cropland. Therefore, the value generated from fruits and vegetables is nearly three times the value generated from other crops on a per acre basis.

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. New York State is a top-producing state of apples, tart cherries, pears, grapes, cabbage, cauliflower, onions, pumpkins, snap beans, squash, and sweet corn. Apples and grapes are the two highest revenue fruit crops in New York while cabbage, sweet corn, snap beans, squash, and onions have been the five highest revenue vegetable crops in recent years; the value of production for each of these crops exceeded \$30 million in 2011.

Below I divide fruits and vegetables into two categories and take a closer look at market conditions in each category. I examine production patterns, and provide an outlook, for fruit and berries, and vegetables (fresh and processing) in New York State. In each case I review production and price data between 2009 and 2012, give an economic outlook on expected market conditions in 2013, and also provide some thoughts on the long term marketing and policy issues for horticultural crops produced in New York State.

## **9.1 Fruit and Berry Situation and Outlook**

Market conditions for major fruit crops in New York State were, overall, slightly more favorable in 2011 compared to 2010. Prices for the two major fruit crops in New York State, apples and grapes, were higher in 2011 compared to 2010, and this is a key driver of the higher total values for these fruit crops in 2011. Crop values for several other fruit crops were also higher in 2011 relative to 2010; although production was down for some crops, prices were up for most and the total value of these crops increased. In what follows, I take a closer look at domestic prices and production values, consumption patterns, and international market conditions for major fruit crops in 2011. Similar to last year, market conditions for grapes are examined separately in Chapter 10. Overall, the total value of fruit (including grapes) in New York in 2011 was \$351 million, up 9% from the value in 2010, but less than the peak values observed in 2007 and 2008.

Table 9-1 shows that 610 thousand tons of apples were produced in New York State in 2011, and that this crop was valued at \$251 million. The overall value of the 2011 crop was up relative to the 2010 crop; the value of the fresh crop was up and the value of the processing crop was down in 2011 compared to 2010. Table 9-1 also indicates that the average price of New York State apples increased in 2011 compared to 2010; the price of apples increased in the fresh market but fell slightly in the processing market. The average price for New York apples used in processing market was \$196 per ton in 2011, and although this is lower than the prices in 2007 and 2008, it remains much higher than the seven-year average price observed between 2005 and 2011.

Once the official data from 2012 are released, I expect to see statistics that show a significant decrease in apple production compared to 2011 and other recent years. Early evidence from the *USDA Fruit and Tree Nuts Outlook* shows that U.S. apple production will be 8.1 billion pounds, which is down 14% from 2011 and the lowest crop in over two decades. The reduced crop was largely due to weather problems. In the eastern states there were spring freezes that substantially reduced the number of buds, and in western states there was a late spring hailstorm that affected production in some apple-growing regions. Overall, it appears that production in western states is up slightly compared to 2011, but that eastern production is down by more than 30% compared to 2011. In turn, we also expect to see a substantial increase in apple prices in 2012 compared to 2011, and we will likely see the per-capita consumption rate for apples fall below 15 pounds in 2012/2013. USDA-NASS reports indicate that apple prices were \$0.529 per pound in August 2012, and this is the second highest August price since 1985.

Relative to other states, New York continued to be a major national producer of apples in 2011. As shown in Table 9-2, the value of U.S. apple production in 2011 was \$2,750 million based on production of 9,500 million pounds and an average price of \$0.292 per pound. Washington State typically produces approximately 55 to 60% of the U.S. apple crop, but in 2012 Washington State is expected to produce about 70% of the national crop given the weather problems experienced in eastern states. In New York State, production is forecast to be 590 million pounds in 2012 which is down 52% from 2011. This decrease is due largely to the early spring frosts in 2012; it is also due to the hot and dry weather experienced during the summer months which influenced fruit size and development.

In addition to apples, New York State is also a top producer of several other tree fruit and berry crops. Table 9-1 shows that pear and peach production increased in 2011 versus 2010, while (tart and sweet) cherry production decreased in 2011. Crop values also increased for peaches and pears but fell for sweet and tart cherries in 2011. In 2011 New York State produced approximately \$3.5 million in cherries (\$1.4 million was tart cherries and \$2.1 was sweet cherries), \$8.4 million in peaches, and \$7.0 million in pears. Although not shown in Table 9-1, berry production (including strawberries, blueberries, and red raspberries) was up in 2011 versus 2010, and the total value of berries produced in New York State increased by approximately \$1.5 million in 2011 compared to 2010. The *USDA Fruit and Tree Nuts Outlook* reports an 8% decrease in pear production in 2012 (down to 1.7 billion pounds), an 11% increase in sweet cherry production (up to 764 million pounds), and a substantial decline in tart cherry production (decreasing to 78 million pounds in 2012). The tart cherry crop was nearly destroyed in Michigan in 2012 due to spring freezes, and Michigan is a major producer of tart cherries in normal production years.

**TABLE 9-1. COMMERCIAL NONCITRUS AND NONGRAPE FRUIT PRODUCTION AND PRICES IN NEW YORK STATE**

	Production			Prices		
	2009	2010	2011	2009	2010	2011
	----- Thousand tons -----			----- Dollars per ton -----		
Apples	680	630	610	308	360	416
<i>Fresh</i>	338	300	283	450	526	666
<i>Processed</i>	342	330	322	166	209	196
Tart Cherries	5.1	3.9	3.0	486	348	484
Pears	9.9	8.3	12.1	490	519	600
Peaches	6.5	5.9	6.8	845	1200	1240
Sweet Cherries	1.2	1.0	0.7	2,440	2,820	3,140
Sources: <a href="#">New York Agricultural Statistics</a> , 2012.						

Table 9-2 highlights the values of tree fruit crops in New York between 2009 and 2011; I also show the total value of these crops nationally in 2009, 2010, and 2011. The information in Table 9-2 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 the U.S. apple crop increased in 2011 relative to 2010, but will be smaller in 2012. The total value of peaches and cherries increased nationally in 2011, but the value of pears decreased nationally in 2011. The smaller changes in values for peaches and cherries 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 important 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; the United States imported 381 million pounds of fresh apples in 2011/12 and is expected to import approximately 371 million pounds in 2012/13. Imports of processed apple products have been steadily increasing in recent years, and now the United States imports more apple juice than what it produces; approximately 80% 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 1,700 million pounds per year. U.S. exports exceeded 1,800 million pounds in 2010/11 and 2011/12, and are expected to be approximately 1,700 million pounds in 2012/13. 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.

**TABLE 9-2. VALUE OF NONCITRUS AND NONGRAPE FRUITS IN NEW YORK STATE AND THE UNITED STATES**

	New York State			United States		
	2009	2010	2011	2009	2010	2011
	----- Million dollars -----					
Apples	208.9	226.8	251.5	2,290.4	2,220.8	2,750.6
<i>Fresh</i>	151.9	157.8	188.1	-	-	-
<i>Processed</i>	56.9	68.9	63.2	-	-	-
Tart Cherries	2.5	1.4	1.4	63.2	40.5	69.5
Pears	4.9	4.3	7.0	355.2	381.7	372.3
Peaches	5.4	7.1	8.4	593.7	614.9	854.6
Sweet Cherries	2.3	2.8	2.1	505.9	721.2	867.8
Total	224.0	242.4	270.4	3,808.4	3,979.1	4,914.8

Sources: [New York Agricultural Statistics](#), 2012; [USDA Agricultural Statistics](#), 2011.

It is widely expected that there will be large crops of perennial fruits in eastern states in 2013 given the reduced crop size in 2012. Perennial fruit trees are able to store unused starches in low production years and carry them into the subsequent production cycle (in some capacity). If these crops are not properly managed, there are indications that we could see a record apple crop in New York State and Michigan in 2013, and this will place downward pressure on apple prices for crops harvested in 2013 and for fruit stored into 2014. Such downward pressure on apple prices would be compounded if Washington State continues to increase production. During 2012 there was some discussion that Washington State's apple production would be below average, but it ended up being about 5% higher than average. This is due, in part, to the increased plantings coming into production in Washington State. A record crop in eastern states coupled with a normal or expanded crop in western states could have a significant effect on producer prices in 2013 and 2014.

U.S. consumption patterns for fresh, frozen, and canned fruit products between 2002 and 2007 were examined in earlier editions of the *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. The per capita apple consumption rates in the United States have been relatively stable between 2002 and 2007. They have also been below per capita consumption rates for bananas, and this is a pattern that reflects a larger trend over the last two decades. We reproduce Table 9-3 from last year's *Agricultural Outlook Handbook* to reinforce trends in 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 it is expected to fall below 15 pounds per capita in 2012/13. Trends in other countries are surprisingly different. In Canada per capita consumption of apples has been closer to 26 pounds per person. The per capita consumption rate in many western European countries has exceeded 30 or 40 pounds per person per year. Of the countries listed in Table 9-3, only Japan has a lower per capita consumption rate of apples than the United States. This information indicates that apple marketers need to develop very strategic plans to reach new consumers or expand apple sales to existing consumers.

**TABLE 9-3. CONSUMPTION PATTERNS FOR SELECTED FRESH FRUITS  
IN VARIOUS COUNTRIES**

	Consumption				
	1991-93	2001-03	2004-06	2007-09	2009
	----- pounds per capita -----				
<u>Apples</u>					
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
<u>Bananas</u>					
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	-
<u>Oranges</u>					
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.

## **9.2 Fruit Outlook: Marketing and Policy Issues**

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 marketing 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. Of the issues listed here, fruit producers in New York State and elsewhere have indicated that labor availability remains as their top concern. This was also a priority topic in the election cycle in 2012 and there are indications that Congress will look at new solutions to this issue that is of paramount interest to fruit growers.

Farmers managing labor intensive specialty crop operations must cope with major risk and uncertainty associated with the perennial challenges of hiring a legally authorized and reliable workforce in an exceptionally challenging, seemingly intransigent immigration policy, regulatory and enforcement environment. Aside from supporting continuing, yet so far fruitless political initiatives to reform current federal policy, farmers have experimented with and adopted a variety of practices to manage such labor risk. To date, only anecdotal evidence has informed our understanding of the effectiveness of these alternative human resource management practices. Similarly, over the past decade Congress has entertained, yet failed to pass a range of immigration policy proposals affecting agriculture, from targeted changes such as the AgJobs bill to comprehensive reform legislation.

A 2009 Cornell study by Tom Maloney and Nelson Bills reports that there are approximately 11,200 Spanish-speaking immigrants performing labor-intensive jobs on New York State's fruit and vegetable farms. While projections vary, it is also estimated that 50% to 80% of immigrants working in U.S. agriculture are not legally authorized, leaving them and the farm owners they work for vulnerable to a range of enforcement actions. Farm workers face the possibility of detention and deportation. Farm owners face the possibility of workforce disruptions during harvest and other critical work periods, as well as the possibility of fines and other penalties. Practical alternatives to the unauthorized workforce must be found if labor-intensive agriculture is to be viable in the future; and this is especially true in specialty crop markets.

New research at Cornell University aims to assess various labor options for specialty crop producers to shed some new light on the relative costs of alternative ways to source and manage farm labor. We also will conduct an analysis to evaluate how potential changes in labor policy might impact labor availability and labor costs, and how any such changes might affect the competitiveness of specialty crop producers in New York State. Labor represents the single largest cost for most producers of specialty crops, notably for producers of fresh fruits and vegetables. Current levels of uncertainty about labor availability greatly add to these costs. Anecdotal evidence also indicates that uncertainty concerning the future of labor availability negatively affects investment among specialty crop producers, and this uncertainty could affect acreage planted to labor intensive crops and the long-term sustainability of the specialty crop industry.

First, we intend to identify and describe the various strategies and practices followed by specialty crop producers to secure and manage a reliable supply of qualified workers in recent years. Such practices range from trying various approaches to participation in the federal H-2A program, to seeking out new sources of labor, to experiments with mechanization and changes in planting strategies. We know growers employ different strategies, but this information is not well documented, and the economic results of various approaches are not known. In addition, different approaches may be used in different geographic regions and by different types of specialty crop producers for specific reasons.

Second, we will examine how proposed changes in labor policy, particularly in the H-2A guest-worker program, might affect labor availability and markets for specialty crop producers in New York State. These policy findings, in conjunction with knowledge generated in the human resource management component of the project will constitute a valuable package of information with which growers can improve

decisions about the adoption of the various labor management strategies. Although other researchers have investigated the potential impact of greater agriculture labor supply in the United States, previous work has not fully addressed labor market conditions in New York State.

### **9.3 Vegetable Situation**

Total land planted to vegetables in New York State decreased from 128,500 acres in 2010 to 91,300 acres in 2011; planted and harvested acres of both fresh and processing vegetables were down in 2011, yet the decrease in processing vegetable acreage was much more significant. Acreage used to produce processing vegetables fell below half of the average level observed in recent years. The value of New York vegetable production (including principal vegetables for fresh and processing markets but not including potatoes and dry beans) decreased from \$409 million in 2010 to \$356 million in 2011; the value of fresh vegetables decreased by about \$50 million in 2011 compared to 2010. In 2010 fresh market vegetables contributed \$329 million to the total (down from \$374 million in 2010) while processed market vegetables contributed only \$27 million in 2011 (which was down from \$48 million in 2010).

The large decrease in planted acreage of processing vegetables in 2011 was due, in part, to record rainfalls in the spring. However, the long-term decline in production in New York State is also due to changing conditions in the structure of the industry. Across the United States, the production of processing snap beans and green peas has decreased substantially between 2000 and 2011. Statistics indicate that there has been a general decline in the production of these two processing vegetables nationwide and the green pea industry has experienced more drastic changes in production than the snap bean industry. Wisconsin has been the largest producer of snap beans nationally, followed by Oregon, New York and Minnesota. Minnesota dominates national pea production followed by Washington, Wisconsin, New York, and Oregon. As one of the top five producing states, New York plays an important role in supplying national markets for green peas and snap beans. The latest data (2010 for snap beans and 2006 for green peas) show that New York State accounts for about 10% of total national production. In recent years, we have seen dramatic declines in planted acreage of green peas and downward trends in acres planted to other key processing vegetables grown for freezing and canning. This is a critical concern for New York State farmers and is somewhat of an enigma, given the fact that geographically the production areas are relatively close to big cities such as New York City and Boston. A number of factors have combined to influence planting decisions and outcomes, including historically high corn and soybean prices, a 48% decline in per capita use of canned and frozen green peas since 1971, persistent production yield challenges for New York snap bean growers, increasing concentration in the processing industry, and inventory decisions, especially for frozen vegetables, made by New York processing firms during the past four years.

Preliminary market conditions reported in the September 2012 edition of the *USDA Vegetables and Melons Outlook* suggest that prices for most fresh vegetables will be down slightly in 2012 compared to levels observed in 2011. Even though we saw a hot and dry growing year in 2012, the volume of most vegetable crops is higher than it was in 2011. The same *Outlook* report shows that total production of processing vegetables is up in 2012, but still remains lower than the recent ten-year average observed in the United States. Second quarter producer prices for fresh vegetables were 6.2% lower in 2012 relative to 2011; some fell by nearly 40% over this time period. One notable exception was onion prices, which increased by approximately 25% between the second quarter in 2011 and the second quarter in 2012. Consumer prices for fresh vegetables were also lower in 2012 relative to 2011, but these have begun to rise during the fourth quarter in 2012. A recent study by the USDA reports that the (loss-adjusted) per capita consumption of vegetables increased by 17% between 1970 and 2010. Relative to 2011, exports of fresh vegetables were up in 2012 by 3%, and imports were also up by 5%. U.S. exports of broccoli were up 31% in 2012 relative to 2011. Much of the change in export activity occurred with expansion into Chinese and Mexican markets. Key export markets for vegetables continue to be Canada, Mexico, Japan, Taiwan, the United Kingdom, and China.

New York State continues to be a significant producer of onions, cabbage, and sweet corn; for each of these commodities, New York State has often produced crops that have a value of \$50 million or more. Total crop values for some of these commodities fell below \$50 million in 2011, but many (including onions, squash, cabbage, snap beans, and sweet corn) had crop values that exceeded \$30 million in 2011. Historically New York State has produced a snap bean crop that had a value exceeding \$50 million, but the snap bean crop in has fallen short of this mark in recent years. 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 9-4 shows production patterns for key vegetables in New York State between 2009 and 2011. Data describing trends in fresh vegetable markets are shown at the top of Table 9-4 and trends for processing vegetables are shown on the bottom portion of Table 9-4. Much of the most recent information for processing vegetables is not available from New York State Department of Agriculture and Markets due to the small number of producers involved, budget constraints facing the National Agricultural Statistics Service, and the proprietary nature of the data.

**TABLE 9-4. COMMERCIAL VEGETABLE PRODUCTION AND PRICES IN NEW YORK STATE**

	Production			Price		
	2009	2010	2011	2009	2010	2011
<b>Fresh</b>	----- Thousand cwt -----			----- Dollars per cwt -----		
Sweet corn	2,150	2,736	1,862	27.10	26.00	28.80
Cabbage	3,496	4,343	4,708	17.00	18.70	20.00
Onions	4,275	3,087	1,891	18.60	19.70	20.80
Snap beans	268	469	323	88.00	83.60	96.10
Cucumbers	384	476	464	41.80	38.80	40.00
Tomatoes	350	392	432	93.50	72.70	84.80
Pumpkins	750	1,462	693	29.00	24.00	34.10
Squash	540	897	836	42.60	41.00	51.30
Cauliflower	52	67	49	45.50	51.00	49.00
<b>Processing<sup>a</sup></b>	----- Thousand tons -----			----- Dollars per cwt -----		
Sweet corn	-	-	-	-	-	-
Snap beans	55.7	86.5	50.9	267.00	250.00	298.00
Green peas	-	-	-	-	-	-
Cabbage	-	-	-	-	-	-

Source: [New York Agricultural Statistics](#), 2012.

<sup>a</sup> Much of these data are not published to avoid disclosure of individual operations.

Production of nearly all of the major fresh vegetable products in New York State was down in 2011 relative to 2010. Onions, in particular, are the one crop listed in Table 9-4 that showed a substantial decrease in production in 2011 compared to 2010. Lower production levels led to higher prices for nearly all of the fresh and processed vegetables listed in Table 9-4. Because of the downward trends in production and the upward trends in prices in Tables 9-4, changes in the total values for the specified vegetable products were mixed (see Table 9-5). The total value of the cabbage crop increased significantly in 2011, as did the value for tomatoes and squash in New York State. Table 9-5 also highlights the national importance of many (fresh and processed) vegetables. For seven of the nine fresh vegetable crops listed in Table 9-5, 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.

Recent USDA information indicates that national shipment levels of fresh vegetables were approximately 2% higher in mid-2012 compared to mid-2011. The 2% comprises a large range across individual commodities, however. National shipments of snap beans, sweet corn, cucumbers, and specific peppers and tomatoes increased by more than 25%; at the same time national shipments of cabbage, onions, squash, and selected tomatoes decreased sharply. Furthermore, these numbers may overstate actual market conditions given that local markets have become much more important and these are not covered in the USDA national shipment information.

**TABLE 9-5. VALUE OF COMMERCIAL VEGETABLE PRODUCTION IN NEW YORK STATE AND THE UNITED STATES**

	New York State			United States		
	2009	2010	2011	2009	2010	2011 <sup>a</sup>
<b><u>Fresh</u></b>	----- Million dollars -----					
Sweet corn	58.3	71.1	53.6	835.8	750.5	-
Cabbage	54.5	74.5	86.6	341.4	378.4	-
Onions	67.6	53.7	33.1	843.6	1,109.3	-
Snap beans	23.6	39.2	31.0	259.9	303.7	-
Cucumbers	16.1	18.5	18.6	220.8	193.4	-
Tomatoes	32.7	28.5	36.6	1,313.9	1,390.8	-
Pumpkins	21.8	35.1	23.6	102.7	116.5	-
Squash	23.0	36.8	42.9	203.5	203.6	-
Cauliflower	2.4	3.4	2.4	286.7	243.9	-
<b><u>Processing</u></b>						
Sweet corn	-	-	-	335.6	241.3	-
Snap beans	14.9	21.5	15.2	155.4	142.7	-
Green peas	-	-	-	140.7	104.6	-
Cabbage	-	-	-	-	-	-
Sources: <u>New York Agricultural Statistics</u> , 2012; <u>USDA Agricultural Statistics</u> , 2011.						
<sup>a</sup> Data for 2011 were not available from <i>USDA Agricultural Statistics</i> at the time this report was written (as of December 1, 2012).						

#### **9.4 Vegetable Outlook: Marketing and Policy Issues**

Many of the outlook issues identified for fruit crops in section 9.2 also have implications for vegetable products. Food safety concerns, traceability issues, country-of-origin labeling requirements, international trade, and potential policy changes in the next Farm Bill 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 2013 as negotiations concerning the next Farm Bill continue. 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. Title IV includes specific provisions for fruits and vegetables in nutrition programs; Title V continues to fund the Market Access Program to support promotion efforts for many specialty crops in foreign market; and Title VII provides some support for research and development activities for the horticultural sector including the Specialty Crop Research Initiative. Changes in many of these programs were discussed in plans that sought to reduce \$23 billion in expenditures for the next Farm Bill under the auspices of the so-called super committee. Although those discussions are now over, there will be a continued effort to critically



examine various provisions that were maintained, and introduced, in the 2008 Farm Bill in upcoming negotiations leading up to the next Farm Bill.

One provision that will be assessed critically in Title I is the planting restriction for fruits and vegetables on base acres. Both the Senate Bill, S. 3240 (United States Committee on Agriculture, Nutrition, and Forestry 2012) and the House Bill, H.R. 6083 (House Committee on Agriculture 2012) proposed to repeal direct payments as part of Title I, and this would also eliminate the planting restriction on fruits and vegetables. This is an important policy consideration in New York State as we have seen a rapid decline in production of processing vegetables over the past five years. Next we take a closer look at the possible implications of the elimination of the planting restriction provision.

The 1990 Farm Bill introduced provisions for farmers enrolled in federal farm support programs to receive payments while moving some of their base acreage away from specific program crops. As a condition of eligibility for payments, producers with a demonstrated history of planting program crops were obligated to continue to plant the historical program crop on at least 75% of base acreage; producers were allowed to plant up to 25% of base acreage (so-called “flex” acres) in an alternate crop, but were explicitly prohibited from planting certain specialty crops on that land, including fruits, vegetables, tree nuts, and wild rice. The 1996 Farm Bill extended planting flexibility to all base acres, but maintained the prohibition on fruit and vegetables.

Producers in violation of the planting restriction would lose payments on those acres planted in fruits and vegetables, plus receive a financial penalty equal to the market value of the restricted fruit or vegetable crop. Further, the producer in violation could lose its contract for federal farm support programs. Exceptions to the planting restriction were made under any of three conditions: (1) farmers with a demonstrated history of planting restricted fruit or vegetable crops could plant them on base acres; (2) land with a demonstrated history of growing restricted fruit or vegetable crops could be used by farmers to produce restricted crops; and (3) regions with a history of double-cropping patterns (where one of the crops is fruits or vegetables). In all three exceptions, producers would forfeit program payments on all base acres planted in restricted crops. Thus, in any case, the planting restriction imposes a potentially important disincentive to produce restricted crops on base acres.

The planting restriction received widespread support from fruit and vegetable producers, who were concerned that unrestricted direct payments would subsidize new production of these specialty crops and lead to decreased prices. It has also attracted criticism from a wide variety of stakeholders—including consumer groups, farm policy critics, fruit and vegetable processors, and trade partners. There appears to be a consensus that the planting restriction may have affected decisions made by some individual producers yet has had a negligible impact on fruit and vegetable acreage overall. New research from Cornell suggests that the effects of the planting restriction may, in fact, be larger.

Using detailed county-level data describing the crop mix before and after the introduction of the planting restriction in 1990, we employ a framework to measure the impact of the fruit and vegetable planting restriction provision. We find a negative causal relationship between base acres in 1987 and the change in fruit and vegetable acres between 1987 and 1997, suggesting that the policy of direct payments and planting restrictions reduced fruit and vegetable acreage in the U.S. This also implies that removing the direct payments and planting restriction has the capacity to notably increase fruit and vegetable production in the United States (and thereby decrease fruit and vegetable prices).

Discussions prior to the 2008 Farm Bill led to the development of the Planting Transferability Pilot Program. The Pilot Program relaxed the planting restriction for specific vegetable crops in seven states in the Great Lakes region between 2009 and 2012; the total eligible land area under the Pilot Program was limited to 75,000 acres. We find that the planting restriction did not have a statistically significant effect on the change

in land area used to produce fruit and vegetables between 1987 and 1997. This finding suggests that the planting restriction was less of a constraint in this region relative to the nation overall. Reports that describe a limited level of grower response to the Pilot Program provide additional evidence that the planting restriction is not a substantial constraint to fruit and vegetable production in this region. Furthermore, we also found that the planting restriction had a much larger effect (compared to the effect found nationally) on land use in selected Sunbelt states (including New Mexico, Florida, Arizona, California, and Texas—the NFACT coalition). This suggests that the introduction of the planting restriction did crowd out fruit and vegetable acreage in this region.

The implementation of the Pilot Program in the Great Lakes region may have been a misguided policy experiment. We expect that if the Pilot Program was implemented in the Sunbelt states, or was adopted across selected counties nationally, there would have been greater response among agricultural producers. If policymakers were to extrapolate results from the Pilot Program in the Great Lakes region to other U.S. regions, it would most likely understate the impact that the planting restriction has had in U.S. agriculture. Given that the elimination of the planting restriction is an imminent possibility, it is important to carefully consider the impacts of its elimination on acreage used to produce fruits and vegetables and on those markets. It is difficult to predict how producers would respond to the elimination of the planting restriction, but our analysis that studies the effects of introducing the planting restriction suggests that it had a non-trivial impact on land use nationally and notably in selected Sunbelt states. This means that elimination of the planting restriction would affect prices for specialty crops, notably processing vegetables, and this would have implications for producers in New York State.

# Chapter 10. Grapes, Wine and Ornamental Crops

Miguel I. Gómez, Assistant Professor and Jie Li, Research Assistant

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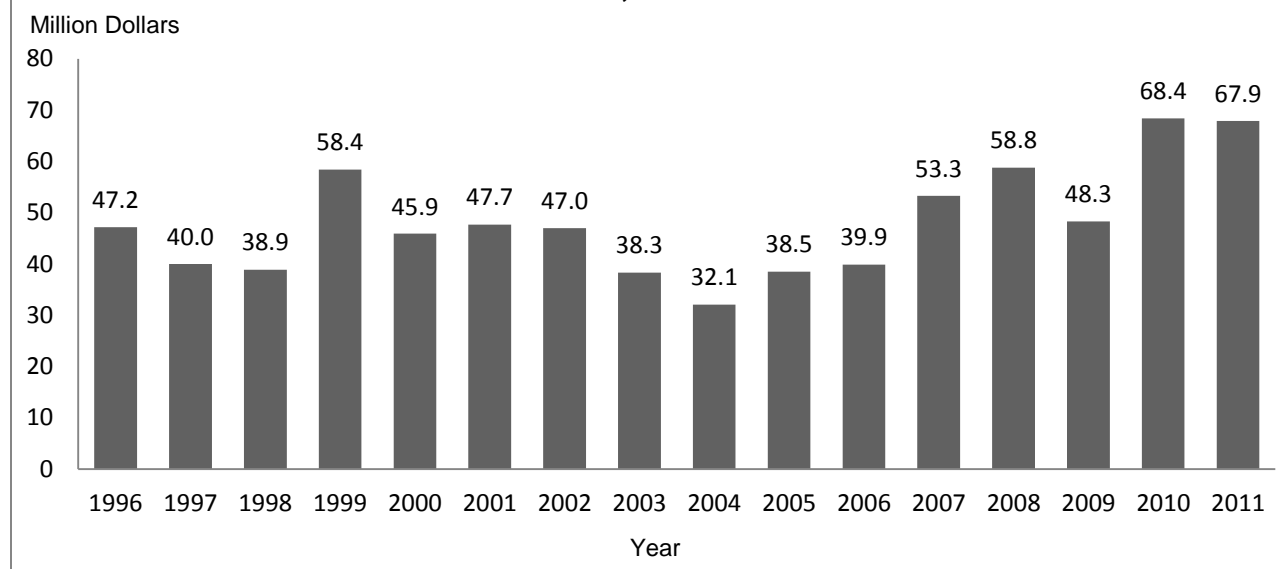
Specialty crops are an important component of New York State's agricultural economy. The agricultural products returned approximately \$5.26 billion in 2011, which almost increased 12% from the total farm value in 2010. About 23% of the state's land area or 7 million acres are used by the 36,000 farms to produce a very diverse array of food products. Tree fruit and grape crops accounted for nearly 6.7% of the total value of agricultural production in New York State with a total value of \$351 million, up 9% from the 2010 value. And another 3.3% was generated from production of ornamental crops with a value of \$171 million. 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. The crop value of grapes is estimated at \$67.9 million in 2011, slightly decreased from 2010. The floriculture products were valued at \$171 million dollars which placed New York the eighth in the nation.

Below we consider the market for three categories of specialty crops and take a closer look at market conditions in each. We examine current patterns, and provide an outlook, for grapes, wine, and ornamental products in New York. In each case we review production and price data between 2006 and 2011, give an economic outlook on expected market conditions in 2012, and also provide some thoughts on the long term potential for grapes, wine, and ornamental products produced in New York State and the United States.

## **10.1 Grapes**

Wine and juice grapes production placed New York the third behind California and Washington as usual. According to the National Agricultural Statistical Service, in 2011, production in New York increased 7% from 2010 to 188,000 tons, among which 185,000 tons of Grapes were crushed by wineries and processors, while only 3,000 tons went to fresh market. After experiencing a decline from 2008 to 2009, and significantly increases from 2009 to 2010, the crop value in 2011 kept stable in 2011 (Figure 10-1). Among the total value of production, 70% of the production was for juice, 28.4% went into wines and 1.6 % for fresh market (Table 10-1). Crop values for 2012 are not available yet, but it is forecasted to be down significantly with a total production of 115,000, tons which will be the lowest since 1977. In 2012, growers faced more challenging growing conditions than previous years. The early bud break caused by the warm weather in March, and the following several frosts and freezes in April contributed to the decreased production of grapes. The growers also encountered drought like conditions throughout June and July. The Chautauqua-Lake Erie grape belt reported a poor growing year. The Finger Lakes region experienced a warm March and an April freeze, but suffered less damage than the Lake Erie area. Long Island growers did not have the same issues with weather conditions that growers in central and western New York experienced.

**FIGURE 10-1. VALUE OF UTILIZED PRODUCTION OF GRAPES, NEW YORK, 1996-2011**



Source: New York Agricultural Statistics, 2012.

In 2011, total grape crop production in the U.S. was 7.37 million, which represents a slight increase from the 2010 crop. Although growers experienced late spring rain, cooler summer and fall rain, total grape production did not change significantly with respect to 2010. In 2011, grape utilization for the fresh market decreased 1,000 tons from 2010, after experiencing a substantial increase from 2009 to 2010. Meanwhile, processed grape for juice and wine production increased from 2009 to 2011. The increase in utilization for juice and wine offset the decrease in fresh market grapes, so total utilization of grapes in 2011 went up 7% from 2010.

**TABLE 10-1. NEW YORK GRAPE UTILIZATION, 2009-2011**

Use	2009	2010	2011
	<i>tons</i>		
Fresh	2,000	4,000	3,000
Juice <sup>a</sup>	84,000	124,000	131,000
Wine	44,000	48,000	54,000
Total	130,000	176,000	188,000

<sup>a</sup> Includes other processing for jam, jelly, etc.

Source: Fruit Report, New York Field Office, NASS, USDA, March 2012

U.S. grape production in 2012 is forecasted at 7.30 million tons, down 1% from 2011. California leads the U.S. in grape production with 90% of the total. Washington and New York are the next largest producing States, with 6% and 2%, respectively. California's all grape forecast, at 6.6 million tons, is down slightly from previous year. Washington growers expect to harvest 415,000 tons, up 31% from a year ago.

## **Grapes and Prices in New York**

Due to funding constraints, the USDA did not collect prices for each variety as has been the case in previous years (Table 10-2). Relative to 2010, grower prices growers of grapes from processing (excluding *vitis vinifera* varieties) dropped from \$363 per ton to \$ 338 per ton (7% down). Prices for fresh grapes are typically higher than those for grapes used for processing, reflecting higher production costs. Much of the high production costs are attributable to a significant dependence on manual labor. Typically, prices for table grapes are lowest in August, when the U.S. domestic grape supply is at its peak, and prices begin to rise in November as supplies decrease. Grower prices for grapes might opt to be higher than in 2011. Overall, steady demand in both domestic as well as export markets is likely to keep the grower price higher than in 2011, especially with a production decline.

Prices for fresh grapes last peaked at \$986 per ton in 2006. After tumbling to \$512 per ton in 2008, prices climbed to \$592 per ton in 2009 before falling to \$508 in 2010 (NASS 2011). Prices for all processing grapes remain lower than fresh grape prices. However, prices for canned and juice grapes have steadily climbed in the last few years while the price for wine grapes has varied. In 2011, canned grapes were valued at \$340 per ton, up \$3 per ton; juice grapes at \$277 per ton, up \$19 per ton; and wine grapes at \$594 per ton, down \$5 per ton from the previous year (NASS 2011).

Concord is still the predominant variety grown and processed in New York (Table 10-3). After experiencing a substantial decline from 2008 to 2009 and a significant increase from 2009 to 2010, there were 125,500 tons of Concord New York-grown grapes processed in 2011. This represents an increase of 7 % relative to 2010 and is above the 5-year production average. Over the past five years, in average, Concords comprised 70.7 % of total tonnage utilized in the state. Due to the funding constraints, in 2011 the USDA collected production data only for Concord, Niagara and the total amount of grapes processed for wine and juice. According to the previous year data, the second leading variety is Niagara. Production of Niagara grapes increased from 21,600 tons to 21,700 tons since 2010, with an annual average of 18,340 tons utilized over the past five years, accounting for 11 % of the NY crush. The total utilization in 2011 increased to 185,000 tons from 172,000 tons, with 11.6% above the five years average.

<b>TABLE 10-2. GRAPES: PRICES PAID FOR NEW YORK GROWN GRAPES PROCESSED 2009-2011</b>				
Variety	2009	2010	2011	3-Year Avg.
<u>American Varieties</u>				
Catawba	287	313	NA	300
Concord	264	287	NA	276
Delaware	376	436	NA	406
Niagara	271	285	NA	278
<u>French American Hybrid</u>				
Aurora	409	411	NA	410
Baco Noir	529	563	NA	546
Cayuga White	502	545	NA	524
de Chaunac	525	512	NA	519
Rougeon	484	505	NA	495
Seyval Blanc	523	555	NA	539
Vitis Vinifera(all)	1,304	1378	NA	1341
Other varieties	422	544	NA	483
Total, all varieties	352	363	338	358

Source: Survey of Wineries and Grape Processing Plants New York, 2011.

**TABLE 10-3. GRAPES: NEW YORK GROWN  
RECEIVED BY WINERIES AND PROCESSING PLANTS, 2007-2011<sup>a</sup>**

Variety	2007	2008	2009	2010	2011	5-year Avg.
Catawba	4,930	3,670	5,150	7,110	NA <sup>c</sup>	5,215
Concord	131,000	127,000	84,900	117,300	125,500	117,140
Delaware	430	470	340	350	NA <sup>c</sup>	398
Niagara	21,000	15,000	12,400	21,600	21,700	18,340
Aurora	2,480	3,320	3,530	2,990	NA <sup>c</sup>	3,080
Baco Noir	430	520	820	610	NA <sup>c</sup>	595
Cayuga White	1,090	1,460	1,650	1,540	NA <sup>c</sup>	1,435
De Chaunac	180	180	420	240	NA <sup>c</sup>	255
Rougeon	270	380	370	260	NA <sup>c</sup>	320
Seyval Blanc	430	760	1,280	680	NA <sup>c</sup>	788
Vitis Vin.(all)	5,770	7,170	7,880	9790	NA <sup>c</sup>	7,653
Other varieties <sup>b</sup>	7890	8070	9260	4310	37,800	13,466
Total, all varieties	176,000	168,000	128,000	172,000	185,000	165,800

a Includes New York grown grapes received at out-of-state plants.

b Includes other American and French Hybrid varieties not shown.

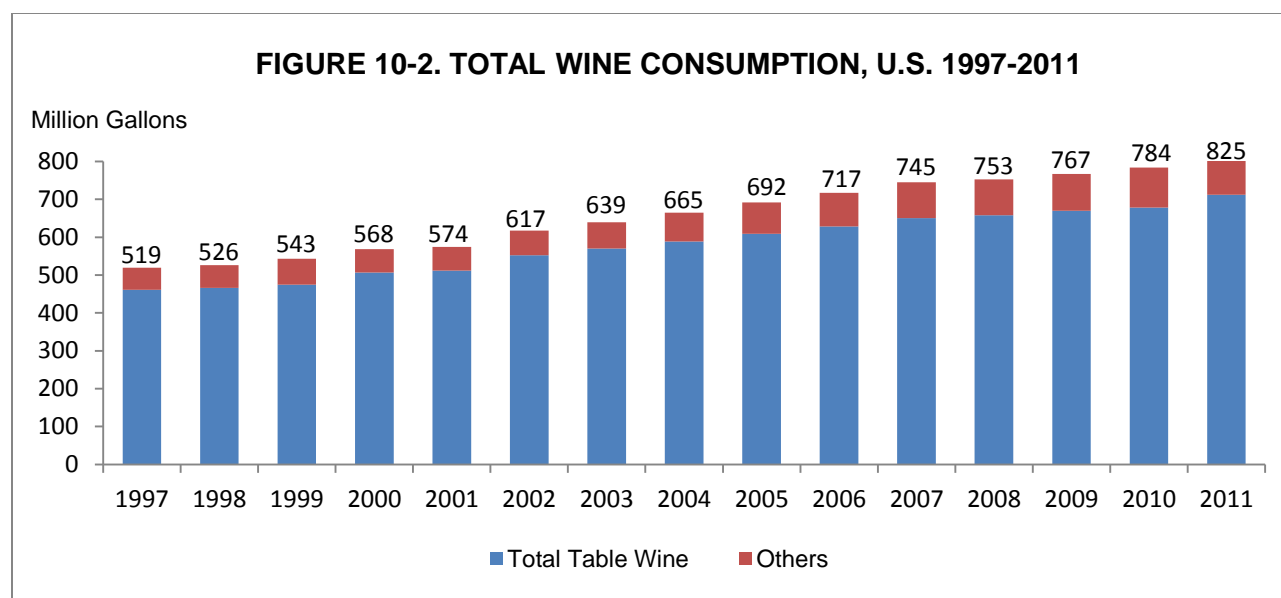
c Data not collected due to lack of funding

Source: New York Agricultural Statistics, 2012

## 10.2 Wine

According to the fruit report from NASS New York Field Office, in 2011, wineries and processing plants located in New York State crushed a total of 185,000 tons of grapes grown in New York or other states, up 7.6 % from the 172,000 tons processed from the 2010 crop. Grape crushed for wine in New York increased 12.5% from last year to 54,000 tons and accounted for 30% of all grapes processed (the rest 70% went to grape juice and other products). Tonnage utilized for juice and other products increased by 6% from 2010 to 131,000 tons.

In 2010, the U.S. became the largest wine-consuming nation followed by France. In 2011, the U.S. is again world's largest wine market. The U.S. wine industry continues its expansion (Figure 10-2). Shipments into U.S. trade channels of wine from California, other states and foreign suppliers reached 825 million gallons (nearly 347 million cases), a record high for the industry in 2011 and a 5.3 % increase compared to the previous year, with an estimated retail value of \$32.5 billion. According to Fredrickson and Associates, California's 211.9 million cases held a 61% share of the U.S. market. This is the 18th consecutive year of volume growth in the U.S. Table wine sales led wine sales in 2011 with a total of \$30 billion retail value for 9 liter cases (Table 10-4). According to the Wine Institute, shipments of sparkling wine and champagne were the highest in the last 25 years, reaching 17.2 million cases, up 13% over the previous year. Strong sales came from a variety of different producers and regions worldwide. *Prosecco* and sparkling *Moscato* were among the winners, but champagnes, other sparkling wines and California *Method Champoise* wines also experienced gains. 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.



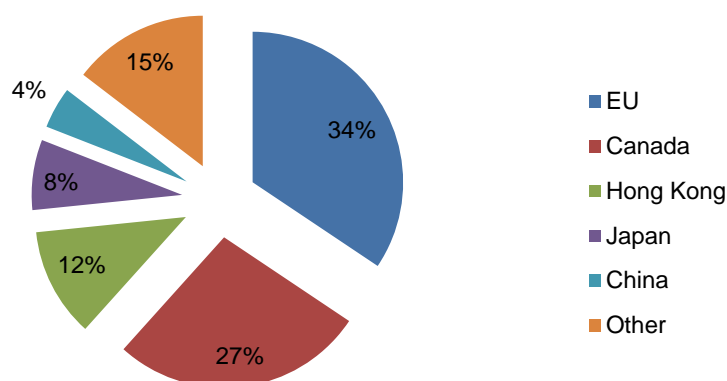
Source: Wine Institute; Department of Commerce; Gomberg, Fredrickson and Associates, 2012

<b>TABLE 10-4. WINE SALES IN THE U.S. 2007-2011 IN MILLIONS OF 9-LITER CASES</b> <i>(Wine shipments from California, other states and foreign producers entering U.S. distribution)</i>					
Year	Table Wine	Dessert Wine	Sparkling Wine/ Champagne	Total Wine	Total Retail Value
2011	299.3	30.6	17.2	347.0	\$32.5 billion
2010	285.2	29.1	15.4	329.7	\$30.0 billion
2009	281.5	27.4	13.9	322.8	\$28.7 billion
2008	274.7	27.6	13.5	315.8	\$30.0 billion
2007	273.5	26.5	13.8	313.8	\$30.4 billion

Source: Wine Institute; Department of Commerce; Gomberg, Fredrickson and Associates, 2012

U.S. wine exports, 90% from California, reached a new record of \$1.39 billion in winery revenues in 2011, an increase of 21.7% from 2010. Volume shipments were up 5.8% to 455.7 million liters or 50.6 million nine-liter cases. 34% of U.S. wine exports by value were shipped to the 27-member countries of the European Union, accounting for \$478 million of the revenues, up 10% from 2010. Other top markets were: Canada, \$379 million, up 23%; Hong Kong, \$163 million, up 39%; Japan, \$105 million, up 39%; and China, \$62 million, up 42% (Figure 10-3).

**FIGURE 10-3. EXPORT OF U.S. WINE TO OTHER COUNTRIES  
2011**



Source: Wine Institute; Department of Commerce; Gomberg, Fredrickson and Associates, 2012

### **10.3 Outlook for Grapes and Wine**

New York grapes are employed mostly in either wine or juice production, while a very small percentage is allocated to table grapes. In 2011, there were 3,000 tons of fresh grapes, while 185,000 tons of grapes were crushed by wineries and processors in New York State. According to USDA's Economic Research Service, the quantity of grapes to be crushed for wine is likely to go down in 2012-2013, mostly driven by the reduced wine grape production in the state. The U.S. grape production is forecasted to have smaller harvest than 2011 due to the unfavorable weather conditions this growing season, which affected major producers particularly in Michigan, Ohio, Pennsylvania, and New York, where production reductions are forecasted in the range of 35% to 75% from 2011 levels.

While deep production cuts are expected in many States, USDA forecasts suggests a steady production in California, which supplies 90% of all U.S. grapes; and a significant boost in Washington, the second-largest producer state. At the same time, dry weather has meant concentrated flavor and sugars and reduction of pests and disease, translating into high-quality fruit. This may drive up prices growers will receive for grapes sold to wineries through 2012/2013. The prices of wine on U.S. store shelves could start rising this year because of an "emerging shortage" of wine grapes and wine plus a more intense wine marketing last year.

Considering the grape juice market, after a significant increase in juice grape production from 2009 to 2010, the total quantity of grapes available for juice processing from this year's harvested crop continued increasing. This will likely drive down prices growers will receive from juice processors in 2012/13. In addition, juice processors in the United States increased their international grape juice purchases by 3% from the previous season. Grape juice exports from the U.S. are also forecasted to increase by 21.7%.

USDA forecasts that U.S. raisin production is likely to be down from the previous season. The primary reason for this decline is the lower quantity of available grapes for drying this year and the forecasted smaller harvest for raisin and table grapes in California. Grower prices for raisin grapes are expected to be high due to reduced raisin production and tight inventories. Since the early 2000s, raisin grower prices averaged at least \$1,000 per ton. In 2011/12, prices averaged \$1,632 per ton, up from \$1,540 per ton in the previous season and the highest since 2004. While this season's domestic raisin production is anticipated to



decrease, exports of U.S. raisins in 2012/13 are forecasted to increase by 5% from last season to 360.0 million pounds (dried weight). Raisin exports will increase primarily to Europe and China.

Table grape production is forecasted to drop again during the 2012-2013 marketing season. While NASS forecast the State's table grape crop to be slightly smaller this year, crop maturity moved ahead of last year's delayed crop, prolonged by cool, wet weather in the spring of 2011. U.S. grower prices for fresh grapes averaged \$0.705 per pound (or \$1,410 per ton) in June, 31% higher than the June 2011 price, 68% above the previous 5-year July average price, and the second highest July price on record since NASS started reporting monthly grape prices in 1995. In addition to the anticipated reduced domestic table grape production, lower overall imports from Chile this winter and spring likely contributed to strong early-season grower prices for U.S. fresh grapes. Despite this decline, the current projected fresh production, if realized, will be relatively the same as the previous 5-year average crop size. That should mean overall supply shortages in the U.S. fresh grape market will not be an issue in 2012/13. California produces 90% of all U.S. grapes and supplies almost all of production for fresh use. Domestic fresh grape use averaged 8.0 pounds per person over the previous 5 years (2007/08-2011/12).

Reduced grape production in California will be mostly behind the lower tonnage of U.S. grapes for fresh use in 2012/13. Only a small volume of California wine grapes are diverted to the fresh market each year. While raisin grapes are mostly used for raisin production, the volume of raisin grapes for fresh use far exceeds those from wine grapes. Therefore, the decline in California's raisin grape production would more than offset the increase in the States' wine grape production in reducing fresh-market supplies in 2012/13. Based on the 2012/13 NASS forecast production, ERS projects U.S. fresh-market grape production to decline for a second consecutive year to 1.92 billion pounds, down 2% from 2011/12.

Table 10-4 shows forecasts for the period 2013- 2015 from the National Food and Agricultural Policy Project (NFAPP), prepared in 2010. According to NFAPP, total grape output will grow steadily. 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, while the per capita consumption of raisins shows a slightly downward trend.

**TABLE 10-5. ECONOMIC OUTLOOK FOR GRAPES, 2013-2015**

	U.S. (unless noted otherwise)		
	2013	2014	2015
<b><u>Total</u></b>			
Acres (1,000)	974	974	974
Yield (tons per acre)	8	8	8
Total U.S. Production (1,000 tons)	7,686	7,726	7,766
Total Production Outside California (1,000 tons)	876	905	938
<b><u>Table Grapes</u></b>			
Production (million pounds)	2,045	2,069	2,093
Farm Price (dollars per ton)	775	805	838
Retail Price (dollars per pound)	2.44	2.54	2.64
Exports (million pounds)	912	938	957
Imports (million pounds)	1,500	1,557	1,614
Per capita consumption (pounds)	8.22	8.31	8.42
<b><u>Wine</u></b>			
Production (million gallons)	641	651	662
Farm Price (dollars per ton)	678	711	746
Retail Price (dollars per gallon)	32.35	33.46	34.66
Exports (million gallons)	128	129	131
Imports (million gallons)	272	285	299
Per capita consumption (gallons)	2.45	2.5	2.54
<b><u>Raisins</u></b>			
Production (million pounds)	677	681	685
Farm Price (dollars per ton)	221	223	226
Retail Price (dollars per pound)	NA	NA	NA
Exports (million pounds)	360	368	376
Imports (million pounds)	48	51	54
Per capita consumption (pounds)	1.62	1.6	1.58
<b><u>Grape Juice</u></b>			
Production (million gallons)	95	96	97
Farm Price (dollars per ton)	336	340	345
Retail Price (dollars per gallon)	4.7	4.82	4.96
Exports (million gallons)	28	29	29
Imports (million gallons)	83	85	88
Per capita consumption (gallons)	0.47	0.47	0.48

Source: National Food and Agricultural Policy Project, 2012.

## 10.4 Ornamentals

Nationally, the 2011 wholesale value of floriculture crops is down 2% from the revised 2010 valuation. The total crop value at wholesale for the 15-State program for all growers with \$10,000 or more in sales is estimated at \$4.08 billion for 2011, compared with \$4.15 billion for 2010. The number of producers for 2011 is 5,763, which represents a reduction of 7% from the previous year. The total covered area for floriculture crop production was 71 million square feet, which is down 2% from 2010.

**TABLE 10-6. GROWER CASH RECEIPTS OF FLORICULTURE AND NURSERY CROPS, NEW YORK, 2005-2011**

	2005	2006	2007	2008	2009	2010	2011
--- Million dollars ---							
Floriculture <sup>a,b</sup>	200.6	203.5	209.1	204.3	182.6	166.6	171.2
Nursery <sup>c</sup>	181.3	205.5	NA	NA	NA	NA	NA
Floriculture and nursery crops	381.9	409	NA	NA	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 Press Release, National Agricultural Statistical Service. 2012

**TABLE 10-7. VALUE OF FLORICULTURE PRODUCTION BY PLANT CATEGORY, NEW YORK, 2007-2011**

	2007	2008	2009	2010	2011	5-yr. avg. 2007-2011	2011 vs. 5-yr. avg.	2011 vs. 2010
							%	%
Bedding/garden plants <sup>a</sup>	111.8	109	98.6	105	103	105.5	-2.3%	-1.9%
Potted flowering plants <sup>a</sup>	41.4	42	42.3	20.8	24.2	34.1	-29.1%	16.3%
Cut flowers <sup>a</sup>	4.6	NA	2.3	1.9	NA <sup>c</sup>	2.9	NA	NA
Foliage Plants <sup>a</sup>	3.3	4.2	2.94	2.63	NA <sup>c</sup>	3.3	NA	NA
Propagative materials <sup>a</sup>	20.7	19.8	16.8	17.6	22.1	19.4	13.9%	25.6%
Grower sales								
\$10,000-\$99,999 (Unspecified crops)	27.1	26.4	17.7	18.9	19.6	21.9	-10.7%	3.7%
Total <sup>b</sup>	209.1	204	183	167	171	186.8	-8.3%	2.8%

a Sales by operations with annual sales of \$100,000 or more.  
b Total reported crops includes categories not listed  
c Not published to avoid disclosing individual operations

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

In 2011, the commercial sales value of New York floriculture production totaled \$171 million, a slightly increase from the revised 2010 sales value, ranking New York 8<sup>th</sup> in the nation (Table 10-6).

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 10-7 indicates that bedding and garden plants are the number one component with total value of sales at \$103million in 2011, a slightly decrease from the revised 2010 sales value. Potted flowering plants were second with a value of sales of \$24.2 million in 2011, a significant decrease from 2009. Propagative materials were third at \$22.121 million, a 26% increase from the previous year (Table 10-6). In 2010, there were 615 growers in New York (down from 657 in 2010) and the open ground area used to produce floriculture crops kept decreasing to 670 acres, down 12% from 2010 (Table 10-7). However, according to the 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 2011 include area used for production of nursery crops as well as floriculture crops.

**TABLE 10-8. GROWING AREA FOR FLORICULTURE CROPS IN NEW YORK<sup>a</sup>  
2007-2011**

Year	Total greenhouse cover	Shade and temporary cover	Total covered area	Open ground	Total covered & open ground
	-- 1,000 square feet --			--- acres ---	
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	3,127
2010 <sup>b</sup>	25,378	340	25,718	760	1,350
2011	25,023	286	25,309	670	1,250

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.  
b Revised

Source: Floriculture Crops, NASS, USDA, various years

An important distinction in floricultural production is the size of operation. According to NASS reports, the U.S. value of floriculture production was \$4.08 billion in 2011, compared to \$4.13 billion for 2010 (Table 10-9). The value of production from large and small growers decreased by 1.1% and by 4% with respect to 2010, respectively. While the value of production from large and small growers in New York both increased by 2.6% and 3% from 2010, respectively. The share of 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 11.4%, which is high compared to the 3.5 % in the U.S. In New York, the value of production from small growers increased to \$19.6 million in 2011 from 2010; and the value from large growers increased slightly to \$ 151.6 million relative to 2010 (Table 10-9).

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 Table 10-9 were adjusted to include only the 15 states surveyed in 2009 and 2010 for comparison. In 2011, the leading state is still California which accounts for 25% of the total wholesale value in the 15-States. Florida ranks second with 21%; while Michigan ranks third with 9%, and Texas and North Carolina round out the top 5 accounting for 6% each.

According to the Floriculture Crop 2011 summary report by NASS, USDA, the 2011 wholesale value of floriculture crops is down 3.94% compared to 2010. The crop value at wholesale for growers with \$10,000

or more in sales is estimated at \$3.94 billion for 2011, compared with \$3.98 billion for 2010. Bedding and Garden plants wholesale value of bedding and garden plants, at \$1.91 billion, is down about 2% from the previous year. Potted flowering plants for indoor or patio use, were valued at \$640 billion in 2010, down 1% from 2010. The value of 2010 foliage plant production, at \$613 million, is up 5% from the previous year, Florida continues to dominate this category with 72% of the total value. The value of cut flowers, at \$359 million, is 4% less than 2010; while cut cultivated greens, shrinks to 72 million from \$78 million in 2010.

**TABLE 10-9. WHOLESALE VALUES OF FLORICULTURE PRODUCTION, BY GROWER SIZE<sup>a</sup>, NEW YORK AND UNITED STATES, 2009-2011<sup>b</sup>**

	New York			U.S.		
	2009	2010	2011	2009	2010	2011
----- Million dollars -----						
Small growers	17.3	19.0	19.6	140	150	144
Large growers	153.2	147.7	151.6	3,860	3,980	3937
All growers	170.5	166.7	171.2	4,000	4,130	4081

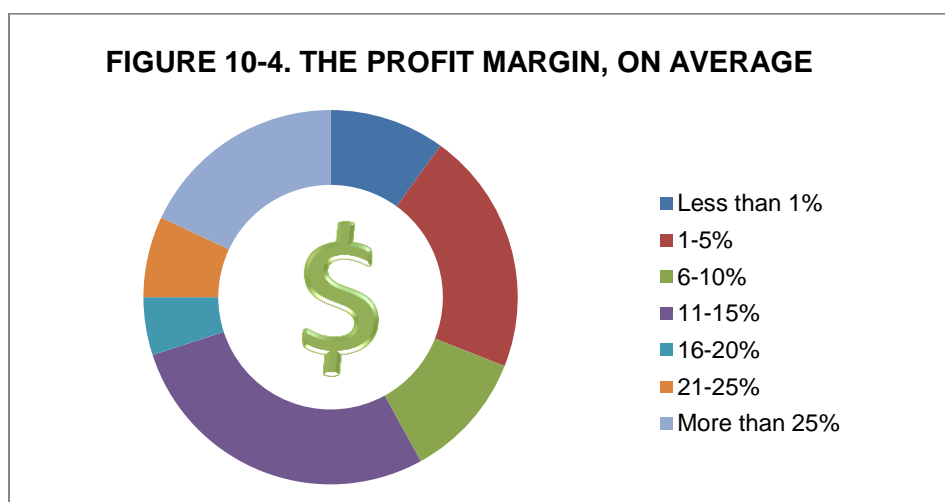
a Small growers have between \$10,000 and \$100,000 in annual floriculture sales; large growers have at least \$100,000.

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

Source: Floriculture Crop, National Agricultural Statistic Service (NASS), USDA, 2011

Regarding nursery crops, after several dismal sales in recent years, it seems that some relief has finally surfaced. Nursery Management (2012) surveyed growers in the states of Ohio, Indiana, Illinois, Wisconsin, Michigan, Kentucky, West Virginia and Virginia. The survey compared nursery performance in 2012 versus 2011. The majority of growers indicated an increase in sales and in profitability in 2012 relative to 2011. The survey reveals that about 30% of growers currently have a profit margin between 11-15%; nearly 20% of growers enjoyed profit margins ranging from 1 to 5 %; and 20% of growers reported profit margins above 25% in 2012 (Figure 10-4). The analysis indicates that more than 40% of those surveyed predicted a 6-10% growth in sales in 2012; 30% of growers are expecting a 1-5% sales growth; and more than 10% of growers are forecasting a 21-25% increase in sales.

**FIGURE 10-4. THE PROFIT MARGIN, ON AVERAGE**



Source: Nursery Management, 2012

Many growers in the north/central region of the U.S. already have or will plant more this year compared to 2011 (Table 10-10). The majority of respondents said they planned to increase production by 1-10%. This is good news, in comparison to the negative trends experienced by the sector in recent years. Increased production varies by the type of product: about 12% of those surveyed are increasing deciduous shade and flowering trees by more than 50%; nearly 36% of growers are planning to increase production of propagated materials by more than 26% in 2012; and 15% of growers plan to increase production of evergreen trees by more than 25%. Overall, growers are very confident that the tree business will grow, they believe that the demand will be strong, and predict that prices will be high.

**TABLE 10-10. CROPS THAT GROWERS ARE INCREASING PRODUCTION IN 2012 VS 2011**

PRODUCT	1-10%	11-25%	26-50%	MORE THAN 50%
Deciduous shade and flowering trees	48.0%	40.0%	0.0%	12.0%
Herbaceous Perennials	71.4%	23.8%	0.0%	4.8%
Deciduous Shrubs	78.3%	17.4%	0.0%	4.3%
Propagated Material (liners, cuttings, plugs)	28.6%	35.7%	28.6%	7.1%
Evergreen Trees	53.8%	30.8%	7.7%	7.7%

Source: [Nursery Management, 2012](#)

## **Outlook**

Economic indicators suggest that ornamental growers are recovering from the economic downturn and experiencing a period of steady sustained growth. The predictions for 2013 are that we will experience a period of sluggish growth with a slow recovery in the next few years. The production of the ornamental crops will increase in the coming 2013, which is primary because the market is experiencing some kind of shortage throughout much of the U.S as growers have cut production, including but not limited to bedding plants field-grown material and shade trees. At the same time, there is growing interest from a large number of households in re-investing in their current landscapes. Therefore the short supply and the expected demand increase will probability provide the right incentives to recover the growth path of the ornamental industry. However, the growers need to be cautious to expand since they have been hit hard in the past four years. The implications for the floriculture industry and for nurseries and landscape industries are therefore cautiously optimistic.

With the shortages in the supply of ornamental products in the near future, it will be more critical than ever for retailers to commit for product purchases earlier and with firm purchase orders, especially for peak selling periods. Pre-books will need to be the norm rather than the exception. Retailers and suppliers are in need of strengthening their partnerships by sharing information with each other so as to gain market knowledge and benefit from supply chain efficiencies.

The next couple of year won't be more challenging than the past several years. However, to maintain growth, suppliers should focus on understanding customer needs and on having the right assortment of products. They need to learn to serve customers in innovative ways: as consumers continue to change, they need to change with them. Producers and retailers should not try to wait to react to change. Instead they should focus on anticipating consumer demand for the products and services offered by the industry. By doing so, the ornamental supply chain, including growers and retailers, would eventually be more customer-centered, more relationship-oriented, and more transparent.

Looking ahead, the industry is in need of identifying key consumer benefits that could be promoted either by individual firms or by ornamental industry national and regional associations. This could be through aggressive industry marketing strategies based on promotions, publicity, branding, and product innovation.





## OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (if applicable)	Author(s)
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2012-12	Unconventional Natural Gas Development and Infant Health: Evidence from Pennsylvania		Hill, E.
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