

2018 Nevada Agricultural Outlook



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in cooperation with

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Table of Contents

Introduction.....	1
The Economy.....	3
Agricultural Policies.....	9
The Outlook.....	13
Risks to the Outlook.....	31
Appendix Tables.....	33

Introduction

The general global agricultural outlook is less than robust as grain and oilseed prices persist at levels well below their peaks of a few years ago. Though major grain and oilseed prices are projected to exhibit little upward movement over the outlook period, they will remain between world market levels prior to 2006 and the high prices of 2010-2013. This expected stability will limit inter-year volatility in the coming ten years. Livestock prices, especially for cattle are also off peaks and are now on the downward arc of the cycle. These developments in agricultural markets are influenced by a number of major factors, both short term and long term. Among them are the economy, weather, agricultural policy, and technology. Assumptions regarding these factors are keys to the shape of this outlook. The stable characteristics of this outlook stem, among other things, from assumptions of global economic growth near the long-term potential, normal weather in producing regions, and a moderately upward petroleum price path. Of course, we recognize that there will be developments that will move us from these assumptions at some time in the next decade, but we do not know when or where. This outlook therefore serves as a middle-of-the-road baseline against which we can compare unforeseen developments.

If the normal temperature and precipitation patterns assumed in this analysis are realized continuing healthy crop supplies will exist, even at relatively low, stable prices projected. Lower prices have alleviated high feed costs for livestock markets and food processors. While deviations from normal weather will continue to have short-term impacts on markets, in the long term, weather is expected to be approximately “normal.” This outlook, therefore, is shaped more by demand side developments than by the supply side.

In contrast to the past several years, global economic growth is finally achieving long-term expectations in 2018. The current rate of growth is expected to remain steady for emerging and developed economies. Both China and India are expected to experience slowing growth over the next decade as their economies mature. However, developing economies are expected to increase growth rates offsetting slowing growth in maturing economies. Increasing global trade protectionism and geo-political disruption adds risk to the pace of economic growth.

Attaining potential economic growth will buoy demand. The growth in demand will limit further downward movement of prices, and allow agricultural producers to maintain returns necessary to keep pace with global consumption. Most of the increase in production will come from yield growth, as returns are not expected to be adequate to induce substantial expansion of crop area in most regions with the exception of major South American exporting countries. Consumption is expected to slightly outpace population growth for most commodities as income expansion, especially in emerging and some developing regions spurs improvements in standards of living and diets.

The value of the U.S. dollar remained relatively stable in 2017 relative to a global basket of currencies. The dollar is expected to depreciate against developing and developed countries and appreciate relative to emerging countries over the next few years then stabilize through the end of the projection period. However, performance against specific currencies will be mixed.

Overall, developing country currencies will weaken the most relative to the dollar. Depreciation of local currencies is expected to occur widely in Africa and Latin America.

While depreciation of currencies, especially steep and rapid weakening causes reduced ability to purchase goods in the short and medium term, often longer-term effects are mitigated by adjustment in the relative price levels of the importing vis-à-vis the exporting country. When adjusted for relative rates of inflation, the purchasing power of nearly all nations is expected to rise.

Agriculture in Nevada faces a weak price outlook. Feeder steer operations are the largest of the agricultural industries in Nevada and feeder steer prices are expected to drop again in 2018, although not as severely as in the past two years. Nevada ranchers will face declining prices through 2020 before another cyclical strengthening takes place in the last half of the dip again this year after increasing in 2017 from 2016 lows. After 2018, milk prices are expected to move steadily higher for several years. However, the price increases will be limited and profitability will be constrained at a time dairy producers in the northern part of the state are expanding their herds to meet the needs of the whole milk powder processing plant. Hay prices have recovered somewhat and will continue to move higher for several years before stabilizing after 2020.

The bright spot in the livestock and dairy sector will be sheep and wool. Global wool prices are at record highs because of shortages in Australia for the past two years and recovery of the flocks there is expected to take several years, helping maintain high wool prices. Nevada producers are tied closely to Australian wool prices.

A feature of this outlook is Nevada producers will face a generally constrained financial situation in the first five years. With expectations of constrained prices in the short to medium term, rising costs will keep profitability, especially for cattle and dairy producers low. Even after the cattle cycle bottoms, improvements in profitability will be limited and certainly not reach record levels. For hay producers, the improved price environment has enabled producers to be profitable. In general, the outlook is for limited net income in the Nevada agricultural sector.

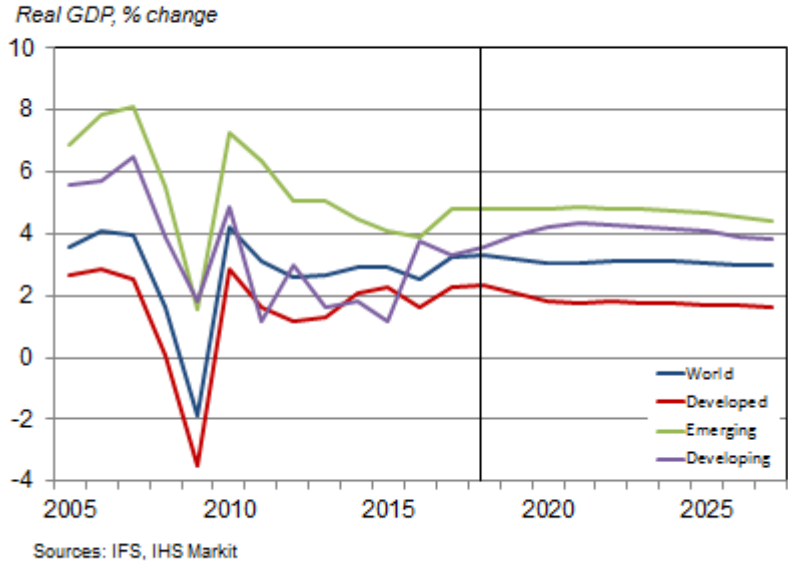
The risks to this outlook come from several sources. Weather, domestic and global economic growth with accompanying changes in foreign exchange rates, domestic and global agricultural and trade policies, including possible imposition of tariffs, geo-political developments, and technology all have the potential to impact agriculture and positively or negatively alter the outlook.

Weather can disrupt both crop and livestock production. Normal weather is assumed here because the frequency, location, and severity of weather events are unknown. Shocks to feed supplies in a number of locations around the world will also impact U.S. and Nevada crop and livestock prices and therefore those markets. The failure of the domestic and global economies to perform as assumed in this outlook could result in weaker demand. A stronger international economy would improve this tepid outlook.

The Economy

After several years of falling short of expectations, the global economy finally neared potential growth in 2017 and is expected to maintain a similar pace throughout the projection period (Figure 1). The current rate of growth is expected to remain steady for emerging and developed economies, whereas developing economies are expected to increase growth rates through 2020. Increasing global trade protectionism and geo-political disruption lends uncertainty to continued economic growth. Appendix Table 1 presents an overview of economic assumptions utilized in the outlook.

Figure 1. Finally Reaching Growth Potential



The U.S. and Canadian economies reached growth expectations in 2017. Much of Western Europe will moderate growth, although the UK is expected to see growth slow as it moves through the Brexit process. Japan’s expansion will again be modest, slightly lower than the performance of 2017.

China is expected to slow again in 2018, whereas India will accelerate. Both these countries are expected to experience slowing growth over the next decade as their economies mature.

Oil prices are expected to exhibit a slow recovery until excess productive capacity is absorbed over the next several years. Prices will then begin to increase at a greater rate and yearly production increases are expected over the next decade. Middle Eastern and North African oil exporters will experience improved growth, but some countries in that region will still see economic contraction due to war in that politically unstable region. Russia and other former Soviet energy-dependent economies will see accelerating rates of growth over the next few years.

The slowing in population growth rates will persist in all global regions in the long term. Annual global population expansion will fall below 1% within the next 10 years, although individual nations' growth rates will vary considerably.

Middle East unrest has pushed many refugees from their homelands and a large proportion of those people are heading for developed countries, especially in Europe and North America. There are political issues surrounding the settlement of refugees which will impact regional population shifts in the medium term.

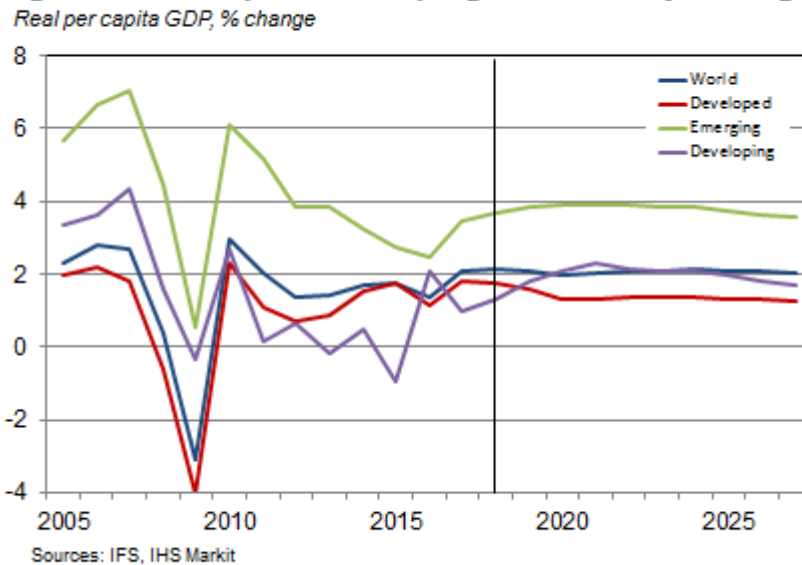
Developing and emerging economies are projected to exhibit significant slowing in population growth. Even with economic and geo-political issues, developing nations overall will still have the highest growth rates. Developed nations will continue to experience population growth declines, although at a very gradual pace.

Emerging nations will experience slower than average population growth. With high income growth, this group will enjoy robust per capita income increases (Figure 2), increasing purchasing power, especially as the economies of energy-dependent nations re-accelerate.

Despite high total GDP growth in developing countries, rapid increases in population dilute per capita income expansion to around the global average and constrain improvements in standards of living. Food and feed demand will increase primarily as a result of population growth in many of the poorest nations until income thresholds are reached that enable improved diets and increased demand for consumer goods.

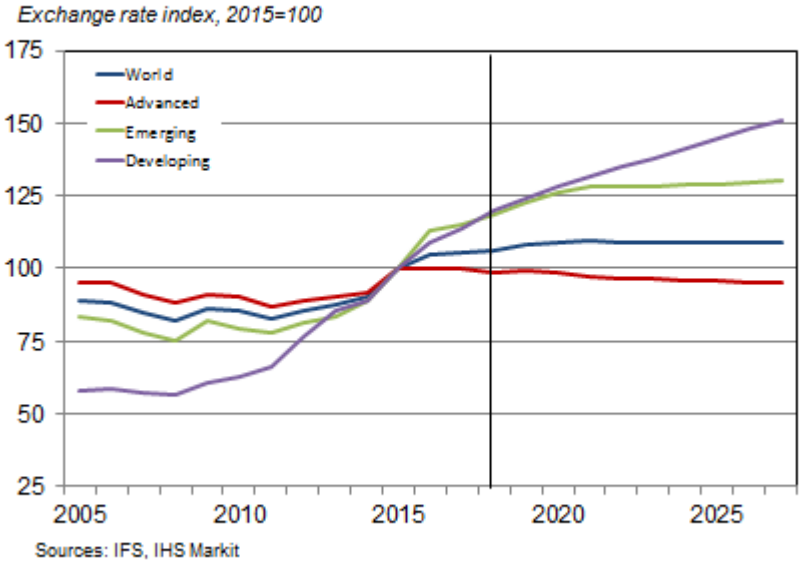
Some of the poorest nations have incomes below the developing nation average of \$2,100, and those populations often live on subsistence agriculture, without much ability to purchase additional food.

Figure 2. Per Capita Developing Growth Only Average



The value of the U.S. dollar remained relatively stable in 2017 against a global basket of currencies. The dollar is expected to depreciate against developed countries and appreciate relative to emerging countries over the next few years, then stabilize in the second half of the outlook. Overall, developing country currencies will weaken the most relative to the dollar. Depreciation of currencies is expected to occur widely in Africa and Latin America (Figure 3).

Figure 3. Depreciation for Developing Currencies



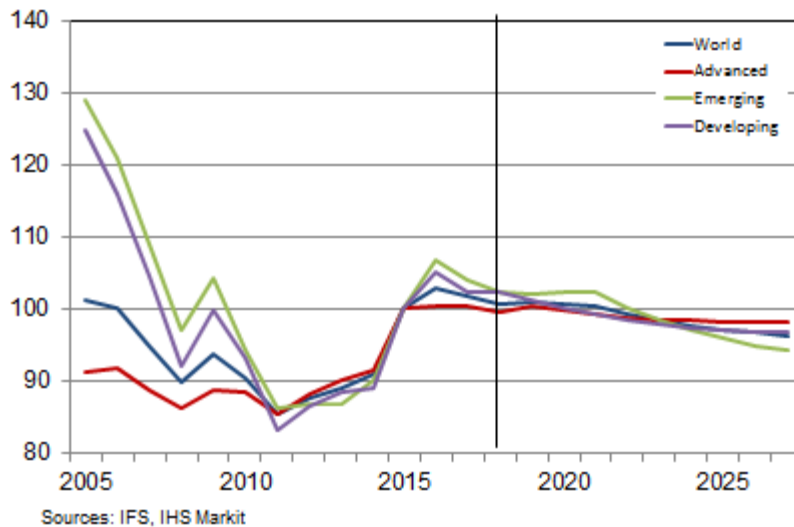
The Japanese yen fluctuated against the dollar in 2017 but finished stronger than the year began. The euro performed particularly well in 2017 against the dollar. The Russian ruble also fluctuated against the dollar but finished 2017 weaker than the year began. Whereas the euro and Japanese currencies continue to gain strength against the dollar in 2018, uncertainty in Russian geo-politics increase uncertainty in Russian currency values in the near future.

The Chinese yuan will strengthen relative to the dollar in 2018 then fluctuate within recent ranges throughout the projection period. The Euro is expected to pull back on quantitative easing in 2018 which will contribute to strengthening against the dollar.

While depreciation of currencies, especially steep and rapid weakening causes reduced ability to purchase goods in the short and medium term, often longer-term effects are mitigated by adjustment in the relative price levels of the importing vis-à-vis the exporting country. The overall long-term picture is for one of increasing purchasing power relative to the dollar. As such, U.S. goods should increase competitiveness on world markets (Figure 4).

Figure 4. Gains in Global Purchasing Power

Real exchange rate index, 2015=100



As the Eurozone countries are projected to get their fiscal situations back on track, and deal successfully with Brexit, the Euro will appreciate against the dollar in real terms.

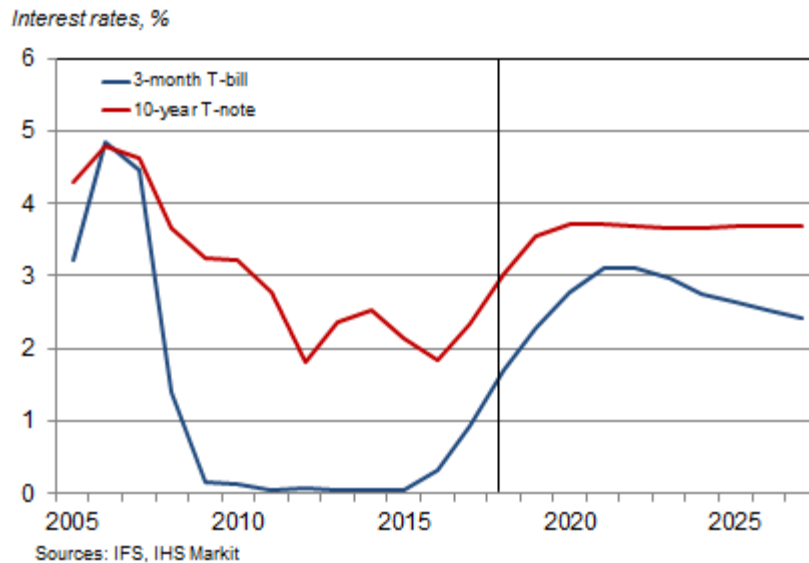
In inflation-adjusted terms, the Mexican peso is expected to regain some ground over the medium term before depreciating for the last half of the outlook. This projection could be somewhat different, depending on the outcome of negotiations regarding NAFTA.

Emerging countries' real exchange rates are expected to appreciate in the next few years, led by the stabilization and eventual strengthening of the Chinese yuan.

The Fed remains watchful for signs of inflation and has already reacted to a more robust U.S. economy with two hikes in interest rates. A less accommodative stance is expected to be continued and rates are expected to rise periodically over the next several years (Figure 65). The Fed will be engaged in a balancing act between keeping inflation in check and maintaining favorable lending standards to support the mortgage market and for consumers and businesses to borrow.

Low interest rates have been beneficial for agricultural producers that demonstrated credit worthiness. Low short-term interest rates for annual operating expenses reduced costs of borrowing. Longer-term interest rates have also been low, benefitting producers with capital and equipment needs. As interest rates are being bumped higher and are expected to move up in the next few years, operating expenses will increase and longer-term lending rates will be less encouraging for expansion or establishment of new enterprises.

Figure 5. Interest Rates Will Increase Borrowing Costs



The outlook for crude oil prices is for an increase this year as the global economy picks up the pace of growth, with an average below \$60 per barrel. Moderate price increases are projected thereafter, but remaining below \$100 per barrel throughout the projection period (Figure 6).

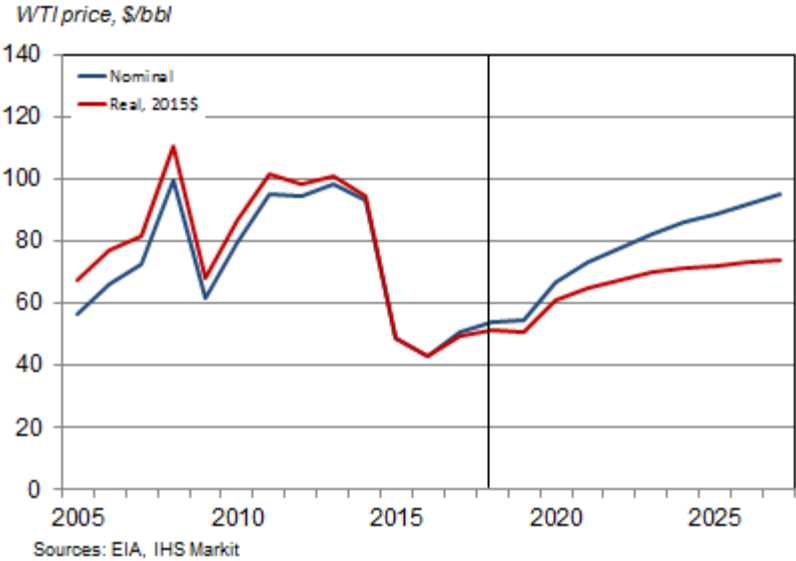
Oil price outlooks always have substantial risk around them, and this year the uncertainty is still present. Factors including the faster pace of the global economic growth, the war against ISIS in Syria and Iraq with consequences for Iraqi production and deliveries, excess production capacity resulting from recent exploration and development, and sizeable reserves existing in various production regions around the world all suggest that volatility will remain a fact of life in petroleum markets.

Prior to 2015, extended periods of high prices induced substantial exploration and expansion of production capacity that is beyond current demand. As a result, some of this capacity was idled as prices plummeted in 2015. However, prices are strengthening again and some of this capacity is already coming back online. This will limit increases in crude oil prices in the short to medium term. One upward risk is the recent Saudi/Russian agreement could lower supplies from those regions.

As petroleum product prices have been edging up, distillate prices have also gained in the past year. Nevertheless crude oil price increases are expected to be moderate, and fuel prices will not be a burden to consumers while the economies of oil importing nations will experience increased growth in the next few years.

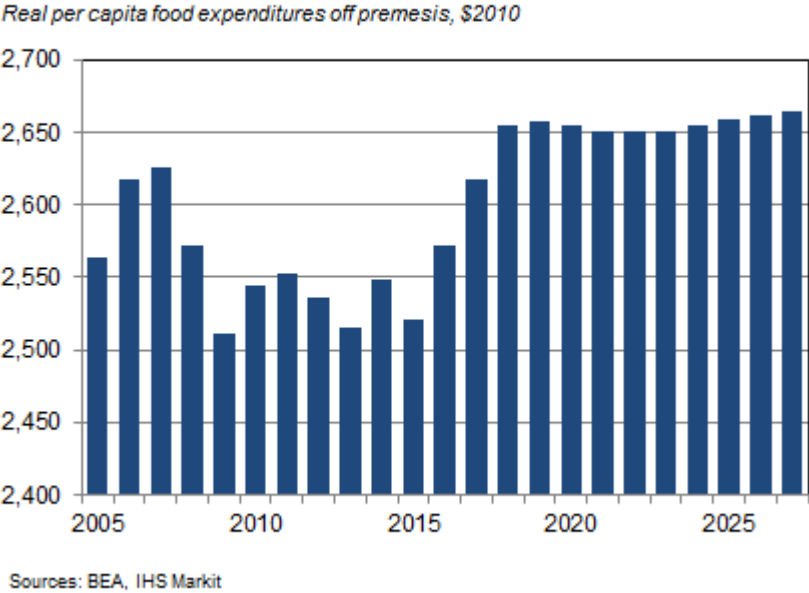
Agriculture will benefit from moderate fuel prices in terms of keeping a lid on production and transportation costs. Low fuel costs not only make it less expensive to operate machinery, but will also contain costs for purchased inputs.

Figure 6. Economic Growth to Induce Price Increases



The disappearance of jobs and income during the past recession had a direct effect on food consumption. During the economic boom of the mid-2000s, real per capita expenditures for food increased in step with real income. With the crash in late 2007, food expenditures exhibited a marked decline (Figure 7).

Figure 7. Food Spending Exceeds Pre-Recession Levels



After 2009 there has been an increase in per capita food expenditures, but this also coincided with an increase in the real price of food. As such, consumers paid more for the same basket of

food even in inflation-adjusted terms than prior to the recession. More recently, crop prices are lower, and prices for meats and livestock products are also retreating, allowing consumers to purchase increasing quantities of higher-quality, higher-priced foods, as well as more convenience products. The long-term expectation is that food spending will increase primarily with modest food price inflation. Even with low relatively contained prices, food expenditures are expected to consistently surpass pre-recession peaks.

Agricultural Policies

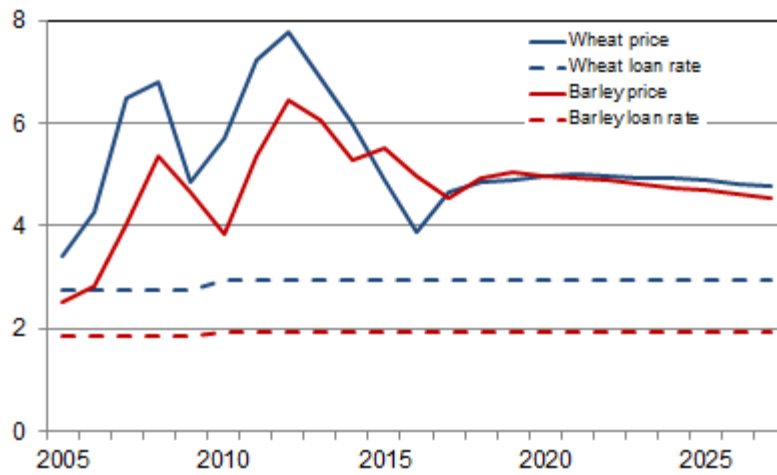
A new farm bill is scheduled to be adopted this year, but it is still unknown if the legislation will be passed. At this time, there is little disagreement about the commodity aspects. However disagreement on the Supplemental Nutrition Assistance Program (SNAP or food stamps) has the potential to derail any agreement this year. Because we do not know the final program parameters, the baseline continues to incorporate provisions of the Agricultural Act of 2014. It includes price loss coverage (PLC) and agriculture risk coverage (ARC), as well as crop insurance policies. Policy assumptions are presented in Appendix Table 2.

The focus of grain and oilseed producer risk mitigation in the U.S. is through insurance programs. Agriculture Risk Coverage (ARC) provides payments to participating producers when revenues fall below a trigger tied to past market prices and county yields. The Price Loss Coverage (PLC) is another option for grain and oilseed producers. For both ARC and PLC, payments are made on 85% of the base acres for a particular crop.

The provisions of the Marketing Loan Program that were under the 2008 farm bill were continued. Crop loan rates are assumed to be maintained at current levels. Prices are expected to be well above those policy rates, therefore they will not be effective in these projections and will not trigger marketing loan payments (Figure 8).

Figure 8. No Marketing Loan Payments

U.S. grain prices, \$/bushel

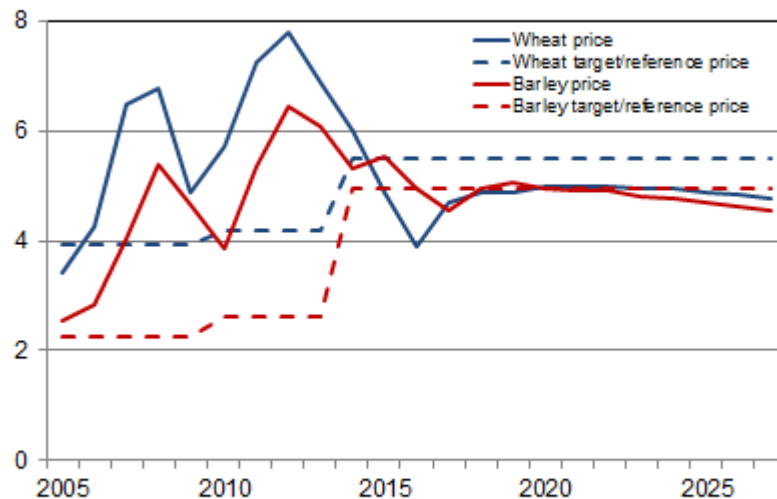


Sources: USDA, FAPRI-MU

Producers participating in the PLC program receive a payment when national season-average farm prices fall below fixed reference prices. The reference prices are higher than the target prices that were used in calculating countercyclical payments under the previous farm bill. Because wheat and barley prices are expected to be below reference prices, PLC payments will occur (Figure 9).

Figure 9. Grain Prices Will Trigger PLC Payments

Prices, \$/bushel



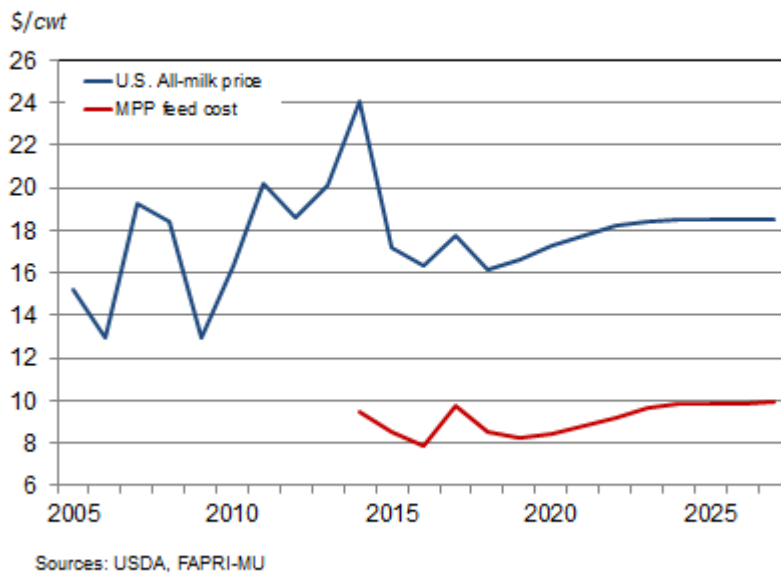
Sources: USDA, FAPRI-MU

ARC is another option for grain and oilseed producers. Payments occur when county or farm-level revenues per acre fall below 86 percent of a benchmark. The benchmark depends on moving five-year Olympic averages of national prices and county or farm yields. The new PLC and ARC programs cost little when crop prices and revenues are high, but could make large payments when prices or revenues are low.

The Dairy Margin Protection Program (MPP) establishes a margin floor and reduces the volatility in margins. Government purchases of dairy products will occur under the Dairy Product Donation Program as a means of temporarily supporting prices sufficiently to bring margins back above the threshold that triggers payments. Because margins are targeted instead of prices, milk prices are expected to fall with lower feed costs projected in this baseline (Figure 10).

The basic margin protection level was increased from \$4 to \$5 per hundredweight at no cost to the producer in the February spending bill. The annual \$100 administrative fee has been waived for underserved farmers, which include veterans, socially disadvantaged, minorities, and women. The coverage applies to the first five million pounds of historical base production. However, higher margins (up to \$8 per hundredweight) can be obtained for a premium to be paid by the dairy farmer. In addition, the margin will now be calculated monthly instead of using a two-month average. In combination with the higher margin this shorter time frame provides more potential for payments as margins will now be required to drop below the threshold for a shorter period of time in order to trigger payments.

Figure 10. MPP Could Pay More With \$5 Coverage



For coverage above the basic \$5 per hundredweight margin, the premiums are significantly higher for annual base production above five million pounds. This feature makes the legislation geared more toward small dairy producers rather than large operations such as those found in the

west. While milk prices are expected to be high enough and feed component prices low enough not to consistently trigger payments at the \$5 margin, it is conceivable that some payments will be made at higher levels of margin coverage in the baseline.

The MPP was conceived and implemented in an environment when feed costs were extremely high. If that environment persisted, the program would pay substantially more to dairy producers. However, with expected low feed costs over the next ten years, the program will be only periodically triggered, especially at lower margins. On the flip side, if feed costs were to jump dramatically and margins become substantially reduced, the program would become very expensive to operate, especially as the basic \$5 margin is covered for the nominal \$100 administrative fee for most producers.

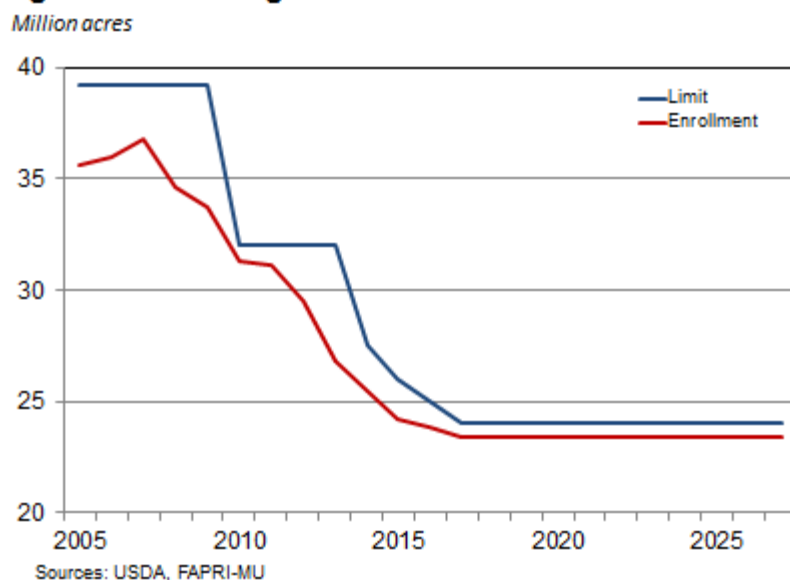
Sheep and wool producers historically relied on a variety of government programs. As some of those programs, such as the long-standing National Wool Act of 1954 were eliminated, severe adjustment took place in this industry. There were several programs since 2000 such as the Lamb Meat Adjustment Assistance Program, the Ewe Lamb Replacement and Retention Program, and reinstatement of federal support for wool and mohair under the Farm Security and Rural Investment Act of 2002. However, the lamb meat and ewe lamb programs were temporary. Much of the support has disappeared, leaving the marketing loan program for wool the primary support mechanism. There is a Livestock Risk Protection program from the RMA.

In the 2014 bill, the Sheep Production and Marketing Grant Program was introduced to strengthen and enhance the production and marketing of sheep and sheep products in the United States. The current legislation also authorizes the Livestock Indemnity Program to assist with disasters that kill sheep and lambs and provides for cost-share of sheep killed by federally re-introduced or regulated predators including avian predators. Even with these programs, there is little support for the sheep and wool industry.

Under the 2008 farm bill the size of the conservation reserve was limited to no more than 32 million acres beginning in the 2010/11 crop year. In 2014, the maximum level of the conservation reserve fell from 32 million acres in 2013/14 to 24 million acres in 2017/18. Not only does this result in budgetary savings, it will have an effect on acreage that could come into production (Figure 11). Where this area expansion occurs will have an impact on land available for traditional or cellulosic crops, and for pasture land.

Since the peak in Conservation Reserve Program acreage in 2007, more than 11 million acres have come out of the program as expiring contracts have added acres back into the land inventory, although not all of this acreage is suitable for crop production. It is precisely this potential for CRP land to re-enter the production system that makes the lower maximum CRP acreage limit so important. Additionally, production increases with rising yields as improved varieties and management practices are utilized. During the run-up in ethanol production, much of the corn supply increase was a result of rising yields, as available crop land is limited.

Figure 11. Declining CRP Limit Makes More Land Available



Projected growth in ethanol production over the next several years is limited as the mandate for corn-based ethanol has largely been met. U.S. ethanol production grows slowly as RFS requirements for cellulosic and other non-corn ethanol increase. Cellulosic and non-corn ethanol production levels contribute relatively minor quantities to the total. Declining motor fuel use in later years implies a slight decline in volume requirements.

Decisions by the U.S., the EU, Argentina, and Indonesia have resulted in a series of anti-dumping and countervailing duties being applied to imports of biodiesel from other countries. The duties applied by the EU against U.S. biodiesel have eliminated access to European markets by American producers.

The new ethanol policy announced by China last December is for that country to achieve a 10% blend rate for motor fuels by 2020. This will amount to approximately 18 million liters of ethanol consumption. This has already resulted in major investment in ethanol plants, but it is not certain that the full blending rate can be met in such a short time. This outlook assumes that China will achieve a 5% blending rate sometime after 2020. Even this lower rate assumption will result in substantially more corn being utilized in China, with most of it expected to be imported as there is little ability to increase area devoted to corn production in that country.

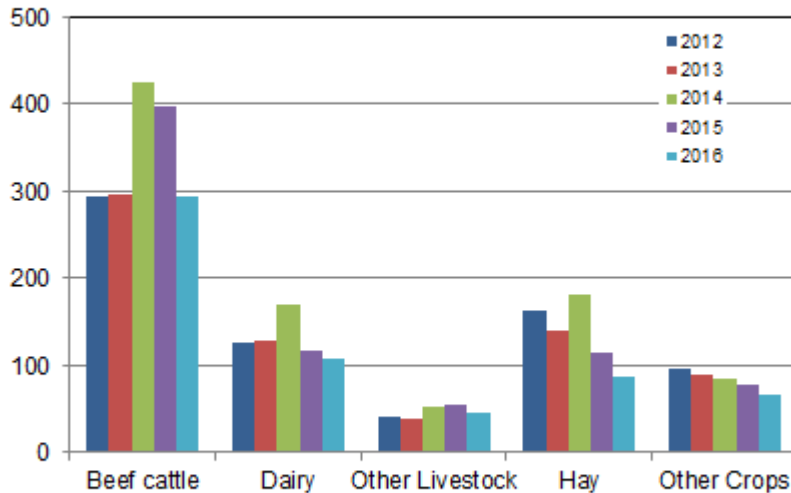
The Outlook

Nevada agriculture revolves around livestock, especially beef cattle production. In most years more than 40% of state agriculture gross receipts stem from beef cattle. Dairy production also accounts for a large proportion of the value of agriculture. While hay is the largest crop, it is

directly related to cattle, dairy, and sheep production. As such, livestock, especially cattle production dominates the state’s agricultural sector (Figure 12).

Figure 12. Beef Cattle Dominate Nevada Agriculture

Cash receipts, \$ mil



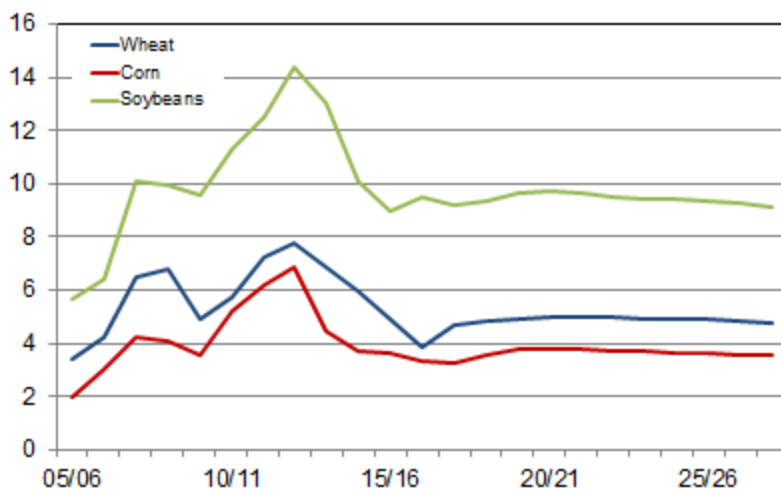
Source: USDA: NASS

The long-term Nevada agricultural outlook remains similar to that of a year ago, while the short term view is somewhat weaker as the recovery of prices, especially for cattle and dairy, is not expected to be as sharp as in last year’s view. It is generally expected that the state’s producers will be able to maintain most sectors, with the exception of those that have been exhibiting long-term declines such as sheep and wool. Nevertheless, wool prices are expected to remain robust internationally, dampening the decline in that industry. In reality, there will be periods when gross receipts far exceed costs in a year, and there will be periods when profitability is lacking.

Assumption of normal weather around the world leads to projections of adequate food and feed production and persistently moderate grain, oilseed, and hay prices (Figure 13). While prices and revenues will be lower than in the recent peak years of 2010-2013, they will be sufficient to generally provide positive net returns for producers, although dairy will be challenged. With modest cost appreciation most crop and livestock sectors are expected to remain profitable although less so than in the past several years.

Figure 13. Supplies Will Keep Prices in Check

U.S. farm prices, \$/bushel



Sources: USDA, FAPRI-MU

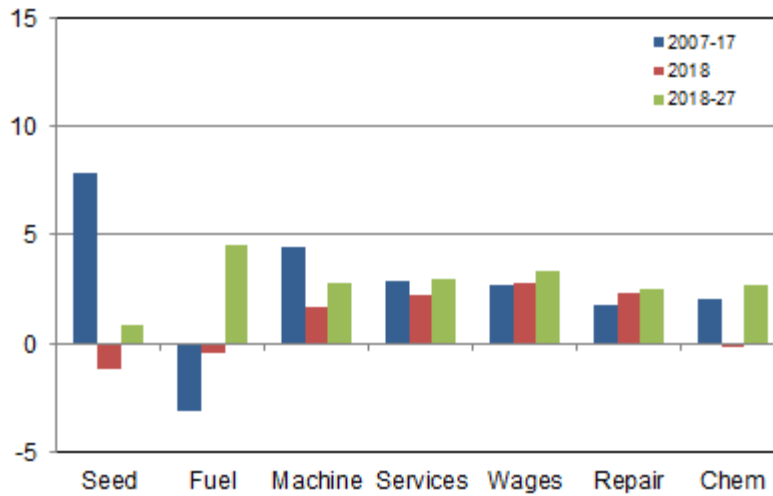
Production Costs

The costs producers face for the means of agricultural production underpin the outlook as much as the demand for commodities. In the long term, producers must be able to recover their costs plus make a profit to continue to expand production to meet growing global demand. This outlook reflects expectations of producers' abilities to maintain margins above costs. While producers must also be able to recover fixed costs in the long run, annual production decisions are made on whether variable, or operating, costs can at least be covered. Indices of major cost categories are presented in Appendix Table 3.

There are several categories utilized in developing the enterprise budgets underlying operating cost estimates and projections in the outlook. Major categories for crops include seed, agricultural chemicals, fuels and energy, machinery, labor, repairs, and services. Livestock enterprises are faced with feed, feeder animals, veterinary, equipment, fuels, trucking, and labor, among the major cost categories. Not all cost categories move together over time, with some exhibiting faster rates of inflation and greater volatility (Figure 14).

Figure 14. Cost Increases Near Overall Inflation Rate

Costs, annualized % change



Sources: USDA, BLS, IHS Markit, UCED

In the period from 2007 to 2017, seed costs increased relatively faster than any other major category, but will be considerably dampened going forward. Fuel was the most volatile category, with large increases over the decade being wiped out by the crash in petroleum and distillate prices in 2015 and early 2016. In 2018 and over the coming decade, not all cost categories are expected to behave as in the previous decade. The rate of fuels price increase expected in the next ten years will be the fastest pace of growth of any cost category.

Aside from seed, machinery and repairs are projected to have the lowest average annual cost increases. Wages are projected to increase at a slightly faster rate in the next ten years than in the past decade, which was influenced by wage stagnation during the recession. As the excess pool of labor decreases, wages will accelerate in the medium term. Items such as services will reflect changes in wages as labor makes up a substantial portion of the costs of these items. As no sharp acceleration or deceleration of the economy and therefore job market is driving the wage rate projections, these items will also follow a relatively smooth upward path that suggests controlled inflation. Most cost categories are expected to increase 2% to 3% per year.

The volatility and potential for sharp increases in fuel prices means that this category embodies significant risk for producers. However, fuel costs are generally not among the largest cost categories. For livestock, feed costs generally account for the largest category. For crops, it is usually fertilizers and other agricultural chemicals.

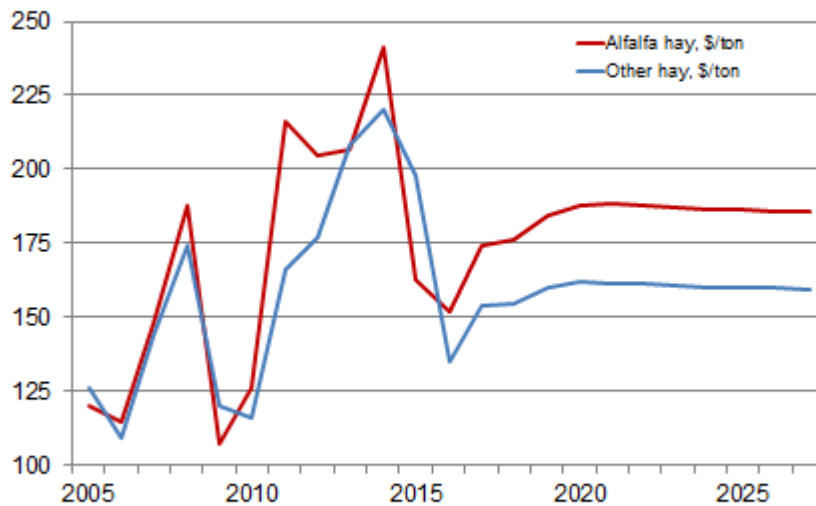
Hay

Hay prices recovered from their 2016 slide last year (Figure 15) as overall feed costs moved upward. Nevada hay production was still constrained last year due to a lack of recovery in harvested acreage from previous severe water shortages. Additionally demand is pushing prices

higher. Despite plentiful water supplies in 2017 average Nevada alfalfa prices gained more than \$20 per ton with prices for other hay moving a smaller amount. There is considerable upward potential for hay prices this year, despite the potential for a substantial recovery in statewide production, as local demand, especially for dairy, is expected to increase. Early 2018 prices for alfalfa as reported by the USDA are up approximately \$40 per ton compared to those of a year ago, and other hay prices are reported to be about \$10 higher. Hay prices are expected to increase in the next two years before stabilizing for the remainder of the outlook. The price outlook for important Nevada commodities is presented in Appendix Table 4.

Figure 15. Feed Costs Are Beginning to Rise

Nevada hay and forage prices



Sources: USDA, UCED

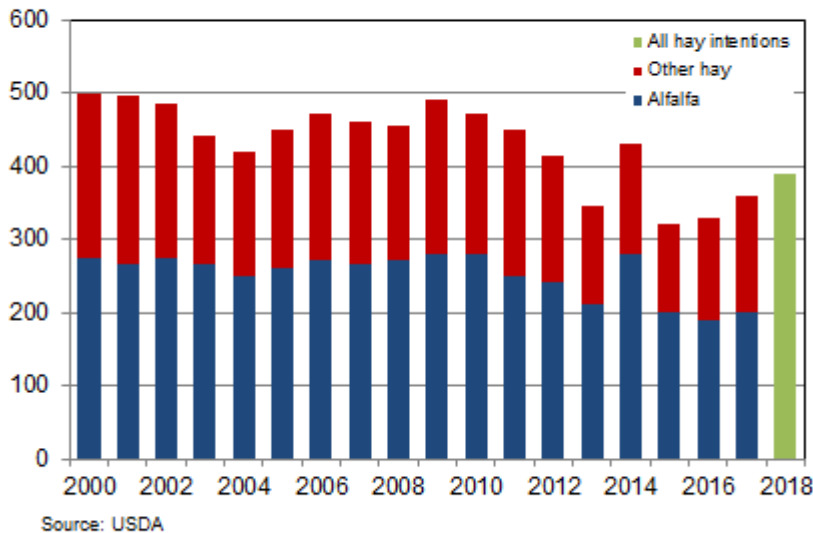
In the longer term, production recovery will be affected by the ability of producers to establish new stands that were damaged by the lack of water during the prolonged drought. Production for the past few years was reduced by lower acreage harvested and to a lesser extent, yields because of the severe, widespread drought.

A significant portion of the state's hay is shipped westward to supply California dairy and cattle production and for providing high quality hay to the horse racing industry. Hay production, especially alfalfa hay, has been declining since 2008 in California. This has tightened the regional market for high-quality alfalfa hay and will be a major contributing factor to the expected higher prices for hay in the next several years. In addition, expanding beef cattle and dairy production will boost demand for all feeds. Dairy herd expansion, especially that resulting from the DFA whole milk powder plant in Fallon will put upward pressure on regional hay and other feed demand, supporting local prices and providing the opportunity for eventual greater production. As always, water will be a crucial factor in the ability of hay producers to increase output. The plentiful water supplies that Nevada is enjoying this year are no guarantee that severe drought will not return in subsequent years.

The March *Prospective Plantings* report from USDA indicated that Nevada hay producers plan to increase harvested acreage around 30 thousand acres this year (Figure 16). Although reported alfalfa yields show little movement over time because virtually all of it is irrigated in Nevada, mitigating the impacts of variable precipitation, the steep cut to water allocations in the past few years did result in average yield reductions. As such there is likely to be an uptick in alfalfa yields this year with improved water availability.

Figure 16. Producers Indicate Hay Acreage Recovery

Nevada hay acreage, ths



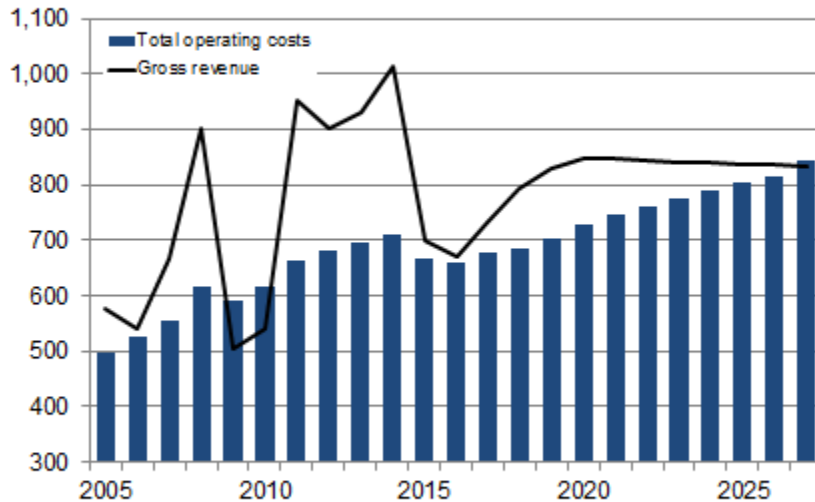
Nevada cow-calf producers are partly insulated from rising feed costs because of federal grazing fees. However, the need to purchase seasonal and supplemental feed exposes them to fluctuations in feed costs and those cattlemen that utilize private grazing lands are subject to more variation in costs from contract to contract. That suggests that range conditions that improved with the larger water supplies last year will continue to benefit producers as adequate precipitation this past winter continues to reverse some of the damage done to grazing lands during the recent drought. As a result, the forage quality and quantity is expected to be improved in the medium term. However, the range will likely take several years to recover, leaving lingering although diminishing effects on grazing.

As the effects of the drought diminished and prices fell more in line with hay prices in other parts of the country, the large per acre profits of earlier years declined in 2015 and remained low in 2016 (Figure 17). One factor helping to retain some profitability was lower operating costs for hay producers, primarily from lower fuel costs. For hay, the largest cost categories are machinery, fuel, and irrigation, with wages also reflecting considerable labor costs. Hay is more exposed to fuel costs than most other crops. Hay is also water-intensive, making growing competition for this vital commodity a major risk factor. Somewhat higher prices expected in the next few years will boost returns over costs until stabilizing prices and steadily rising costs erode

profitability again in the last part of the projection period. Net returns for major Nevada agricultural commodities are shown in Appendix Table 5.

Figure 17. Profitability to Improve For Alfalfa Producers

Nevada alfalfa, \$/harvested acre



Sources: USDA, UCED

Grains

The long-term outlook for U.S. and Nevada agriculture is for generally stable grains prices. This requires global grain markets regaining balance, particularly for wheat. Low prices last year induced a decline in global wheat area, and as a result production increased less than 1%, helping to support an expected price increase in 2017/18. It is expected that prices will recover from over-supply and the normal price relationship between wheat and other grains will be re-established in the short to medium term.

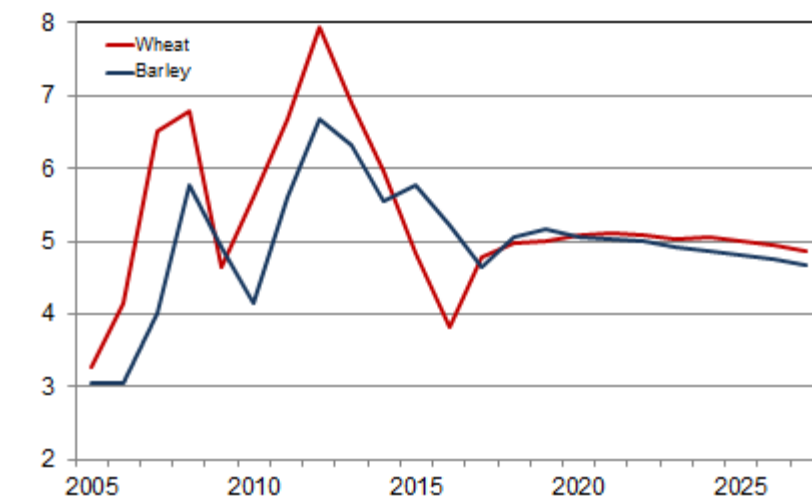
With the assumption of normal weather and average yields in coming years, production is expected to be maintained at levels that will balance global supply and demand at more normal, stable prices. These somewhat higher prices than in the recent past will ensure that wheat successfully competes for land against other crops.

Barley prices are exhibiting that grain's two distinct markets. The price at Rouen, France, will increase reflecting the decline in wheat feeding as that commodity's prices increase. The feed barley price is much lower than the premium price for malting-grade barley. The U.S. price more reflects that higher-priced market, which has risen relative to wheat in recent years.

Grain production is not as large in Nevada as in neighboring Western States. The state's wheat producers are expected to see prices rise from the low levels of 2016/17, then enjoy a brief period of strengthening in line with the national and global markets (Figure 18) before stabilizing over most of the outlook, returning to a normal relationship with wheat and other feedgrains.

Figure 18. Wheat Will Recover From Discount

Nevada grain prices, \$/bushel

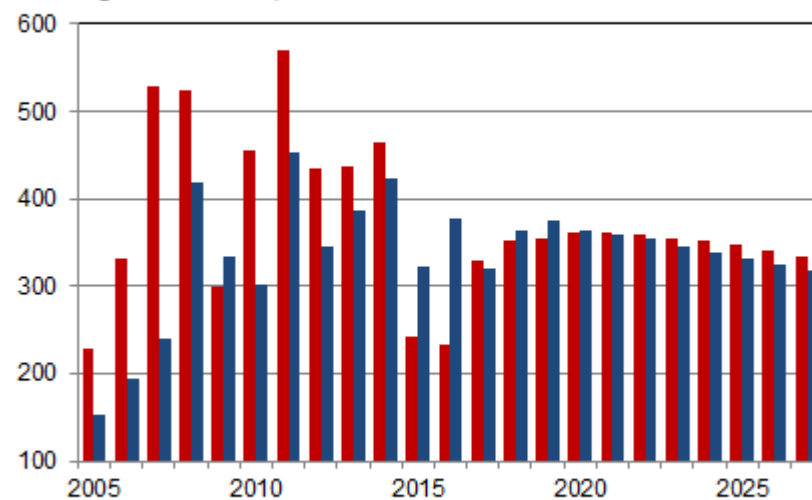


Sources: USDA, UCED

Low grain prices, especially for wheat have reduced net returns for producers. With a modest uptick in prices expected in the next few years revenues will regain some lost ground and grains will be moderately profitable (Figure 19).

Figure 19. Wheat Returns Will Recover

Nevada grain net returns, \$/acre



Sources: USDA, UCED

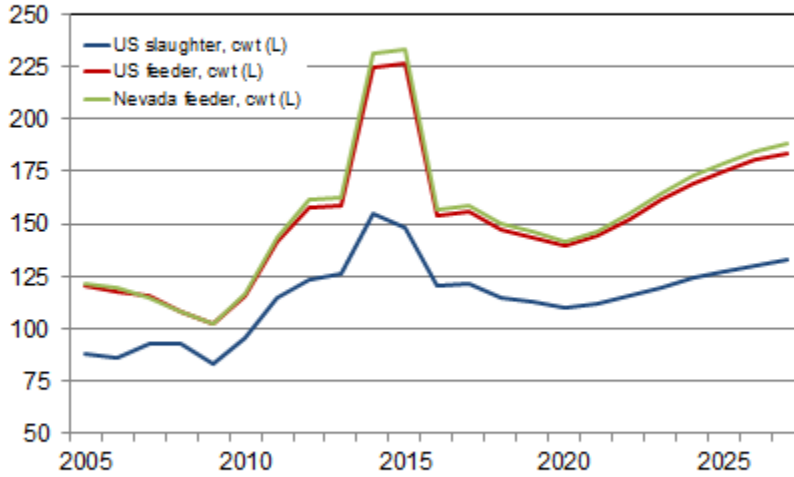
Cattle

U.S. and Nevada ranchers saw cattle prices fall sharply in 2016, and prices are expected to continue sliding into 2020 (Figure 20). In early 2018, feeder steer prices remain similar to the

lows seen last year. Nevertheless, cattle inventories are expected to increase through 2020 induced by recovery from drought in western states.

Figure 20. Cattle Prices Near Cyclical Lows

Cattle prices, \$



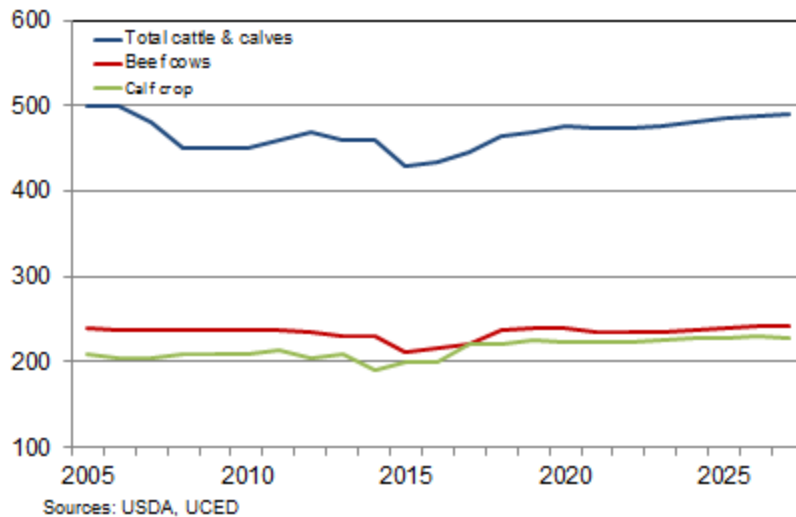
Sources: USDA, FAPRI-MU, UCED

The past drought prevented Nevada cow-calf producers from expanding inventories even as prices gained traction after 2010. The cattle inventory data indicate that the Nevada herd increased by approximately 2% during 2016 and more than 4% in 2017 (Figure 21). With declining returns expected over the next several years, Nevada cattle numbers are only expected to exhibit modest increases, topping out around 2020. After that time, prices reflecting the downside of the cycle will induce inventories to decline for a few years before regaining traction again in the last few years of the outlook.

While non-feed costs are assumed to increase at recent historical rates, feed costs are expected to remain below recent high levels. In addition, many western herds are grazed on federal lands where grazing fees will remain at long-term historical rates, adding further stability to feed costs during the projection period. In the short term, however, this insulation may be limited by the period it will take for far western rangelands to complete recovery following the recent drought. This will exacerbate eroding prices and their impacts on potential herd expansion.

Figure 21. Limited Expansion Expected for Herds

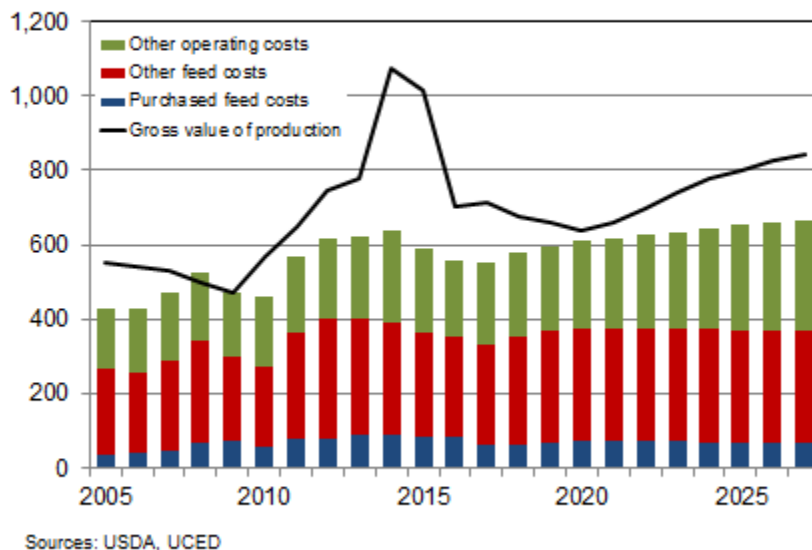
Nevada cattle, 1,000 head



As cattle prices continue to fall over the next several years and costs rise at a moderate rate, returns will diminish and cow-calf profitability will be severely constrained for a few years (Figure 22). As this portion of the cycle develops, herd contraction will take place until inventories fall to levels that constrain marketing's, resulting in a return to price strengthening. Because of the high proportion of cow-calf operations in the west this region will be heavily impacted by the contraction of the cattle industry and weaker cyclical demand for calves.

Figure 22. Weak Prices Are Eroding Profitability

Basin & Range cow-calf, \$/bred cow

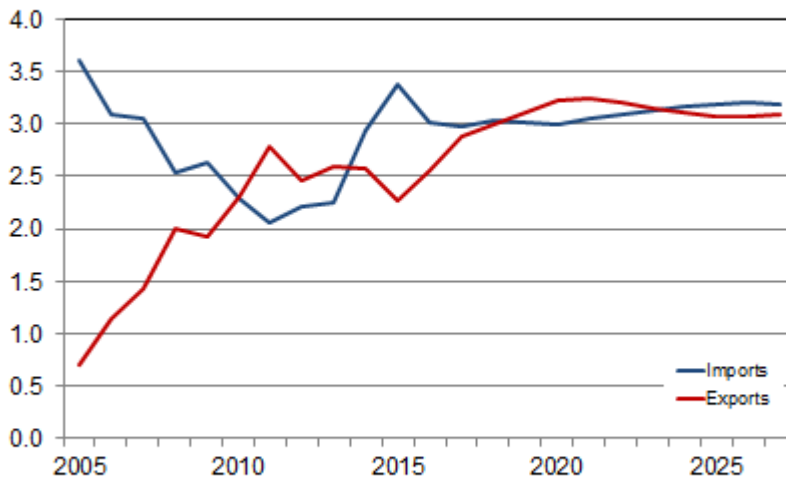


When the current expansion of herds slows and ultimately ends in the next couple of years below-average prices will discourage marketing, while at the same time expectations of waning profitability will discourage expansion of herds. These two conflicting objectives will result in gradual reduction of the breeding herd, absorbing the decreases in marketing while net returns are low.

The strong U.S. dollar constrained beef exports and supported beef imports by the U.S in 2016. Nevertheless, the combination of declining domestic beef prices and a stabilizing dollar improved U.S. beef competitiveness on international markets and the trade balance showed an improvement last year as exports ticked up and imports pulled back modestly (Figure 23). As beef prices decline further and the dollar stabilizes and eventually weakens relative to other currencies, U.S. beef will regain a competitive position on world markets. U.S. exports are expected to be competitively priced on international markets in the long run.

Figure 23. Falling Prices Balance Beef Trade

Beef trade, bil lb



Sources: USDA, FAPRI-MU

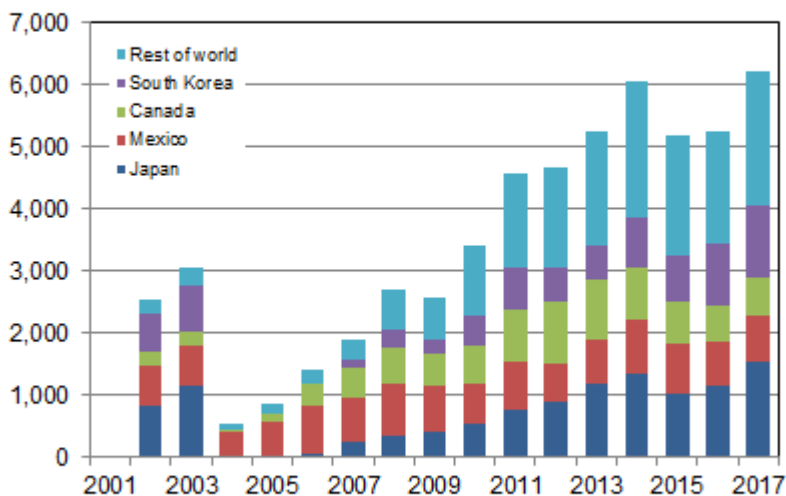
The improved beef export volume last year contributed to higher export value (Figure 24), even with continued weak prices. In coming years, the recovering global economy, especially for developing countries, will expand meat, including beef demand. Increasing affluence has been the dominant driver of rising commodity imports by China. However, U.S. beef is on the commodity list that could be subject to tariffs in response to those imposed by the U.S.

Many developing nations are also seeing incomes reach thresholds that typically indicate more demand for higher-quality diets, and beef producers will benefit. Particularly developing nations with a constrained land base, many of them Asian nations with rapid income growth, will turn to global markets to acquire agricultural products they are not capable of producing domestically.

Importing country restrictions placed on U.S. beef because of earlier detection of BSE have been gradually eased since 2006. U.S. beef is flowing to these nations' consumers again, especially to Japan and South Korea. With the safeguards put in place since 2003, confidence has been restored in the U.S. beef production, processing, and shipping chain.

Figure 24. Volume Offsets Low Prices as Values Rise

U.S. beef exports, \$mil



Source: US Census Bureau Trade Data

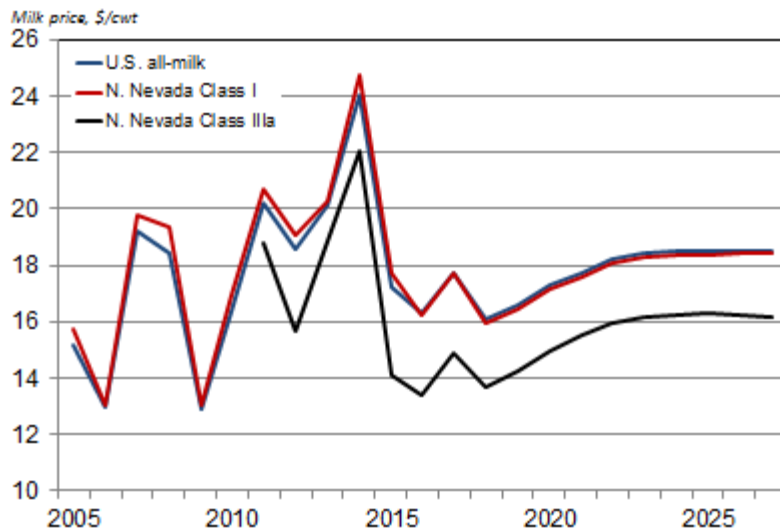
As beef prices fall in the next several years, export volume will expand, helping to maintain export values. Although export quantities are projected to flatten after 2020, the return of strengthening prices at that time will boost export values. Japan, Mexico, and South Korea are expected to maintain their positions as top international markets for U.S. beef.

Dairy

Milk prices dropped sharply in 2015 and to a lesser extent in 2016 but experienced an uptick last year (Figure 25). However, strong production this year has again pushed prices downward, but these levels are not expected to be sustainable. While they are not expected to regain the highs of 2014, prices are expected to recover to levels similar to averages prior to 2010. Factors contributing to the increase in milk prices include slightly higher feed costs, increasing domestic use of dairy products and in international dairy product markets.

Compared to feed costs, margins are expected to be high enough over the baseline period that the Margin Protection Program (MPP) payments will occur only occasionally at the basic \$5 per hundredweight level, and will occur relatively infrequently at most higher levels of coverage. However, it should be noted that Nevada dairy rations are different than the standard rations used in many grain and oilseed producing areas, but the feed cost calculation for the MPP is based on those standard rations. As a result, the MPP margin might not reflect margins in Nevada.

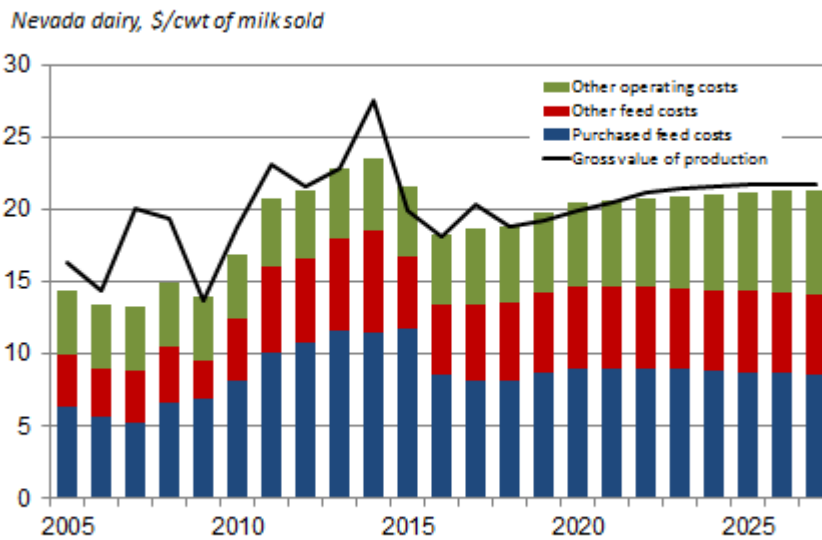
Figure 25. Northern Nevada Milk Prices Reflect Processing



Source: Nevada Dairy Commission, USDA, FAPRI, UCED

Relatively favorable feed costs will be the one factor that will help dairy producers maintain some margin with the unremarkable level of milk prices expected. However, with the modest increases in milk prices in coming years barely able to offset increases in non-feed costs, dairy profitability will be constrained (Figure 26).

Figure 26. Dairy Will Struggle With Profitability



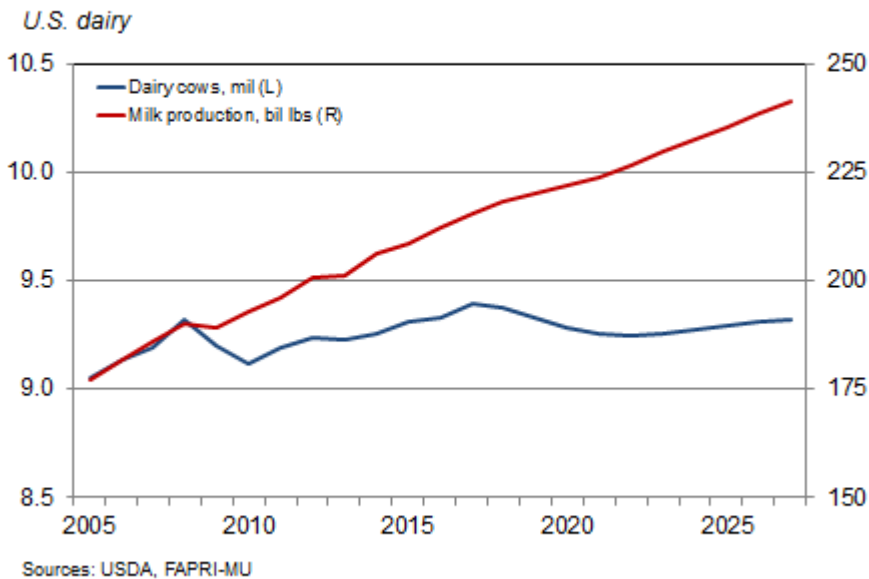
Sources: USDA, UCED

Non-feed costs are expected to increase at rates similar to overall inflation so that when total operating costs are considered, the rate of increase will be slightly lower than the increases in

dairy gross revenues. Margins will be constrained for the next several years, but will be positive for the last half of the outlook, albeit at relatively low levels. This suggests that small dairies that are unable to withstand low margins will face challenges, and larger operations are more likely to be the source of expansion. As such, the larger dairies characteristic of Nevada have the potential to make the expansions that are intended to provide milk to local processors. It should be noted that the gross value of dairy production also includes sales of calves and cull cows. With declining cattle prices through 2020 the value of cattle sales for dairy producers will constrain profitability in the medium term, but less so in the long run.

Milk prices will be insufficient to induce expansion of milk cow inventories on a national basis in the next several years, but milk cow inventories are expected to edge up slowly in the last half of the projection. Although dairy cow inventories have been relatively stable since 2000 milk production increased more than 20% over that time (Figure 27). Ongoing increases in milk yield per cow will be instrumental in supplying the milk requirements of the U.S. Breeding, nutrition, veterinary science, and lactation cycle management are among the factors combining to increase the average cow’s ability to produce milk. Milk production increases will be vital to supplying domestic requirements and meeting expanding dairy product demand on international markets, as well.

Figure 27. Productivity Will Drive Milk Supply



The potential for dairy expansion in Nevada, especially in the northern part of the state is different than at the national level. Milk prices are now impacted by the whole milk powder plant in Fallon. Most Northern Nevada produced milk will be utilized at the plant and be bought from producers at the lower Northern Nevada Class IIIa (California Class 4a) price instead of a Northern Nevada Class I (California Class 1) price. In order to supply Class 1 milk to California bottlers, Northern Nevada producers received a lower effective price as they had to meet

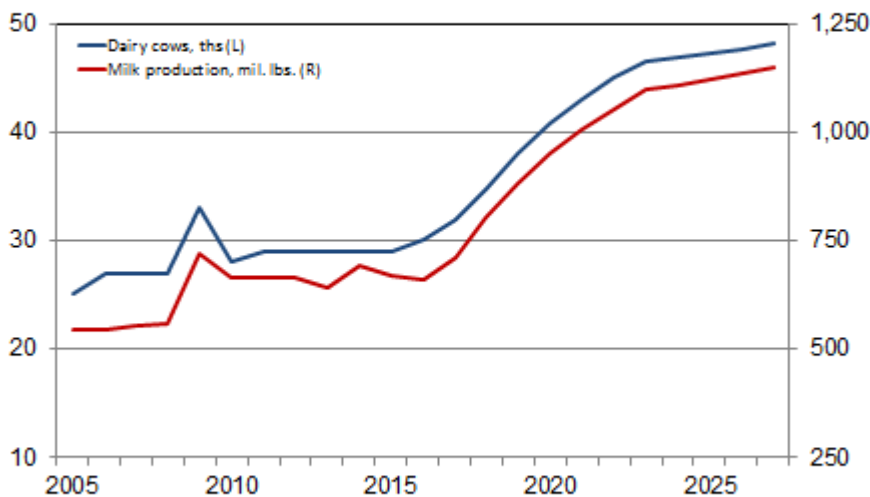
transportation costs to California points. Because they will now sell the majority of their milk to the Fallon plant, those transportation costs will be much less, allowing them to sell milk at the lower Class IIIa price. The price differential is expected to be made up by no longer having to factor transportation costs to California into the local milk price.

However, the necessary addition of approximately 16,000 head of dairy cattle required to increase milk production to levels to meet the plant’s two million pound per day capacity has proceeded slowly. The major limiting factor has been water. The drought severely cut water availability to run and expand dairy farms, as well as to produce locally-grown feeds such as hay and corn silage. As a result, the herd expansion is only recently picking up steam. With improved water supplies expansion has begun and is expected to pick up steam in the next few years.

Local dairy farm expansion, restarts of idled farms, and new operations will be necessary to supply the required milk (Figure 28). However, with the recent steep decline in milk prices and margins, this expansion may take longer than previously anticipated. There have been plans for several large dairy farms to open in Northern Nevada to meet the needs of the plant. In the past two years, dairy herds have begun to increase, adding an estimated 4,000 cows. Supplying milk to the plant will end the flow of milk out of Nevada and provide the basis for prices for local producers, who historically sold milk for California prices less transportation costs.

Figure 28. Low Profits Could Dampen Expansion

Nevada dairy



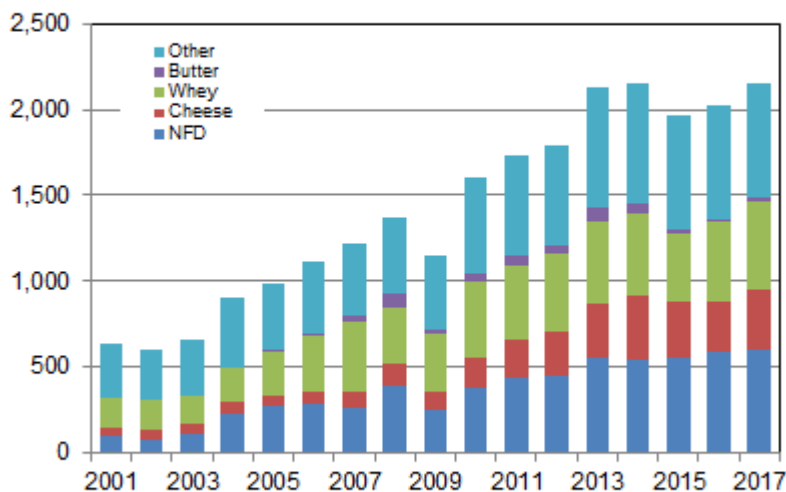
Sources: USDA, UCED

In addition to supporting expansion of Northern Nevada’s dairy industry, feed demand, especially for locally-grown hay and corn silage would increase, providing expanded local markets for those crops and supporting prices for them. Despite the improved precipitation of the winter of the last two years, a major issue for expanding the state’s dairy herd and producing feed is the ever-present need for scarce water.

Domestic consumption will provide only limited growth potential. Rapidly growing and increasingly affluent populations in developing and emerging economies, especially in Asia, are providing excellent market opportunities for dairy products (Figure 29). Like many other agricultural commodities, global markets for dairy products are viewed as an opportunity for expanding the domestic industry. Nevertheless, U.S. dairy product market share requires competitive prices, and the strong dollar recent years dampened U.S. competitiveness. With the expectation of a weaker dollar in the long-term the international market will remain a vital supporter of the domestic dairy industry.

Figure 29. Strong Global Economy Boosts Dairy Trade

U.S. dairy exports, thousand tonnes



Source: USDA, Foreign Agriculture Service

Competing exporters like New Zealand and Australia have more favorable exchange rates and their products are less expensive on foreign markets. Nevertheless, the U.S. dairy industry's growth potential is greatly enhanced by international demand. China, specifically, is viewed as an immense market to target for increasing dairy product exports.

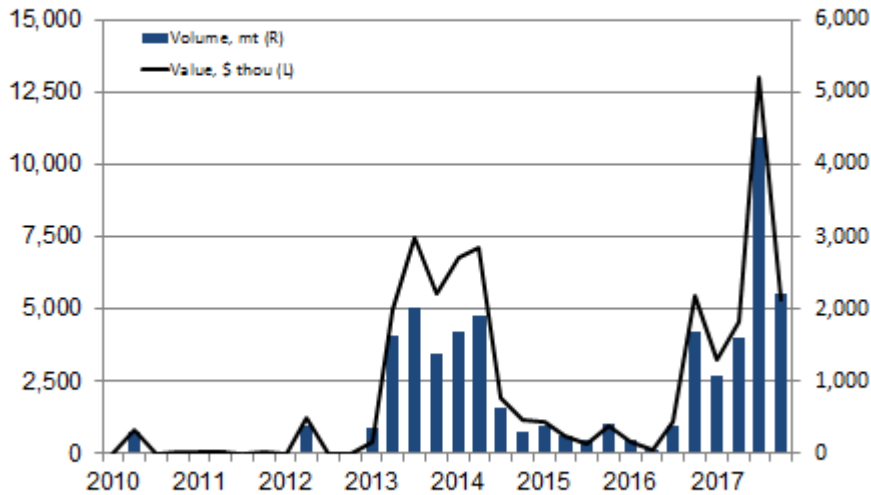
The emerging world market is precisely the impetus behind the evolving dairy product industry in Nevada. The market for the products of the Fallon plant is primarily China which is increasingly looking to the world market for dairy products. In the past year, China reinvigorated its milk powder buying which had benefitted U.S. producers. Whole milk powder is imported, sold on local markets, and reconstituted by consumers for their dinner tables. New Zealand and Australia are dominant exporters, but the market is also attractive to other suppliers.

In 2015 and 2016, China has faced some economic issues and purchases from abroad were diminished for many products, including dairy. Adding to that loss of market was the loss of competitiveness for U.S. powder because of strength of the U.S. dollar, especially against the Australian and New Zealand dollars. But as the dollar stabilized last year and China's economy firmed, whole milk powder exports from the U.S. to China jumped (Figure 30). This is expected

to persist in coming years as Chinese demand grows and the dollar remains more competitive. If not, other markets will have to be found for milk powder produced in Nevada.

Figure 30. China Is a US Customer Again

China, dry whole milk and cream, imports from U.S.



Source: USDA: Foreign Agriculture Service

Sheep and Wool

Sheep producers have continually reduced the national flock size to reflect flagging demand in order to maintain prices and margins. In the period since 1990, national sheep inventories have fallen by more than half, and in Nevada they have been reduced by 40%. However, some of the reduction in the Nevada flock was a sharp drop in the two years of 2015 to 2016, partly related to declining forage availability with the drought. In the past two years, state sheep inventories have stabilized.

Sheep producers historically depended on a variety of government programs for price support. Now most of those programs have been eliminated and support is primarily from the marketing loan program for wool, which is not likely to be triggered at current and expected wool prices.

The U.S. is not a dominant player in the global sheep and wool markets as it is in many other livestock and products markets. As a result, developments in major sheep producing regions have a more pronounced impact on U.S. producers than for other commodities, and American producers have struggled to maintain competitiveness. Nevertheless, this also provides opportunities for windfalls for domestic producers as they can also benefit from adverse conditions elsewhere that force global wool and sheep meat prices higher. This has been the situation in wool markets for the past two years.

The relatively small share Nevada sheep and wool producers contribute to national and global output leaves them subject to prices largely determined elsewhere. This position of price-

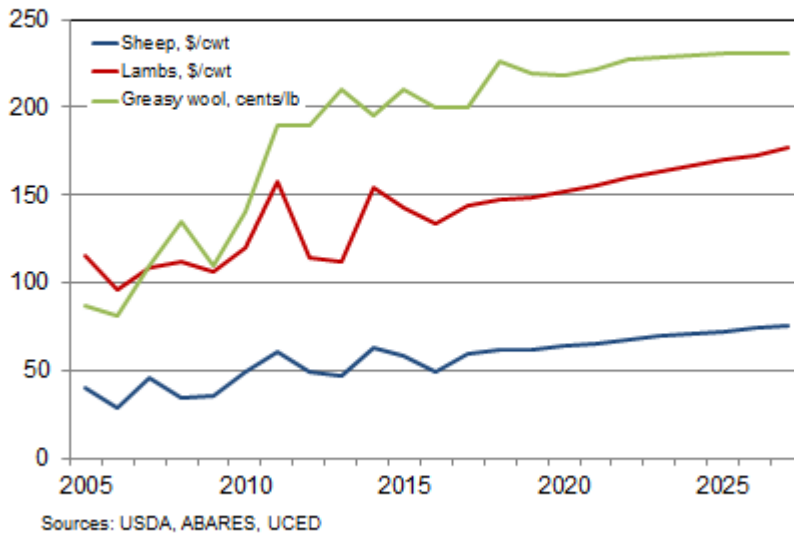
takers has limited the competitiveness of American sheep and wool producers for the past six decades and contributed to the decline in the national and state flocks.

While lamb and mutton are losing ground to other meats in the developed world, consumers in developing nations are increasing consumption of these products as incomes push their propensity to consume upward and population growth adds to the demand base. As a result, global lamb and mutton trade is increasing, albeit slowly and inconsistently.

Wool demand has generally declined over the past two decades, although it has stabilized in recent years, primarily as a result of rising demand in China, developing Africa, and the Former Soviet Union. Recently, upper-end products made from high quality wool have found niche markets, and are supporting demand and prices for wool. Even with the otherwise expected tepid growth in global markets that will offer some support to prices (Figure 31), the sheep and wool industry in the U.S. will continue to decline in order to match supply of sheep meat to a weak demand base. However, the rate of decline is not expected to be as rapid as in the past two decades. Much of industry profitability will come from the wool side, although wool has a high exposure to prices determined on the Australian market, and domestic producers have little ability to influence those prices.

Figure 31. Wool Prices Buoying Sheep Markets

Nevada average prices



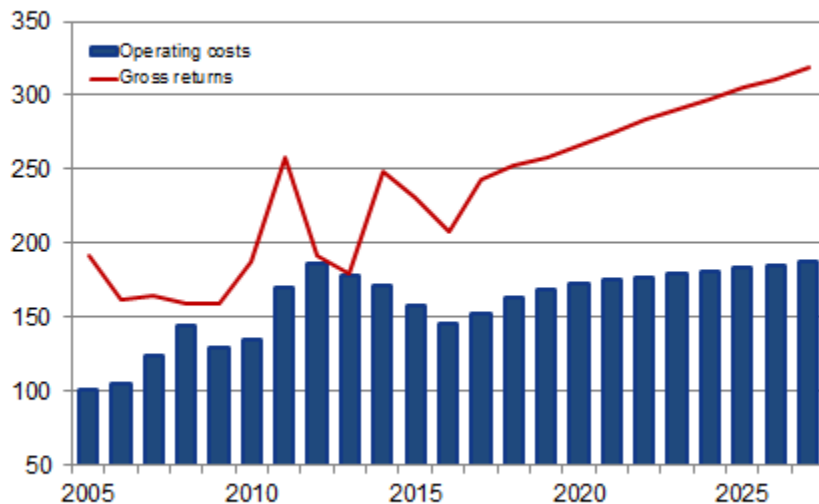
Upward cost pressures are expected to reappear and persist throughout the baseline. Maintaining adequate returns will require sheep numbers to continue declining. However, with the expected continuing downsizing of domestic flocks that will result in prices adequate to rationalize supply and demand, profitability will be maintained (Figure 32).

Because there is currently little slaughter of livestock, including sheep in Nevada, live animals must be marketed and shipped out of state. As a result live sheep and lamb prices are somewhat lower in the state compared to national benchmark prices at San Angelo, Texas.

Shearing does take place within the state and Nevada prices hold a premium over national average prices. The presence of Merino sheep in Nevada enhances wool quality and results in higher prices.

Figure 32. Lower Feed Costs Help Maintain Profits

Sheep and wool, \$/bred ewe



Source: USDA, UCED

Risks to the Outlook

The primary risks to the outlook stem from assumptions about economic, technological, energy, geo-political, policy, and weather developments that might be substantially different from actual developments in the future.

Outlook accuracy aside, the above factors present real risks for production, prices, and producers’ bottom lines. For agriculture, weather is an ever-present risk. Damaging weather can take the form of several weeks or months of abnormal temperature or precipitation that can affect large areas. It can also come in sudden catastrophic events that tend to be more localized in nature. Since most crop safety net programs tend to be price oriented, they generally do not come into play in such instances. If the breadth of damage is wide enough, Congress can enact ad hoc disaster bills. With smaller emergencies, however, farmers and ranchers are often left with insurance as their only source of aid. Insurance programs are currently more of a focus for policymakers, and are the primary risk-mitigating tool under current farm law. Congress reduced other programs in the interest of budgetary savings and to continue pushing U.S. agricultural policy toward more non-market distorting programs.

There are several factors, both domestic and foreign, that could either derail the economic expansion or accelerate it. The increasingly global economy offers substantial business and trade opportunities. It also means that political, economic, and financial troubles in a major economy can spill over into markets elsewhere. The current threat of a widespread trade war presents risks

to the global economy. But while such developments could dampen global growth, they will not derail it.

High deficits and debt will force resources to be devoted to service these shortfalls in years ahead instead of being used to fuel growth.

One outcome of the last recession and housing crisis was the extended period of low interest rates. But the Fed started increasing interest rates last year and will continue to do so as the economy tightens and inflation threats emerge. Borrowing rates, both short term for operating costs and long term for capital purchases, will continue to increase this year, with anticipation of several incremental rate hikes. Higher interest rates boost costs for producers. Should inflation resurface in coming quarters, the Fed will move rates up more quickly. Furthermore, rising housing demand rates is contributing to increasing demand for credit and will lead to higher mortgage and other long-term interest rates.

The volatility in energy markets and prices makes them a major risk to the outlook. There are two sources of this volatility that are particularly troublesome and both are very difficult to predict. The first is the perpetually unstable geo-political situation in major petroleum producing regions, particularly the Middle East. The continued unrest in Iraq and Syria boosts risk to global energy markets and petroleum prices. Iran's interpretation of the recent nuclear deal is leading to tensions that could result in returning to some economic sanctions. Cartels, wars, terrorism, and economic sanctions and their consequences impact the supply and price of oil. The recent Saudi-Russian agreement to reduce daily output has likely contributed to recent increases in petroleum prices to date. The second is the speculative trade in petroleum contracts that is often driven by perceptions of risk rather than reality, and often causes wild swings in prices, even when fundamental supply and demand suggest no shift in the current or near-term supply and demand balance and the need to utilize price rationing.

As always, there is uncertainty surrounding the crude oil price, including the increases projected after 2018. As prices rise with economic expansion, substantial exploration and expansion of production capacity will occur. This presents a downward risk for crude oil prices in the short to medium term.

Recent exploration has resulted in new production capacity that will not be absorbed overnight and crude oil inventories continue to be more than adequate. While oil prices will rise with growth in the global economy, there is the potential for the market to balance at substantially different prices than in this projection, particularly in the outer years as continually increasing oil production will be necessary to meet global demand.

Farmers and ranchers will have to navigate this minefield of risks. However, the generally mediocre financial situation for agriculture in the U.S. at present magnifies that risk in the short term. As always, producers' long-term survivability will depend on making sound decisions based on the price and cost environment they are facing. This outlook lays out a middle of the road estimate of what that environment will look like and provides information to weigh in the decision making process.

Appendix Tables

Table 1. Economic Assumptions

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Real GDP growth, %													
U.S.	2.9	1.5	2.2	2.7	2.6	2.0	1.8	2.0	1.9	1.9	1.8	1.8	1.8
Advanced economies	2.3	1.7	2.3	2.3	2.1	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.6
Emerging markets	4.1	3.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.7	4.7	4.5	4.4
Developing countries	1.1	3.8	3.3	3.5	4.0	4.2	4.4	4.3	4.2	4.2	4.1	3.9	3.8
World	2.8	2.4	3.1	3.2	3.1	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.8
Exch. rate index, 2010=100	117.5	123.4	124.1	125.1	127.2	128.0	128.4	127.9	127.7	127.6	127.7	127.9	128.1
Unemployment rate, %	5.3	4.9	4.4	3.9	3.7	3.8	4.1	4.3	4.4	4.5	4.6	4.7	4.7
Interest rates, %													
Fed funds rate	0.13	0.40	1.00	1.82	2.52	3.09	3.45	3.45	3.31	3.06	2.95	2.81	2.70
3-Month T-bill	0.05	0.32	0.93	1.69	2.28	2.78	3.10	3.10	2.98	2.75	2.65	2.53	2.42
10-year T-note	2.14	1.84	2.33	3.01	3.54	3.72	3.72	3.69	3.67	3.67	3.68	3.69	3.70
30-yr mortgage	3.85	3.65	3.99	4.54	5.05	5.31	5.39	5.38	5.36	5.33	5.33	5.33	5.33
WTI crude oil price													
\$/barrel	48.69	43.21	50.91	53.76	54.76	67.01	73.10	77.65	82.08	85.88	88.72	91.67	94.94
% change	-47.8	-11.3	17.8	5.6	1.9	22.4	9.1	6.2	5.7	4.6	3.3	3.3	3.6
Real US food expenditure													
Per capita, \$2010	2,521	2,572	2,618	2,654	2,658	2,654	2,651	2,650	2,651	2,654	2,659	2,662	2,665
% change	-0.2	2.0	1.8	1.4	0.1	-0.1	-0.1	0.0	0.0	0.1	0.2	0.1	0.1
Population, % change													
U.S.	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7
Advanced economies	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
Emerging markets	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7
Developing countries	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9
World	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9

Table 2. Baseline Policy Assumptions

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Wheat, \$/bu													
Loan rate	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94
Target/Reference price	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
Barley, \$/bu													
Loan rate	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Target price	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95
Dairy MPP cost, \$/cwt	8.53	7.86	9.71	8.55	8.22	8.39	8.84	9.20	9.62	9.79	9.83	9.86	9.90
Wool loan rate, \$/lb													
Graded (average)	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Ungraded	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
CRP, mil. acres													
Limit	26.0	25.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Enrollment	24.2	23.9	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4

Table 3. Production Cost Indices, 2011=100

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Fertilizer	87	72	68	68	70	74	75	76	77	78	79	80	79
% change	-7.7	-17.7	-5.2	0.3	1.9	5.7	1.8	0.9	1.3	2.0	1.7	0.1	-0.4
Agricultural chemicals	107	108	107	106	110	115	119	122	126	130	133	136	139
% change	-2.7	1.1	-1.0	-0.2	3.1	4.6	3.2	3.3	3.1	3.2	2.3	2.0	1.9
Seed	114	112	110	109	109	110	112	114	116	117	118	119	120
% change	0.7	-2.4	-1.2	-1.2	0.0	1.4	1.8	1.5	1.2	1.0	0.9	0.8	0.8
Farm machinery	115	115	118	120	124	128	132	136	140	143	147	151	155
% change	2.3	0.7	2.2	1.7	3.4	3.5	3.1	2.7	2.7	2.6	2.7	2.7	2.6
Fuels	64	56	66	66	67	75	80	85	90	94	97	100	102
% change	-35.1	-12.4	18.5	-0.5	2.0	11.8	7.2	6.4	5.2	4.2	3.3	3.0	2.9
Wages	112	116	119	122	126	131	135	140	145	150	155	160	165
% change	3.6	3.6	2.8	2.8	3.1	3.5	3.5	3.4	3.4	3.4	3.3	3.4	3.3
Farm services	114	116	119	121	125	129	134	138	142	146	151	155	160
% change	4.2	1.7	2.7	2.3	3.1	3.4	3.2	3.1	3.1	3.0	3.0	3.0	3.0
Farm repairs	106	106	108	110	113	116	119	122	125	128	132	135	138
% change	0.1	0.2	1.8	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.5	2.5	2.4
Farm supplies	106	106	107	109	111	113	115	117	119	121	124	126	128
% change	0.2	0.2	1.1	1.7	1.6	1.8	1.7	1.8	1.9	1.8	1.7	1.7	1.6

Sources: USDA, BLS, IHS Markit

Table 4. Nevada Agricultural Commodity Prices

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Livestock & product prices													
Feeder steers, \$/cwt	233.10	156.60	158.96	150.53	146.36	141.92	146.67	154.86	164.69	173.01	178.66	184.65	188.45
Milk, \$/cwt													
N. Nevada Class I	17.69	16.26	17.70	15.98	16.44	17.19	17.59	18.07	18.31	18.34	18.39	18.40	18.40
N. Nevada Class IIIa	14.10	13.41	15.43	13.68	14.22	14.95	15.50	15.95	16.15	16.24	16.27	16.23	16.18
Sheep, \$/cwt	58.53	48.88	59.79	61.35	62.13	63.72	65.53	67.52	69.19	70.78	72.37	73.91	75.77
Lambs, \$/cwt	143.14	133.77	143.83	147.61	148.86	151.97	155.70	159.96	163.33	166.55	169.74	172.83	176.54
Wool, \$/lb	2.10	2.00	2.00	2.27	2.19	2.18	2.21	2.27	2.29	2.30	2.30	2.30	2.31
Hay, \$/ton													
Alfalfa	163	152	174	176	185	188	188	188	187	186	186	186	185
Other hay	198	135	154	154	160	162	162	161	160	160	160	160	159
Grains, \$/bushel													
Wheat	4.85	3.83	4.78	4.97	5.00	5.09	5.10	5.09	5.04	5.05	4.99	4.94	4.87
Barley	5.78	5.22	4.65	5.04	5.16	5.07	5.04	5.01	4.92	4.87	4.81	4.75	4.68

Table 5. Nevada Estimated Returns

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Livestock and products													
Cow-calf, \$/bred cow													
Gross revenue	1015.79	704.62	714.95	677.96	659.67	640.19	661.06	696.96	740.10	776.60	801.37	827.65	844.35
Variable costs	591.55	556.81	552.02	577.13	597.44	610.30	618.92	627.10	635.23	643.55	651.83	660.01	663.43
Net returns	424.24	147.81	162.93	100.83	62.22	29.90	42.14	69.86	104.86	133.06	149.54	167.64	180.92
Milk, \$/cwt													
Gross revenue	19.94	18.12	20.30	18.78	19.26	19.97	20.54	21.11	21.44	21.61	21.71	21.74	21.74
Variable costs	21.56	18.31	18.61	18.87	19.84	20.45	20.66	20.82	20.91	21.01	21.16	21.29	21.26
Net returns	-1.62	-0.19	1.69	-0.09	-0.58	-0.48	-0.12	0.29	0.53	0.60	0.55	0.46	0.49
Sheep & wool, \$/ewe (U.S.)													
Gross revenue	230.98	207.87	242.97	252.99	257.59	265.58	274.12	283.12	290.25	297.41	304.81	311.35	318.50
Variable costs	157.49	146.11	152.10	162.61	169.17	172.87	175.18	177.15	178.85	180.89	183.00	185.10	187.15
Net returns	73.49	61.76	90.86	90.38	88.43	92.71	98.94	105.97	111.40	116.51	121.80	126.25	131.35

Table 5. Nevada Estimated Returns, continued

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Crops, \$/acre													
Alfalfa hay													
Gross revenue	700.90	668.80	730.80	794.01	831.16	845.71	847.24	844.02	840.58	838.43	837.47	836.65	834.25
Variable costs	667.43	659.35	678.46	686.49	702.92	728.59	744.56	761.15	776.45	790.87	803.96	816.47	845.13
Net returns	33.47	9.45	52.34	107.51	128.25	117.11	102.68	82.87	64.14	47.56	33.50	20.18	-10.88
Barley													
Gross revenue	469.06	524.38	470.77	513.67	529.51	524.59	525.32	525.96	520.44	518.80	516.33	513.73	509.59
Variable costs	147.37	146.78	149.89	150.42	154.24	160.92	165.75	170.71	175.50	180.27	184.24	187.95	191.63
Net returns	321.69	377.60	320.88	363.25	375.27	363.67	359.56	355.25	344.94	338.53	332.09	325.78	317.96
Wheat													
Gross revenue	394.22	384.54	484.43	506.53	513.19	527.92	532.73	534.84	533.77	538.30	536.19	534.80	531.62
Variable costs	151.41	151.86	154.06	154.52	158.63	165.31	170.23	175.29	180.23	185.23	189.35	193.19	197.02
Net returns	242.81	232.68	330.36	352.01	354.55	362.61	362.50	359.55	353.54	353.07	346.84	341.61	334.60